

# Vyrnwy Frankton

Preliminary Environmental Information Report – Volume 1

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## Glossary

Term	Definition
Abnormal Indivisible Load	A vehicle that is used to transport very large equipment and has a weight of more than 44,000kg; or an axle load of more than 10,000kg for a single non-driving axle and 11,500kg for a single driving axle; or a width of more than 2.9m; or a rigid length of more than 18.65m.
Above Ordnance Datum	A term used in mapping and surveying to describe the height of a location relative to a fixed reference point called the Ordnance Datum.
Access points	A location connecting a construction site to the public highway.
Access routes	Public highway used by construction traffic to access a construction site
Agricultural Land Classification	The system of grading land quality for use in land use planning purposes. This divides farmland into five grades according to the degree of limitation imposed upon land use by the inherent physical characteristics of climate, site, and soils. Grade 1 land is of an excellent quality, whilst grade 5 land has very severe limitations for agricultural use.
Air Quality Management Area	An area, declared by a local authority, where air quality does not meet Defra's national air quality objectives.
Air-Insulated Switchgear	Switchgear that adopts the air as the insulation medium.
Ancient Woodland	Land that has been continually wooded since at least 1600 in England. Regarded as 'irreplaceable habitat' in national planning guidance. Ancient woodland greater than 2ha is recorded on the Natural England Ancient Woodland Inventory.
Annual Average Daily Flow	The average over a full year of the number of vehicles passing a point in the road network each day.
Annual Average Daily Traffic	The measurement used to calculate the total volume of vehicle traffic on a road for a year.
Applicant	Green Generation Energy Networks Cymru

Term	Definition
Application	Application for development consent is required for all Nationally Significant Infrastructure Projects in England and Wales.
Aquifer	Water-bearing rock or sediment below the soil layer.
Archaeological remains	The material remains of human activity from the earliest periods of human evolution to the present. These may be buried traces of human activities, sites visible above ground, or moveable artefacts.
Area of Outstanding Natural Beauty (Commonly known now as National Landscapes)	An area of outstanding natural beauty is land protected by the Countryside and Rights of Way Act 2000 (CROW Act). It protects the land to conserve and enhance its natural beauty.
Backclothing	Careful use of topography and surrounding context in the routeing process to reduce the visibility of an overhead line.
Bailey bridge	A temporary prefabricated bridge designed for quick assembly.
Baseline	Information on the current environmental conditions of the project site.
Bellmouth	A flared vehicular access/egress point connecting a construction site to the public highway, designed to accommodate turning movements by large vehicles.
Best and Most Versatile land	Grades 1, 2 and 3a under the Agricultural Land Classification system.
Biodiversity	The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems.
Biodiversity Net Gain	An approach to development, and/or land management, that aims to leave the natural environment in a measurably better state than it was beforehand. The Environment Act (2021) sets a minimum of 10% net gain is acceptable for developments in England, this is calculated using the Defra Biodiversity Metric.
Cable	An insulated conductor designed for underground installation.



Term	Definition
Cable sealing end compound	The compound area surrounding the terminal pylon, where an overhead line converts to an underground cable when for example entering a Substation.
Cement-bound sand	Used to form a protective bedding for underground cable installations.
Conductor	The overhead wire that carries electricity from one place to another. For example, the line between two pylons.
Conservation area	Areas of special architectural and historic interest, protected by special planning rules.
Construction	The process of building the permanent features of the Project and will involve temporary features such as construction compounds.
Contaminated land	Land where substances are causing or could cause significant harm to people, property or protected species or could cause significant pollution of surface waters or groundwater.
Corridor	Strategic area of land between two points of connection within which potential route options can be identified for comparative environmental appraisal.
Decommissioning	When there is no longer a business case, the transmission of electricity will cease to exist.
Development Consent Order	The consent issued by the UK Government under the Planning Act 2008 for a Nationally Significant Infrastructure Project.
Dewatering	The removal of groundwater (e.g. by pumping) to keep a below-ground works area dry. This can be used during construction of the underground cable sections.
Disaster	May be a natural hazard (e.g. earthquake) or man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident.
Double circuit	This refers to the arrangement in which six conductors are provided to make two different transmission circuits. Both circuits are mounted or run through the same transmission line.
Ecological feature	Habitats, species or ecosystems.

Term	Definition
Ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.
EIA Regulations 2017	Provide the criteria of a development for when an Environmental Impact Assessment is required.
EIA Scoping Opinion	Confirms the need for an EIA assessment and provides further guidance on the expected context of the EIA.
EIA Scoping Report	Sets out the need for an EIA along with the proposed content of the assessment.
Electric and Magnetic Fields	A combination of invisible electric and magnetic fields of force.
Embedded mitigation measures	Mitigation measures that are intrinsic to and built into the design of the Project.
Embodied Carbon	The emissions associated with materials and construction processes throughout the whole lifecycle of infrastructure.
English Index of Multiple Deprivation	A relative measure of deprivation in England.
Environmental Impact Assessment	The process used for describing, analysing and evaluating the range of environmental effects that are caused by a proposed development.
Environmental Statement	The document that sets out the findings of the EIA.
Essential mitigation	Comprises any additional Project-specific measures needed to avoid, reduce or offset potential impacts that could otherwise result in effects considered significant in the context of the EIA Regulations.
European Protected Species	Animals and plants listed under the Habitats Directive and protected under the Conservation of Habitats and Species Regulations 2017.
Flood Zone 1	Land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).

Term	Definition
Flood Zone 2	Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Flood Zone 3	Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
Fragmentation	Breaking up of, for example, an area of land or habitat resulting in difficulties in accessing or using some or all of that land.
Fugitive dust	Dust released from an open source such as construction works rather than from a stack
Gas-Insulated Switchgear	Switchgear that combines vacuum switching technology with clean air insulation.
Geological Conservation Review	A site that contains geological and geomorphological features of national and international importance.
Good practice mitigation	Mitigation measures such as standard approaches and actions that are commonly used on infrastructure projects to avoid or reduce environmental impacts and are typically applicable across the whole Project.
Grid Connection	Either an overhead line or an underground cable used to transmit electricity
Groundwater Dependent Terrestrial Ecosystems	Wetlands which critically rely on groundwater flows and/or chemistries.
Heavy Goods Vehicle	Goods vehicles weighing more than 3500kg.
Heritage asset	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage assets include designated heritage assets and assets identified by the local planning authority (including local listing).
Historic buildings	Architectural, designed, or other structures with a significant historical value. These may include structures that have no

Term	Definition
	aesthetic appeal or structures not usually thought of as buildings, such as milestones or bridges.
Historic landscape	The current landscape, whose character is the result of the action and interaction of natural and/or human factors.
Historic Parks and Gardens	Assessed to be of particular significance.
Holford Rules	Established practice for routeing overhead lines in the UK.
Hydromorphology	The physical character and water content of waterbodies.
Independent Distribution Network Operator	Connect to the local distribution network or to the transmission network to supply new housing and commercial developments with electricity. IDNOs pay for the construction and maintenance of the new electricity distribution network.
Index of Multiple Deprivation	The official measure of relative deprivation for small areas in England and Wales.
Individual Passive Infrared	A type of motion sensor.
Infiltration	Incident rainfall that percolates into the ground, rather than evaporating or running off.
Inter-Project effect	The effects of the Project alongside the effects of other developments within the study area. E.g. the construction traffic of the Project in combination with the construction traffic of another development in the study area may lead to a temporary increase in traffic on the local road network.
Intra-Project effect	The effects to a receptor from within the Project only e.g. the impact of residential visual amenity changes alongside the impact of noise from the construction and operation of the Project on a residential property
Invasive non-native species	An invasive non-native species is any non-native animal or plant that can spread, causing damage to the environment, the economy, health, and way of life.
kV	Kilovolt (one thousand volts)
L7 (c) Tower	A steel lattice tower with six cross-arms (three on each side)

Term	Definition
LAeq T	The A-weighted Leq sound level measured over a specified period of time.
Land cover	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use
Land use	What land is used for, based on broad categories of functional land cover such as urban and industrial use and the different types of agricultural and forestry.
Landform	The shape and form of the land surface resulting from combinations of geology, geomorphology, slope, elevation and physical processes.
Landscape	An area, as perceived by people, the character of which is the result of the action and integration of natural and/or human factors.
Landscape susceptibility	The ability of the landscape (whether it be the overall character or quality/condition of a particular landscape type or area, or an individual element and/or features, or a particular aesthetic and perceptual aspect) to accommodate the proposed development without undue consequences for the maintenance of the baseline situation.
Landscape and Visual Impact Assessment	The technique used to assess the effects of change on the landscape.
Landscape character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
Legislation	A law or set of laws that Parliament has passed. All references to legislation in this PEIR are to that legislation as amended on the date of this PEIR.
Light-Emitting Diodes	A type of light.
Limits of Deviation	Represent the maximum deviation for permanent infrastructure. The LoD allow for the adjustment to the final positioning of the

Term	Definition
	Project features to avoid localised constraints or unknown or unforeseeable issues that may arise.
Listed building	A measure of a building's special architectural and historic interest. Listing includes the interior, exterior and the setting of the building. Listed buildings are graded as grade I (highest value), grade II* and grade II.
Local Air Quality Management	A system through which local authorities are required to assess air quality in their area and designate Air Quality Management Areas.
Local Nature Reserve	Sites dedicated by the local authority under Section 21 of the National Parks and Access to the Countryside Act 1949 for nature conservation which have wildlife or geological features that are of special interest locally.
Local planning authority	The public authority whose duty it is to carry out specific planning functions for a particular area.
Local Wildlife Site	Non-designated areas of land important for their wildlife and nature conservation value.
Long list	List of other proposed developments within the study area that could interact with the Project.
Lowest Observed Adverse Effect Level	This is the level of noise above which adverse effects on health and quality of life can be detected.
Magnitude of change	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
Main river	Usually larger rivers and streams that the Environment Agency maintain and improve to manage flood risk.
Major accident	A major accident is an event that threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment and requires the use of resources beyond those of the client or its appointed representatives (i.e., contractors) to manage.

Term	Definition
	Major accidents can be caused by disasters resulting from both man-made and natural hazards.
Million Tonnes of carbon dioxide equivalent (M tCO <sub>2</sub> e)	A measurement to allow the comparison of the potential warming impact of an emission e.g. nitrous oxide to an emission of the same amount of carbon dioxide.
Mitigation	Measures, including any process, activity or design to avoid, reduce or remedy adverse effects of a proposed development.
National Grid Electricity Transmission	The electricity transmission system in the UK.
National Nature Reserve	Sites that are dedicated by the statutory country conservation agencies, under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981, for nature conservation and which have wildlife or geological features that are of special interest nationally.
National Park	National Parks are large areas designated by law to protect their special landscape qualities and promote outdoor recreation. National Parks have their own authorities which control planning.
National Policy Statements	Set out government policy on different types of national infrastructure development.
National Vegetation Classification	System of classifying natural habitat types in Great Britain according to their vegetation types.
Nationally Significant Infrastructure Project	A project of a type and size required to go through the consenting process as defined by the Planning Act 2008. The Act includes thresholds to defined relevant projects and these can be located wholly in Wales, wholly in England or be “cross border”.
Net Benefit for Biodiversity	The regime used for Biodiversity Enhancement in Wales which is a legal requirement, but there is no threshold or metric.
Noise important area	Determined via strategic noise maps and highlight the residential areas experiencing the highest 1% of noise levels from road and rail sources in England and Wales.

Term	Definition
Non-statutory designated site	A site designated at a local level for its biodiversity and/or geological value. These are not underpinned by legislation.
Non-statutory consultation	Not legally binding, but there are agreed best practices to ensure a good quality consultation is completed.
Operation	Once the construction of the Project is completed. The operation involves the physical features being used for their intended purpose.
Ordinary watercourse	Watercourses that are not main rivers, and that Lead Local Flood Authorities, district councils and Internal Drainage Boards maintain.
Outline Construction Environmental Management Plan	Describes the good practice measures that would be undertaken on the Project. This would include good practice approaches and actions commonly used on infrastructure projects to avoid or reduce environmental impacts and is typically applicable across the whole Project.
Overhead line	An electric line installed above ground supported by lattice steel pylons or wooden poles.
Photomontages	Illustrate the likely appearance of the OHL overlaid onto a photograph
Planning Inspectorate (PINS)	The body responsible for managing the legal process for Development Consent Order applications.
PM10	Particulate matter less than 10 microns in aerodynamic diameter
PM2.5	Particulate matter less than 2.5 microns in aerodynamic diameter
Precautionary Approach	Where limited information is available (in terms of the proposals for the Project), a realistic worst-case scenario is assessed.
Preliminary Environmental Information Report	Information that has been compiled by the applicant to support statutory consultation held in advance of submitting an application for development consent. The Preliminary Environmental Information Report should contain information reasonably required for the



Term	Definition
	consultation bodies to develop an informed view of the likely significant environmental effects of the development and any associated development.
Project's draft Order Limits	The Order Limits are defined as the maximum extent of land within which the Project, as defined within this PEIR, may be carried out, and includes land required on a permanent and temporary basis to build and operate the Project.
Public Right of Way	A footpath, bridleway or byway accessible to all members of the public.
Pylon	Transmission line supports.
Ramsar site	Sites designated under the Ramsar Convention. The designation covers all aspects of wetland conservation and use, recognising wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the wellbeing of human communities.
Receptor	Refers to living organisms or materials which are affected by air quality, such as residential properties, schools, parks and ecological sites.
Regionally Important Geodiversity Sites	Non-statutory sites selected to protect the most important places for geology, geomorphology and soils, complementing the network of legally protected Sites of Special Scientific Interest (SSSIs).
Registered Battlefields	A battlefield of historical significance.
Registered Historic Landscapes	A landscape of outstanding or special historic interest.
Registered Park and Garden	A park or garden included on Historic England's Register of Historic Parks and Gardens. Sites are graded I, II* or II like listed buildings
Riparian	Relating to or situated on the banks of a watercourse.
Rochdale Envelope	An approach to assessing the likely significant effects of a Project which involves assessing a limit of deviation and the maximum (or where relevant, minimum) parameters for elements of the Project where flexibility need to be retained.

Term	Definition
Scheduled Monument	Nationally important archaeological sites.
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptors to the specific type of change or development proposed and the value related to that receptor.
Setting	The surroundings in which a heritage asset or landscape designation is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.
Short list	A filtered long list which identifies suitable projects to be taken forward to the inter-project cumulative effects assessment.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Significant Observed Adverse Effect Level	This is the level of noise above which significant adverse effects on health and quality of life occur.
Site of Special Scientific Interest	A statutory designation under the Wildlife and Countryside Act 1981, protecting nationally important wildlife sites, habitats and geological sites.
Soil association	Represent a group of soil series (soil types) which are typically found occurring together in the landscape.
Soil compaction	Degradation of soil structure, which can be caused by heavy loading, resulting in a reduction in the voids within the soil.
Source Protection Zone	A defined area around a drinking water source that carries statutory protection from damaging activities.
Source Protection Zones	Areas of land through which water infiltrates into a groundwater borehole, well or spring that is used for public drinking water supply.
Special Area of Conservation	Special Areas of Conservation have been chosen to make a significant contribution to conserving habitats and wildlife species that live there, named in the EC Habitats Directive.

Term	Definition
Special Protection Area	Special Protection Areas are areas that have been designated specifically to conserve wild birds that are listed as rare and vulnerable in the Birds Directive. They also include sites that migratory birds use as stop-off points on their journeys across the planet.
Stakeholder	A person, group or organisation with a vested interest, or stake, in the decision-making and activities of a business, organisation or project.
Statutory Consultation	A statutory consultation on a developed design together with preliminary environmental assessments. Statutory consultations are bound by legal requirements, in this instance The Planning Act 2008.
Statutory Consultees	Organisations and bodies, defined by statute, who must be consulted on relevant planning applications.
Statutory designated site	A site which receives protection by means of legislation in recognition of its biodiversity value.
Statutory environmental bodies	Advisory bodies and key stakeholders.
Subsoil	The layer of soil under the topsoil on the surface of the ground, lacking in the levels of organic matter found in topsoil.
Substation	Substations are used to control the flow of power through the electricity system. They are also used to change (or transform) the voltage from a higher to lower voltage to allow it to be transmitted to local homes and businesses.
Sulphur Hexafluoride (SF6)	A potent greenhouse gas.
Superficial geology	Uncemented sediments, such as alluvium, immediately beneath the soil and above the bedrock.
Sustainable Drainage Systems	Mimics natural drainage, managing surface runoff at or close to the surface and as close to its source as practicable, controlling the flow (volume and rate of runoff) and providing a range of additional benefits.
Switching Station	It allows the power to be isolated from a substation.

Term	Definition
Topic	A subject area covered within the EIA, for example landscape and visual or Ecology.
Topsoil	The uppermost layer of soil, usually with the highest concentration of nutrients, organic matter and microorganisms.
Tranquillity	A state of calm and quietude associated with peace, considered to be a significant asset of landscape.
Underground cable	A cable buried within trenches to avoid conflicting with proposed wind turbines.
Vantage Point Survey	Surveys that record the movements of birds flying over and landing within the Project's draft Order Limits.
Visual receptor	Individuals and/or defined groups of people who could be affected by a project impacting on their views.
Visual susceptibility	The ability of a visual receptor to accommodate a project.
Visual value	The relative value that is attached to different views by society. A view may be valued by different stakeholders for a whole variety of reasons.
Welsh Index of Multiple Deprivation	A relative measure of deprivation in Wales
Wirelines	Depict the scale of the development from a particular point of view, but not superimposed onto a photograph.
Working area	The working area refers to the area of land that is likely to form part of the construction site.
Zone of Influence	The defined geographic area within which the project's environmental receptors are located.
Zone of Theoretical Visibility	Areas from which the OHL would be theoretically visible, supplemented by fieldwork and will be agreed with stakeholders.

# 1 Introduction

## 1.1 Overview of the Project

1.1.1 Green Generation Energy Networks Cymru (the Applicant) is working to develop a stronger, more resilient renewable electricity network that would distribute clean, green energy to homes, hospitals, schools, businesses and communities both in Wales and nationally. The Applicant aims to build and operate a new 132kV connection, the Vyrnwy Frankton Project, to distribute energy to the existing electricity transmission network. The Vyrnwy Frankton Project (the Project) would support the UK Government's Net Zero targets for 2050 and the Welsh Government's target for 100% renewable electricity in Wales by 2035. The Applicant aims to address the energy and climate crises, whilst providing investment, jobs and skills to empower rural communities.

1.1.2 The Project comprises:

- Approximately 50km double circuit 132kV connection from the new 132kV Grug y Mynydd Collector Substation (which is close to the existing Tirgwynt Wind Farm and to proposed wind farms being promoted by Bute Energy Ltd (Llyn Lort Energy Park) and Vattenfall (Mynydd Llest y Graig Wind Farm) in Powys, Wales) which will accommodate incoming Overhead Lines (OHL) from additional proposed energy sites.
- A new Underground Cable (UGC), which will be routed from the Grug y Mynydd Collector Substation, through the proposed Llyn Lort Energy Park to avoid conflicting with the proposed turbines and connect to a new Cable Sealing End Compound (CSEC) near Cors y Carreg which is required to transition from a UGC to an OHL.
- A new OHL which be supported on a type of tower referred to as an L7 design, a steel lattice tower with six cross-arms (three on each side);
- A new Switching Station near Lower Frankton which allows the power to be isolated from the substation being developed by National Grid Electricity Transmission to connect to the existing 400kV national electricity transmission system in Shropshire, England.
- There will also be temporary works associated with the construction of the Project.

- 1.1.3 The Project aims to facilitate the integration of energy generation into the existing high voltage electricity network. By enabling the transfer of renewable energy, this Project seeks to contribute to a sustainable and resilient energy infrastructure while addressing the pressing challenge of climate change.
- 1.1.4 Further details of the Project are included within Chapter 2: Project Description.

## 1.2 Geographical Context

- 1.2.1 The Project is located in Wales and England and crosses the border. The Project is approximately 50km in length, crossing land within the jurisdiction of Powys County Council in Wales and Shropshire Council in England.
- 1.2.2 The Project would commence at the proposed new 132kV Grug y Mynydd Collector Substation. The 132kV UGC would extend from the Grug y Mynydd Collector Substation, through the proposed Llyn Lort Energy Park for 4.8 km before connecting to a new CSEC near Cors y Carreg. The proposed 132kV OHL would then travel in a north-easterly direction for 45 km through the Vyrnwy Valley. The 132kV OHL would then connect to a new Switching Station, near Lower Frankton in Shropshire. This would allow for connection to the new substation near Lower Frankton, which is being consented separately by National Grid. Further details of the Project are included within Chapter 2: Project Description.
- 1.2.3 The Project has been broken down into nine geographical sections:
- Grug y Mynydd Collector Substation.
  - UGC Section: Grug y Mynydd to Cors y Carreg.
  - CSEC near Cors y Carreg.
  - OHL Section 1: Cefn Coch to Llangyniew.
  - OHL Section 2: Llangyniew to Meifod.
  - OHL Section 3: Meifod to Llansantffraid-ym-Mechain.
  - OHL Section 4: Llansantffraid-ym-Mechain to Llanymynech.
  - OHL Section 5: Llanymynech to Lower Frankton.
  - Lower Frankton Switching Station
- 1.2.4 Further details of the Project sections are provided within Chapter 2: Project Description.

## 1.3 Legislative Context

1.3.1 If progressed with significant elements of OHL, the Project would be classified as a Nationally Significant Infrastructure Project (NSIP) as defined under Part 3 Section 14 and Section 16 of the Planning Act 2008 (Ref. 1.1) as it meets the criteria:

*‘Section (14)(1) In this Act “nationally significant infrastructure project” means a project which consists of any of the following— (b) the installation of an electric line above ground*

*Section (16)(1) The installation of an electric line above ground is within section 14(1)(b) only if (when installed) the electric line will be—*

- (a) wholly in England,*
- (b) wholly in Wales,*
- (c) partly in England and partly in Wales, or*
- (d) partly in England and partly in Scotland.*

1.3.2 The Planning Act 2008 provides for certain circumstances in which the installation of an electric line would not constitute an NSIP. These exemptions are not relevant to the Project and are therefore not considered further.

1.3.3 All NSIPs in England and Wales require an application for development consent. The Applicant intends to apply for the granting of an order for development consent for the Project to the Secretary of State for Energy Security and Net Zero as it comprises the installation of 132kV electricity transmission infrastructure over approximately 50km that will be located partly in England and partly in Wales.

1.3.4 Schedules 1 and 2 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) (Ref. 1.2), provide the criteria of a development for when an Environmental Impact Assessment (EIA) is required. An EIA is required for Schedule 1 developments and for Schedule 2 developments, an EIA is not mandatory, and professional judgment based upon the parameters provided in Schedule 3 of the EIA Regulations (Ref. 1.2) is required regarding the likelihood of the Project resulting in significant environmental effects. This depends on the size, nature and location of the Project.

- 1.3.5 Paragraph 20 of Schedule 1 to the EIA Regulations states that an EIA is required for:
- ‘Construction of overhead electrical power lines with a voltage of 220 kV or more and a length of more than 15km.’ The Project is not a Schedule 1 development under the EIA Regulations as the proposed voltage of the Project is 132kV.*
- 1.3.6 Paragraph 3(b) of Schedule 2 to the EIA Regulations states that an EIA may be required for:
- ‘Industrial installations for carrying gas, steam and hot water; transmission of electrical energy by overhead cables (projects not included in Schedule 1 to these Regulations);’*
- 1.3.7 The Project has been determined as a Schedule 2 development under the EIA Regulations, due to the Project transmission of electrical energy by overhead cables.
- 1.3.8 In January 2024 the Applicant submitted a Scoping Report (Ref. 1.3) to the Planning Inspectorate setting out the need for EIA along with the proposed content of the assessments. In March 2024 the Planning Inspectorate provided their Scoping Opinion (Ref. 1.4), confirming the need for EIA and providing further guidance on the expected context of the EIA.
- 1.3.9 Section 16 of the Planning Act 2008 provides that OHL projects located partly in England and partly in Wales are NSIPs. Although section 16(3B) of the Planning Act 2008 provides that OHL developments associated with a devolved Welsh generating station will not be an NSIP, this will not be relevant to the Project as it is not located wholly in Wales. The Project will therefore be consented through a single DCO application and will not require a separate Development of National Significance (DNS) consent from the Welsh Ministers for the portion of the Project located in Wales.

## 1.4 Purpose of this Report

- 1.4.1 Regulation 12(2) of the EIA Regulations (Ref. 1.2) defines preliminary environmental information as information that:

*‘Has been compiled by the applicant; and’*



*'Is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development).'*

- 1.4.2 Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects: Guidance on the pre-application stage for Nationally Significant Infrastructure Projects (Ref. 1.5), paragraph 12 states:
- 1.4.3 'There is no prescribed format for PEI. However, depending on the availability of material, applicants are encouraged to prepare this as an early draft of the Environmental Statement and include it as such as part of the statutory consultation under sections 42, 47 and 48 of the Planning Act. If applicants decide to take a different approach, they should be clear with consultees about the status of the PEI.'
- 1.4.4 This Preliminary Environmental Information Report (PEIR) is not intended to be a draft Environmental Statement (ES), however, the same topics will be included within the ES. It is intended to enable consultees to develop an informed view of the likely significant environmental effects (positive or negative) to enable them to prepare well-informed responses to the statutory consultation. The PEIR has been carefully compiled to ensure there is read across from the Scoping Report and forward to the ES. All conclusions and assessments are by their nature preliminary and are based on the current Project design described within this PEIR. All assessment work has and continues to apply a precautionary approach, in that where limited information is available (in terms of the proposals for the Project or detailed environmental survey results), a realistic worst-case is assessed, as acknowledged within the Rochdale Envelope (Ref. 1.6). This is discussed further in Chapter 5: Methodology, however, there may be topic-specific points to note that will be flagged in the methodology sections of the individual chapters.
- 1.4.5 Any significant effects identified within the PEIR are identified on a preliminary basis and may be subject to change as individual assessments progress. Therefore, likely significant effects provisionally identified within this PEIR may later be found not to be significant following the completion of the design and identification of further mitigation measures reported in the ES.
- 1.4.6 The final assessment would be presented within the ES submitted with the application for development consent. This would consider and take into account the representations made during the statutory consultation and ongoing engineering design informed by the EIA process and stakeholder engagement.

1.4.7 The PEIR has been informed by the EIA Scoping Opinion published by the Secretary of State in March 2024 (Ref. 1.4).

## 1.5 Structure of the PEIR

1.5.1 The PEIR comprises three volumes. Volume I contains the main body of the PEIR; Volume II contains the Figures referred to in the PEIR; Volume III includes the Technical Appendices for the PEIR. A Non-Technical Summary also accompanies the PEIR.

1.5.2 Table 1.1 outlines the structure of this PEIR, describing the chapters and supporting appendices along with a summary of their contents.

*Table 1-1 – Structure of the PEIR*

Chapter / Appendix	Content
Volume I	
Non-Technical Summary	Provides a summary of the Project and any preliminary findings reports within the PEIR using non-technical language. The Non-Technical Summary is a stand-alone separate document.
1. Introduction	This chapter Introduces the Project and outlines the purpose and structure of the PEIR. This chapter also describes the government policies and strategies.
2. Project Description	This chapter describes the general characteristics of the Project including permanent features and any associated temporary works.
3. Main Alternatives Considered	This chapter outlines the evolution of the Project, the main reasonable alternatives considered and the reasons for selecting the Project.
4. Consultation	This chapter outlines the consultation undertaken to date.

Chapter / Appendix	Content
5. Environmental Assessment Methodology	This chapter includes a description of the overall methodology that is proposed to be presented in the ES and the approach to mitigation.
6 - 19. Topic Chapters (Landscape and Visual Amenity; Ecology; Ornithology; Historic Environment; Traffic and Transport; Noise and Vibration; Water Resources; Ground Conditions, Geology and Hydrogeology; Air Quality; Soils and Agriculture; Health and Wellbeing; Major Accidents and Disasters; Greenhouse Gas Emissions; and Socio-economics.	<p>There is a chapter for each environmental topic scoped into the EIA. The topics chapters are structured as follows unless stated otherwise:</p> <ul style="list-style-type: none"> <li>• Legislation, Policy and Guidance.</li> <li>• Consultation and Engagement.</li> <li>• Assessment Methodology and Significance Criteria.</li> <li>• Baseline Conditions.</li> <li>• Preliminary Mitigation Measures.</li> <li>• Preliminary Likely Significant Effects.</li> <li>• Preliminary Mitigation and Enhancement Measures.</li> <li>• Next Steps.</li> </ul> <p>Where the current assessment allows, preliminary enhancement measures have been included and where it has not been possible at this stage of assessment, enhancement measures will be developed in discussion with stakeholders for inclusion in the ES.</p>
20. Cumulative Effects	This chapter describes how cumulative effects will be assessed along with an initial indication of potential cumulative effects associated with the Project.
Volume II - Figures	Contains supporting figures to the PEIR.
Volume III – Technical Appendices	Contains additional technical information supporting the chapter above.

## 1.6 References

- Ref 1.1 Ministry of Housing, Communities, and Local Government (MHCLG) (2008). Planning Act 2008. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents> [Accessed 24/07/2024].
- Ref. 1.2 Ministry of Housing, Communities, and Local Government (MHCLG) (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: <https://www.legislation.gov.uk/uksi/2017/572/contents> [Accessed 24/07/2024].
- Ref. 1.3 Green GEN Cymru (2024). Green GEN Vyrnwy Frankton Scoping Report. Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/wales/green-gen-vyrnwy-frankton/?ipcsection=docs> [Accessed 29/07/2024].
- Ref. 1.4 Planning Inspectorate (2024). Green GEN Vyrnwy Frankton Scoping Opinion. Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/wales/green-gen-vyrnwy-frankton/?ipcsection=docs> [Accessed 24/07/2024].
- Ref. 1.5 Planning Inspectorate (2024). Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects: Guidance on the pre-application stage for Nationally Significant Infrastructure Projects. Available at: <https://www.gov.uk/guidance/planning-act-2008-pre-application-stage-for-nationally-significant-infrastructure-projects> [Accessed 24/07/2024].
- Ref. 1.6 Planning Inspectorate (2018). Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope. Available at: <https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope#conclusions> [Accessed 17/12/2024].

## 2 Project Description

### 2.1 Introduction

- 2.1.1 This chapter outlines the current proposals for The Vyrnwy Frankton Project (the Project), which have been developed through ongoing engineering design, discussions with landowners, and environmental assessment. The Vyrnwy Frankton Project is an overhead line which is approximately 50km in length connecting the proposed Grug y Mynydd collector substation near Cefn Coch in Powys to a new National Grid substation at Lower Frankton in Shropshire. The current proposals have also incorporated feedback received during the non-statutory consultation that took place between 6 September and 18 October 2023. The design would continue to develop based on feedback received during the statutory consultation and further ongoing environmental and engineering design work, which would also be informed by stakeholder engagement. The final design would be presented in the Environmental Statement (ES) and application for development consent.
- 2.1.2 The Green GEN Phase Two Grid Connection Strategy (Ref. 2.1) and Green GEN Vyrnwy Frankton Routeing and Consultation Document (Ref. 2.2) present the alternatives that were previously considered. This is described in more detail in Chapter 3: Alternatives.
- 2.1.3 The remainder of this chapter is split into the following sections:
- Section 2.2: An Overview of the Project: This outlines key features of the Project by section which are being presented at statutory consultation.
  - Section 2.3: Project Sections: This describes the nine geographic sections of the Project used in this PEIR.
  - Section 2.4: Environmental Mitigation Measures: This describes the embedded and good practice measures relating to the Project.
  - Section 2.5: Draft Order Limits and Limits of Deviation (LoD): Describes the Project's draft Order Limits which are defined as the maximum extent of land within which the Project, as defined within this PEIR, may be carried out.
  - Section 2.6: Construction – General: This describes aspects such as the construction programme, working hours, and the existing features during construction.
  - Section 2.7: Construction – Temporary Features: This describes how the Project would be constructed including associated temporary work features such as site compounds and haul roads.

- Section 2.8: Operation: This describes the permanent features of the Project that would be in place during operation.
- Section 2.9: Maintenance: This describes the anticipated activities during the operation phase including site inspections and routine maintenance.
- Section 2.10: Decommissioning: This describes what would happen once the Project reaches the end of its design life and/or is no longer required.
- Section 2.11: References.

## 2.2 An Overview of the Project

2.2.1 The Project comprises an approximately 50km double circuit 132kV connection from the new 132kV Grug y Mynydd Collector Substation (would be close to the existing Tirgwynt Wind Farm and proposed wind farms being promoted by Bute Energy Ltd (Llyn Lort Energy Park) and Vattenfall (Mynydd Lluest y Graig Wind Farm) in Powys, Wales) to the existing 400kV network in Shropshire, England.

2.2.2 The current proposals for the Project, which are the subject of the 2025 statutory consultation, comprise:

- A new double circuit 132kV connection comprising an Overhead Line (OHL) with a small proportion of Underground Cable (UGC) from the new 132kV Grug y Mynydd Collector Substation (would be close to the existing Tirgwynt Wind Farm and proposed wind farms being promoted by Bute Energy Ltd (Llyn Lort Energy Park) and Vattenfall (Mynydd Lluest y Graig Wind Farm) in Powys, Wales) which will accommodate incoming Overhead Lines (OHL) from additional proposed energy sites.
- A new Underground Cable (UGC), which will be routed from the Grug y Mynydd Collector Substation, through the proposed Llyn Lort Energy Park to avoid conflicting with the proposed turbines and connect to a new Cable Sealing End Compound (CSEC) near Cors y Carreg which is required to transition from a UGC to an OHL.
- A new OHL which will be supported on a type of tower referred to as an L7 design, a steel lattice tower with six cross-arms (three on each side).
- A new Switching Station near Lower Frankton which allows the power to be isolated from the substation being developed by National Grid Electricity Transmission to connect to the existing 400kV National Electricity Transmission System (NETS) in Shropshire, England.
- There will also be temporary works associated with the construction of the Project.

- 2.2.3 The Project would commence at the 132kV Grug y Mynydd Collector Substation, Powys, and would include the installation of electrical switchgear and associated equipment. The 132kV UGC connection would extend from the Collector Substation, through the proposed Llyn Lort Energy Park for approximately 4.8km before connecting to a new CSEC near Cors y Carreg. The Cors y Carreg CSEC is required to transition from a UGC to an OHL and would require the installation of electrical equipment and a gantry. The Project elements can be seen in the Consultation Plans (331201487-STN-22-XX-LAY-OH-003).
- 2.2.4 The proposed 132kV OHL would then travel in a north-easterly direction for 45km through the Vyrnwy Valley, supported on 'L7c' steel lattice towers with an average height of 28.5m. It is currently anticipated that the tallest tower would be 36m and the smallest tower would be 23m above ground level.
- 2.2.5 The 132kV OHL would then connect to a new Switching Station near Lower Frankton which allows the power to be isolated from the National Grid substation and would include the installation of electrical equipment and a gantry, near Lower Frankton in Shropshire. There are currently two routes (west and east) proposed for this connection which can be seen on the Consultation Plans (331201487-STN-22-XX-LAY-OH-003). The chosen route will be confirmed within the ES which will consider design development as well as feedback from statutory consultation and stakeholders. This would allow for connection to the new 400kV substation near Lower Frankton, which is being proposed and consented separately by National Grid.
- 2.2.6 In addition, third-party utility diversions and/or modifications would be required to facilitate the construction of the Project which would cross existing 132kV and lower voltage OHLs, the Shrewsbury to Chester railway line and the Montgomery Canal. The typical construction methodology for crossing existing 132kV and lower voltage OHL would involve scaffolding protection or undergrounding of the third-party utility. Scaffolding is also the most effective way of crossing railway lines during construction which would have to be done under Network Rail line possession to provide a safe, traffic-free worksite for activities to be carried out.
- 2.2.7 The Project would require permanent infrastructure during the operation and maintenance phases of the Project which would include infrastructure, drainage and lighting associated with the Grug y Mynydd Collector Substation, UGC, Cors Y Carreg CSEC, OHL, and Lower Frankton Switching Station. Maintenance access roads would also be required.



2.2.8 There would also be land required for mitigation, compensation and enhancement of the environment including for Biodiversity Net Gain (BNG) in England and Net Benefits for Biodiversity in Wales.

2.2.9 As well as the permanent infrastructure, land would be required for temporary construction activities, including access tracks and construction compounds which would provide locations for the storage of construction materials, equipment, machinery, and secure locations for site offices and staff welfare provision.

## 2.3 Project Sections

2.3.1 As described in Chapter 1: Introduction, the Project is split into nine geographical sections for the purposes of the Preliminary Environmental Information Report (PEIR):

- Grug y Mynydd Collector Substation.
- UGC Section: Grug y Mynydd to Cors y Carreg.

2.3.2 CSEC near Cors y Carreg;

- OHL Section 1: Cefn Coch to Llangyniew.
- OHL Section 2: Llangyniew to Meifod.
- OHL Section 3: Meifod to Llansantffraid-ym-Mechain.
- OHL Section 4: Llansantffraid-ym-Mechain to Llanymynech.
- OHL Section 5: Llanymynech to Lower Frankton.
- Lower Frankton Switching Station.

## 2.4 Environmental Mitigation Measures

### Overview

2.4.1 There are three types of mitigation to be incorporated into the Project and preliminary assessment which include: embedded, good practice, and essential mitigation. Environmental mitigation measures have also been defined within each environmental topic chapter.

### Embedded Mitigation Measures

2.4.2 Environmental assessment has been a key part of the Project design process since conception, which means that the Project has been able to avoid environmentally sensitive features as far as reasonably practicable.



- 2.4.3 Embedded mitigation measures are those that are intrinsic to and built into the design of the Project. The Applicant has embedded mitigation measures into the design of the Project to avoid or reduce significant effects that may otherwise be experienced during the construction and operation phases of the Project.
- 2.4.4 The design of the Project would be continually reviewed in line with assessment work and consultation feedback as it progresses to the detailed design. The environmental assessment would continue to influence the design, whereby mitigation measures may be embedded into the design, to avoid or reduce significant effects arising as much as possible from the Project.
- 2.4.5 Table 2.1 outlines the key embedded measures that have been incorporated into the design to date. This would be updated in the ES to outline any further embedded mitigation measures that have been developed as part of the design.

Table 2-1 – Embedded Mitigation Measures

Embedded Measures	Benefits
Whole project / Route Measures	
<p>Sensitive routeing and siting to develop the Project’s draft Order Limits defined as the maximum extent of land within which the Project, as defined within this PEIR, may be carried out, and includes both permanent and temporary land required to build and operate the Project.</p>	<p>The route alignment and siting have been designed as far as practicable to avoid impacts on identified environmental receptors/features and to reflect the Holford Rules.</p> <p>The location of the towers have been carefully chosen with several factors considered for example:</p> <ul style="list-style-type: none"> <li>• Proximity to watercourse.</li> <li>• Being near to the access point for ease of construction and future maintenance.</li> <li>• Use of land, cropped field or grazing (towers in cropped fields need to be on the boundaries where possible to make it easier for the landowner to harvest crops).</li> </ul> <p>Third-party utilities both overhead and underground in proximity to tower location.</p>
<p>UGC route</p>	<p>An UGC route is proposed between the Grug y Mynydd Collector Substation and the Cable Sealing End Compound. This would be routed through the proposed Llyn Lort Energy Park for approximately 4.8km. The proposed UGC route would avoid impacts on the operation of the proposed wind turbines and other on-site infrastructure for the proposed Llyn Lort Energy Park. The UGC route would also reduce the impact on views and setting.</p> <p>Where possible the cable route would be designed and constructed near the energy park access road. This would reduce the environmental impact and provide value engineering by utilising the same access road for the energy park. This would also make</p>

Embedded Measures	Benefits
	<p>installation more efficient as well as ensure good future access for maintenance and system monitoring.</p>
<p>L7(c) Steel Lattice Towers</p>	<p>The Project would use L7(c) Steel Lattice Towers, which can be seen on the indicative layout drawing (331201487-STN-35-XX-GA-OH-265), to support the 132kV conductors. This option has been chosen as they are the optimum design for 132kV technology. L7(c) Steel Lattice Towers can accommodate 12 conductors that are larger in weight and diameter in comparison to 3 conductors on wood poles, providing a much greater capacity. For instance, to achieve the same capacity for wood poles compared to L7(c) Steel Lattice Towers, 4 wood pole lines would be required compared to a single L7(c) Steel Lattice Tower line. This ensures the right balance in terms of deliverability, economics, likely environmental impacts, and efficiency and would provide sufficient flexibility to deliver green energy both locally and nationally in the short and long term.</p>
<p>Collector Substation, CSEC and Switching Station</p>	<p>The siting of the Collector Substation, CSEC and Switching Station has been designed as far as practicable to avoid impacts on identified environmental receptors/features and to provide value engineering. Predominantly seeking to reduce visual intrusion by using existing areas of planting and contours to help screen views of the new infrastructure.</p>

## Good Practice

- 2.4.6 An Outline Construction Environmental Management Plan (OCEMP) would be developed describing the good practice measures that would be undertaken on the Project. This would include standard approaches and actions commonly used on infrastructure projects to avoid or reduce environmental impacts and is typically applicable across the whole Project. This would continue to be updated where required. An OCEMP would be submitted as part of the application for development consent. Should consent be granted, the OCEMP would be further developed by the Main Works Contractor as part of the detailed design and a final version would be submitted for approval as required by the development consent order.
- 2.4.7 Additional management plans have been identified in each of the topic chapters. These are subject to change and will continue to be developed in line with design development and engagement with key stakeholders. At this preliminary stage of assessment, the outline management plans include (but are not limited to):
- Outline Construction Traffic Management Plan (OCTMP).
  - Outline Habitat Management Plan (OHMP).
  - Landscape Management Plan.
  - Soil Management Plan (SMP).
  - Bird Protection Plan (BPP).
  - PRoW Management Plan.
  - Drainage Strategy.
  - Peat Management Plan.
  - Environmental Control Plans (ECP).
  - Draft Heritage Mitigation Strategy and Outline Written Scheme of Investigation (WSI).
  - Draft Heritage Management Strategy.
  - Surface Water Management Plan (SWMP).
  - Dust Management Plan (DMP).
  - Stakeholder Communications Plan.
  - Construction Logistics Plan.
  - Travel Plan.

## Essential Mitigation

- 2.4.8 Essential Mitigation comprises any additional Project-specific measures needed to avoid, reduce or offset potential impacts that could otherwise result in effects considered significant in the context of the EIA Regulations. Essential mitigation

considers embedded mitigation and good practice and has been identified and discussed further in each environmental topic chapter.

### **Approach to Material Assets (and Waste)**

- 2.4.9 The nature of the Project means that it is not possible to use secondary sources of material during construction, as this can affect the operation and the Project's design life. Temporary materials, such as hardcore for the haul road and site compounds, work cabins and security fencing would be required during construction. It is intended that these would be sourced from a mix of existing local sources, imported from the wider area, and reused after completion of the Project where possible.
- 2.4.10 Waste materials would be produced by the Project. The Main Works Contractor(s) would produce an outline site waste management plan (OSWMP) prior to construction (OSWMP would be included as an appendix to the OCEMP) and would be secured through the application for development consent. This would set out the measures to reduce the generation of waste in the first place and appropriate measures to reuse and recycle materials where practicable. It would also identify appropriate waste facilities to dispose of materials.
- 2.4.11 The Applicant would adopt good construction and management practices to ensure waste is minimised as far as possible and that the storage, transport and eventual disposal of any waste follows the waste hierarchy (reduce - reuse – recycle - responsible disposal). The management and collection of waste arisings would be carried out under the requirements of the UK waste regulatory regime. The effects of any waste-producing development would be addressed as part of the relevant environmental aspects and associated strategies, for example, the transport effects from the management of waste arisings would be considered in Chapter 10: Traffic and Transport, Chapter 11: Noise and Vibration and Chapter 14: Air Quality of the ES where appropriate.

### **Design Resilience to Climate Change**

- 2.4.12 The need for the Project is to support the connection and transfer of energy from mid Wales into the NETS network. The Project would support the UK's net zero target to achieve net zero emissions by 2050 through the connection in mid-Wales of new low carbon energy generation.
- 2.4.13 In terms of the vulnerability of the Project to climate change, overhead lines are designed to withstand extreme weather conditions, such as high winds and ice formation on the conductors. The vulnerability of the Project to future flooding

would be considered as part of the Flood Risk Assessment (FRA) which would be submitted as part of the application for development consent.

- 2.4.14 The Project Description within the ES would detail likely construction materials. This would be supported by a greenhouse gas emissions chapter that would assess the emissions associated with the construction phase of the Project, comparing this against UK emissions to determine if the Project is likely to have a material impact on the ability of the Government to meet its carbon reduction targets. Extreme climatic events would also be assessed within the Major Accidents and Disasters Chapter within the ES.

## **2.5 Draft Order Limits and Limits of Deviation (LoD)**

- 2.5.1 The Order Limits are defined as the maximum extent of land within which the Project, as defined within this PEIR, may be carried out, and includes land required on a permanent and temporary basis to build and operate the Project.
- 2.5.2 The Project's draft Order Limits also include Limits of Deviation, which represent the maximum deviation for permanent infrastructure. The LoD allow for the adjustment to the final positioning of the Project features to avoid localised constraints or unknown or unforeseeable issues that may arise.
- 2.5.3 The Project's draft Order Limits are shown on the Consultation Plans (331201487-STN-22-XX-LAY-OH-003) included as part of the statutory consultation materials, as well as on Figure 2.1 of the PEIR, Volume 2. Please refer to Chapter 5: Environmental Assessment Methodology for information on the Rochdale Envelope used to inform the assessments within this PEIR. The following assumptions have been made at the PEIR stage:
- 2.5.4 Grug y Mynydd Collector Substation, Lower Frankton Switching Station, and Cors y Carreg CSEC: The Project's draft Order Limits are shown on the Consultation Plans (331201487-STN-22-XX-LAY-OH-003). The proposed locations for these elements within the Project's draft Order Limits have been identified (in part) to provide sufficient space to micro-site and orientate the infrastructure to reduce environmental effects and allow for mitigation such as landscaping and habitat creation as required. The vertical LoD for these elements of permanent infrastructure could be up to 10% higher than the maximum heights specified.
- Underground cable: The Project's draft Order Limits are generally 60m wide. The lateral LoD is 20m from either side of the centre line. There is no defined vertical LoD as the extent would be determined during detailed design in

response to more detailed information on ground conditions, however, the UGC would be a minimum depth of 1.2m below ground level.

- OHL: The Project's draft Order Limits are generally 100m wide, to accommodate the permanent infrastructure, construction working areas and the required LoD. The lateral LoD is 40m; 20m either side of the centre line. This lateral LoD allows flexibility to move the OHL tower positions for unforeseen circumstances, such as poor ground conditions or archaeological finds, and to cater for maximum conductor (overhead line) swing. The vertical LoD would be 6m in height which would allow for 2 extensions (which are in 3m sections) on any of the towers for unforeseen circumstances and could be any extent in depth underground.

2.5.5 While the lateral LoD and vertical LoD have been identified in this Chapter, the Applicant is continuing to investigate the longitudinal LoD (i.e. the extent to which towers may be moved up and down along the length of the overhead line). The Applicant's final proposals for the longitudinal LoD will be set out in detail in the ES together with any constraints that the Applicant identifies.

2.5.6 The LoD would be defined further within the application for development consent and described within the ES.

## **2.6 Construction – General**

### **Construction Programme**

2.6.1 It is anticipated that the application for development consent would be made in Q1 2026. Should consent be granted in 2027, it is anticipated that access and construction of the Project would commence in Q4 2027, starting with enabling works including, site clearance activities, and the installation of construction compounds and access roads. It is expected the main construction works would continue through to Q4 2029. While the phasing of the programme is yet to be confirmed, further information would be outlined in the ES.

### **Construction Working Hours**

2.6.2 Expected typical working hours for construction are 07:00 to 19:00. It is assumed that the core working hours for construction would be:

- Monday to Friday: 07:30 – 18:30.
- Saturday and Sunday: 07:30 – 16:00.
- Bank Holidays where possible.

2.6.3 The following operations may take place outside of the core working hours:

- The jointing of underground cables, except for cable cutting which would take place only during core working hours.
- The installation and removal of conductors, cables, pilot wires and associated protection across highways, railway lines or watercourses.
- Trenchless crossing operations: Deliveries of abnormal indivisible loads (AILs), for example, the cable drums.
- Large concrete pours that cannot be reasonably completed within core hours.
- The completion of operations commenced during the core working hours which cannot safely be stopped.
- Any highway works requested by the highway authority as necessary to be undertaken outside of core working hours (where possible).
- Testing or commissioning of any electrical plant installed as part of the Project.
- The completion of works delayed or held up by severe weather conditions which disrupted or interrupted normal construction activities.
- Security monitoring and surveys.

### **Construction Workforce and Vehicles**

- Approximately 250 full time construction workers from September 2027 to October 2029 would be working at any given time.
- There would be 160 overhead line works, 40 underground cable works, and 50 workers for the civils.

2.6.4 Approximately 75 vehicles (50 Heavy Goods Vehicles (HGV), 25 Large Goods Vehicles (LGV)), including mobile cranes (75 tonne lifting capacity) and front/rear escorted HGV articulated units (for transporting large diameter cable drums) would be used for the OHL and UGC construction.

### **Existing Features during Construction**

2.6.5 The following paragraphs outline the general design approaches that have informed the preliminary design stage in relation to existing features that will potentially be impacted during construction of the Project. These design approaches have been based on a reasonable worst-case scenario in relation to existing features.

#### **Land Drainage**

2.6.6 Where appropriate, pre-construction field drainage would be installed where relevant to working areas to:



- Help prevent possible waterlogging of working areas and therefore the need for temporary dewatering during construction.
- Enable the landowner's current drainage system to continue working throughout construction.
- Help prevent damage to the soil structure.
- Aid recovery from construction activities.
- Help prevent any future drainage problems.

2.6.7 Landowners would be consulted on the design of the land drainage proposals. The design would pay particular attention to the need to reduce risk so that the drains do not act as pathways for contamination or cause flooding off-site. The Lead Local Flood Authorities (LLFAs) would also be consulted on drainage design where necessary. Following construction, the land would be reinstated to its former condition (unless otherwise agreed) including replacement drainage, if required.

2.6.8 A specialised drainage contractor(s) would review the drainage designs and provide advice to the Applicant and the Main Works Contractor(s) during all relevant construction and reinstatement activities. Permanent records of the land drainage locations would be made and passed to the landowners/occupiers.

### **Roads**

2.6.9 During site set-up, there is likely to be the need to undertake works to the existing bellmouths of the proposed access points (where the construction traffic would access the working areas from the local road network). These may include widening at entrances to provide space for vehicle turning or trimming vegetation to improve visibility splays.

2.6.10 Where the new overhead line is to be installed across a road, scaffolding would be used to protect the road during construction. During the site set-up scaffolding would be placed on either side of the road. Each scaffold would be designed for the individual crossing that it would protect.

2.6.11 Lane closure and temporary traffic management may be required during the works to B-roads or larger. Smaller roads may require full closure with diversion routes provided. Hedgerows would be reinstated as soon as practicable, taking into account suitable planting seasons. It may be that some road works are undertaken at night to reduce impacts on local traffic. This would be agreed with the relevant highway's authority.

- 2.6.12 The Applicant would discuss any traffic management, road closures and diversions with the relevant highway's authority and the emergency services. Further details, including any proposed road closures and diversions, would be set out within the Transport Assessment submitted with the application for development consent.

### **Vegetation**

- 2.6.13 For the purposes of the PEIR, it has been generally assumed (unless otherwise stated) that vegetation within the new 132kV overhead line sections would have a maximum swathe of 30m felled to ground level (no removal of roots) to facilitate construction activities. This is a worst-case scenario as not all hedgerows would need to be removed.
- 2.6.14 For the UGC installation, the Project would use the access tracks for the proposed Llyn Lort Energy Park as part of the working area to install cables, thereby reducing the need for vegetation clearance during the construction of this element.
- 2.6.15 For the Grug y Mynydd Collector Substation and Lower Frankton Switching Station vegetation clearance will be required for the footprints and their associated construction compounds. The Cors y Carreg CSEC will only require vegetation clearance for its footprint.

### **Public Rights of Way (PRoW)**

- 2.6.16 Some PRoW would be affected by the construction of the Project. Discussions with PRoW officers are ongoing to discuss the preferred method for managing the diversion of PRoW. PRoW access disruptions will be minimised where possible. Should temporary closures be unavoidable, temporary diversions will be clearly marked at both ends with signage explaining the diversions and the duration of the diversion, and a contact number for any concerns. For PRoW in the area of the Grug y Mynydd Collector Substation (Footpath 236/5/1 and Footpath 236/1/2) it is assumed, for the purposes of the PEIR that as a worst-case scenario a permanent closure may be required, subject to further design iterations.

### **Watercourses**

- 2.6.17 Where the new overhead line crosses rivers, a temporary bailey bridge would be required as part of the temporary construction haul route. This would involve excavating the banks to install the bridge. Following construction, the bridge would be removed, and the banks would be reinstated. The proposed design and

construction methodology would be discussed with Natural Resources Wales and the Environment Agency and as appropriate.

- 2.6.18 Other watercourses within the overhead line sections would be crossed by the haul route using temporary culverts. Bank excavation may be necessary at these locations and, where this is required, bank reinstatement would take place following construction. A typical design and construction methodology would be discussed with Natural Resources Wales and the Environment Agency as appropriate.

## **2.7 Construction – Temporary Features**

### **Introduction**

- 2.7.1 This section outlines how the Project would be constructed including the temporary work features, such as construction compounds and haul roads. Temporary works discussed within this section would evolve as the design of the Project develops and further consultation is undertaken.

### **Temporary Lighting for Construction**

- 2.7.2 Expected typical working hours for construction are 07:00 to 19:00. Should the contractor(s) decide to work the maximum hours available during the winter months, it is possible that temporary lighting would need to be used for working the first 1.5 hours in the morning (07:00 to 08:30) and 5.5 hours in the evening (13:30 to 19:00). This is applicable for all elements of the Project.
- 2.7.3 The purpose of the lighting would be to illuminate the work area to a sufficient level to facilitate safe construction.
- 2.7.4 Typically, no lighting is expected overnight. Lighting will only be used overnight as a last resort e.g. if work needs to be completed under a rail possession which is typically completed at night.
- 2.7.5 During construction temporary lighting would be included within temporary traffic management on private and public roads and at site access and egress locations if required.
- 2.7.6 All temporary lighting would be designed and maintained in accordance with industry design specifications and British Standards such as BS 5489-1 and HSG38.

2.7.7 The lighting of the temporary construction compound is described below.

### **Temporary Construction Compounds**

2.7.8 There would be preparatory works in advance of construction at all construction sites. The working area would be demarcated and secured by temporary fencing that would be appropriate to each location, such as the provision of stockproof fencing in grazing fields. Gated entrances would be installed at the entrance of the construction compound to secure the site. Once secured, the working area within the construction compound would generally be stripped of the upper layers of soil, which would be stored appropriately through the implementation of best practice measures.

2.7.9 The following types of compounds are proposed to facilitate the construction of the Project:

- Main works compounds which would be the main point of deliveries, materials storage, fuel storage, office space, meeting facilities, welfare facilities and power generators for the Project's delivery team. The main works compounds would be approximately 150m x 150m x 12m.
- Satellite compounds would be smaller than the main works compound at approximately 100m x 70m x 3m and serve as specific working areas to provide welfare facilities for staff and points for the delivery of materials to work areas.

2.7.10 The drainage for the construction site compounds would include the following:

- The hard-standing areas would be graded to direct the runoff to channel drains and/or floor gullies connected to on-site runoff receptors.
- The gutters from the proposed office, meeting and welfare units would discharge into the respective runoff receptors.
- Runoff would be collected in water storage tanks located within the site boundary. The water from these storage tanks would be collected by a specialist contractor.

2.7.11 The lighting for the construction compounds would include the following:

- Exterior and interior lighting would be provided at all sites to allow for the safe movement and operation of equipment. The purpose of exterior lighting is to allow the safe movement of vehicles (using their headlights) and pedestrians between any two points that they might be reasonably expected to negotiate within the site perimeter.

- These would operate during the morning/evening winter working hours as outlined above.
- Temporary flood lighting is likely to be Heavy-duty 6m hinged columns. Luminaries would typically be Light-Emitting Diodes (LED) type with directable light output to minimise light pollution, except at each access gate where individual passive infrared (PIR) motion sensors operated with "instant ON" facility to provide safe night entry. The installation shall be designed to minimise visual intrusion outside the main compound periphery.

## **Temporary Construction Access Points and Haul Roads**

- 2.7.12 Construction haul roads would be provided to allow access for construction vehicles from access points to the working areas. This would reduce the need for construction vehicles to use the local road network. The haul roads are proposed to be constructed adjacent to the UGC route and to provide access to the OHL towers which can be seen on the Consultation Plans (331201487-STN-22-XX-LAY-OH-003).
- 2.7.13 Each haul road would be cleared of vegetation where required and fenced appropriately. The Project will aim to use track matting where practicable for haul roads, however, the worst-case assumption is that the haul roads would be approximately 7m wide and 0.5m deep and would involve stripping of the topsoil, which would be stored in accordance with the OCEMP, and stone/gravel would be placed on top of the subsoil.
- 2.7.14 Access points would be used where construction vehicles are required to leave the local road network to access working areas via the construction haul roads. Existing access points would be used where available and practicable. In some locations, there is likely to be a need for new or widened accesses (bellmouths), along with localised modifications of public highways to safely accommodate construction vehicles. Where necessary bell mouths and access tracks would be cleared of vegetation and fenced appropriately. Excavated materials from haul roads would be appropriately segregated and stored, within construction compounds, to ensure that water runoff from stockpiles does not enter the water environment via drains and nearby watercourses. If necessary, stockpiles would be covered. Pollution prevention best practice protocols would be adopted to ensure contamination does not enter surface water.
- 2.7.15 Appropriate actions would be provided in accordance with Construction Industry Research and Information Association (CIRIA) C648 to mitigate the potential risks of water pollution during construction.

## **Grug y Mynydd Collector Substation and Lower Frankton Switching Station**

- 2.7.16 The Project would commence at the 132kV Grug y Mynydd Collector Substation, which would include the installation of electrical switchgear and associated equipment. The typical construction methods outlined below for the Grug y Mynydd Collector Substation would be the same for the Switching Station in the vicinity of Lower Frankton.
- 2.7.17 The typical construction sequence to install the Grug y Mynydd Collector Substation and Lower Frankton Switching Station would involve:
- Vegetation clearance and stripping of topsoil from the proposed permanent site area and any working areas (topsoil would be stored in bunds on site, for reuse).
  - Set up of temporary access, construction compounds and temporary drainage (including temporary fencing, laying and compaction of granular material (and asphalt where required, proposed at the construction laydown areas), excavation of drainage attenuation features, installation of pipes, etc.).
  - Earthworks for construction of permanent site access and platform (including the forming of temporary soil bunds for storing excavated topsoil). Where practicable the temporary and permanent access would be combined.
  - Civil engineering works, to include permanent fencing, access, drainage and foundations (which may include piling of larger structures and/or equipment that is sensitive to ground settlement).
  - Installation of structures (e.g. gantries).
  - Building works, if the site is to include proposed gas-insulated switchgear (GIS), air-insulated switchgear (AIS) or a hybrid option. The design options are still under consideration.
  - Overhead line or underground cabling works, as necessary.
  - Mechanical and electrical equipment installation.
  - Testing of equipment.
  - Commissioning/energisation.
  - Reinstatement of working areas outside the permanent substation boundary (including environmental mitigation (including landscape planting/habitat creation as required)).
- 2.7.18 Where appropriate, the drainage design would apply the Sustainable Drainage Systems (SuDS) techniques as promoted by the CIRIA. This includes but may not be limited to water quantity and quality control. Appropriate actions would be

provided in accordance with CIRIA C648 to mitigate the potential risks of water pollution during construction.

- 2.7.19 Temporary drainage should be established for the construction phase of substations to prevent silt mobilisation, potentially impacting flow regimes and silt pollution downstream. The construction of SuDS has been considered in the early stages of design.

### **Underground Cables**

- 2.7.20 The proposed section of UGC route would extend for approximately 4.8km through the proposed Llyn Lort Energy Park to connect the Grug y Mynydd Collector Substation and the Cors y Carreg CSEC.
- 2.7.21 The anticipated method for installing UGC comprises open-cut techniques. The working width required for the UGC would be 35m wide. The Project's draft Order Limits are 60 m wide for the UGC to allow space for the permanent installation of the cables and the temporary construction works.
- 2.7.22 Standard open-cut installation typically involves the following:
- Appropriate fencing would be installed to prevent trespassing and livestock.
  - Vegetation would be removed where necessary, topsoil would be stripped, and subsoil would be removed and stored in accordance with the OCEMP.
  - A temporary haul road would be installed to provide access for construction vehicles.
  - Open trenches would be excavated, and ducts would be installed surrounded with cement-bound sand (CBS). Cables would then be winched into position from each joint bay. Ancillary communication cables (which are used for network monitoring and fault detection when the route is operational) are typically placed adjacent to the main cables and within the CBS surround before backfilling.
- 2.7.23 The underground cables would typically be delivered to the construction compounds in batches using specialist low-loading articulated lorries. A smaller lorry would then deliver an individual drum from the compound to the working area along the cable construction route. The cable would be transported on cable drums and a crane would be used to offload these from the delivery vehicles. The cables would be pulled off the drums onto rollers in the trenches using winches. The cables would then be pulled through the ducts and would be jointed together at joint bays.



## Cable Sealing End Compound

- 2.7.24 A Cable Sealing End Compound provides the interface between underground cable and overhead line sections. The Cors y Carreg CSEC would comprise high voltage equipment and gantry structures, to enable the transition between underground cables and overhead conductors.
- 2.7.25 The working areas and the area for the permanent infrastructure at the Cors y Carreg CSEC would be stripped of the upper layers of soil and stored in accordance with the OCEMP. The working areas and the area for the permanent infrastructure at the Cors y Carreg CSEC would be cleared of vegetation where required and fenced appropriately.
- 2.7.26 Sheet piling, rock anchor and piling rig may be required at the Cors y Carreg CSEC, and this would be confirmed through a programme of ground investigations which would inform the foundation designs. Further details on the need for piling and specific locations would be set out within the ES.

## Overhead Line

- 2.7.27 The working areas at each tower base would be cleared of vegetation where required and fenced appropriately. A temporary stone pad would be required adjacent to each tower location, for plants such as cranes and piling rigs. Materials would be brought to site on HGVs and would include concrete for tower foundations, steelwork for the OHL towers and the conductors wrapped around large drums. The tower's foundations would be constructed of concrete beneath each leg position. The depth of the foundation would depend upon site conditions and tower type but would typically range between 3m and 4.6m in depth. The excavation volume per leg would be 50m<sup>3</sup> and the concrete per leg would be 31m<sup>3</sup>.
- 2.7.28 Different foundation types can be used for lattice towers, such as pad and column, vertical tube piles or bored mini pile foundations, depending on the local ground conditions. The type of foundation to be used is typically identified during the detailed design stages by the Main Works Contractor(s) following pre-construction intrusive ground investigation.
- 2.7.29 Percussive piling may be required at some tower locations, subject to ground conditions. This would be confirmed through a programme of ground investigations which would inform the foundation designs. Further details on the need for piling and specific locations would be set out within the ES.



## **Crossing Protection**

- 2.7.30 Where the new overhead line crosses a road, railway line or navigable watercourse, scaffolding would be used to protect the crossing during construction. During site set-up, scaffolding would be placed on either side of the feature. Each scaffold would be designed for the individual crossing that it would protect. The work area required for scaffold protection is dictated by the angle at which the overhead line crosses the asset which it is protecting.
- 2.7.31 The scaffold would be capable of withstanding a conductor being dropped on it in the unlikely event that this was to occur. The working area around the scaffold would be sufficient to erect the scaffold and to install and accommodate ground anchors or kentledge blocks required to stabilise the structure and catenary wires supporting the nets. Some night work may be required to raise scaffold netting over major roads and the Shrewsbury to Chester railway line if specified by the highway and railway authorities.

## **Third Party (Statutory Undertakers) Works**

- 2.7.32 To facilitate the construction of the Project, several existing third-party services would need to be diverted, removed, undergrounded or protected. This is primarily where there is an interface with the Project, such as with the proposed new OHL crossings, along primary access routes or at the access point locations. The typical construction methodology for crossing existing 132kV and lower voltage OHL would involve scaffolding protection or underground the third-party utility.
- 2.7.33 The detailed methods and duration (temporary or permanent) would be confirmed and agreed with the asset owners before any work is carried out.

## **Reinstatement**

- 2.7.34 Once the Project has been constructed, the working areas would be removed, and the sites reinstated. Temporary construction haul roads, bridges, and culverts will be removed after the project. However, if they are identified to be required for long-term maintenance or benefit the environment, and if the landowner and relevant authorities agree, they may be retained. This will be documented in the DCO.
- 2.7.35 Temporary features such as site welfare, fencing and scaffolding would be removed. Any stripped subsoil and topsoil would be reinstated, and the sites would be returned to their former use.

- 2.7.36 Reinstatement would also include landscape planting. This is likely to include reseeding grassland areas, and replanting hedgerows. It would also include additional landscape planting at the Grug y Mynydd Collector Substation, Cors y Carreg CSEC and Lower Frankton Switching Station to help screen the infrastructure from sensitive receptors, which may also be included as part of the BNG / NBB proposals once completed.
- 2.7.37 Additional details of reinstatement would be provided within the ES which may include further additional mitigation.

## **2.8 Operation**

### **Introduction**

- 2.8.1 This section describes the permanent features of the Project that would be in place during the operation phase. It is split into five main components:
- Grug y Mynydd Collector Substation.
  - UGC route.
  - Cors y Carreg CSEC.
  - OHL sections.
  - Lower Frankton Switching Station.

### **Grug y Mynydd Collector Substation and Lower Frankton Switching Station**

- 2.8.2 A new 132kV Collector Substation would be located at Grug y Mynydd which would enable electricity generated at the proposed Llyn Lort Energy Park to be combined to enable the efficient transfer of electricity to the subsequent section of the network. The typical operation information outlined below for the Grug y Mynydd Collector Substation would be the same for the Switching Station in the vicinity of Lower Frankton.
- 2.8.3 The maximum size for the Collector Substation at Grug y Mynydd and the Switching Station in Lower Frankton would be 250m x 150m x 13m. Both substations include switchyard reactor components, to stabilise the overall power system. Substation reactor enclosures contain oil for insulation and cooling purposes and have dedicated fire-protection systems and drainage systems in place to ensure Health Safety and Environmental compliance.
- 2.8.4 New drainage systems would be designed and installed in the Grug y Mynydd Collector Substation and the Switching Station in Lower Frankton.

- 2.8.5 Surface water drainage pipe network would be designed in accordance with the latest guidance and best practices (such as the SuDS manual). The surface water would outfall via a headwall to existing drainage ditches adjacent to the site in accordance with any local authority discharge consents.
- 2.8.6 Should infiltration to the ground be deemed unfeasible, surface water runoff would be discharged to a nearby surface water body/watercourse. Any proposed drainage systems would collect, treat, convey, and attenuate surface water runoff. Where possible, attenuated flows would be discharged at agreed rates and provide betterment to the existing scenario.
- 2.8.7 A separate foul water drainage network would be installed, and the foul drainage would drain to a suitably located cesspit.
- 2.8.8 A Flood Risk Assessment (FRA) would be prepared and submitted as part of the application for development consent. The FRA would inform the sustainable drainage system and support the design for the Grug y Mynydd Collector Substation and Lower Frankton Switching Station.
- 2.8.9 Due to the lack of surface water sewers within the immediate vicinity of the site, it is not considered feasible to discharge surface water to a public sewer. Therefore, it is proposed that the site would have its onsite drainage network which would be designed to accommodate the site's surface water, which would be determined as part of the FRA and the Surface Water Drainage Strategy (which will be submitted as part of the application for a DCO).
- 2.8.10 Exterior and interior lighting would be provided and designed to allow for the safe movement and operation of equipment. The purpose of exterior lighting is to allow the safe movement of vehicles (using their headlights) and pedestrians between any two points that they might be reasonably expected to negotiate within the site perimeter. It is not intended to facilitate maintenance activities (planned or unplanned) for which it is assumed additional portable equipment would be employed.
- 2.8.11 Exterior lighting is typically installed on dedicated steel columns, typically a maximum of 13m in height. Luminaries would typically be LED type with directable light output to minimise light pollution, except at each access gate where PIR motion sensors operated with an "instant ON" facility to provide safe night entry. The installation would be designed to minimise visual intrusion outside the periphery of the sites

- 2.8.12 Lighting at the Grug y Mynydd Collector Substation and the Switching Station in Lower Frankton would not be permanently on. It would only be switched on during exceptional circumstances where access is required during night/low visibility periods.
- 2.8.13 Landscape planting would be provided at the Grug y Mynydd Collector Substation and the Switching Station in Lower Frankton to help screen the sites, and any surplus spoil would be incorporated into landscaping proposals if possible.

### **Underground Cables**

- 2.8.14 The proposed section of UGC route would extend for approximately 4.8km through the proposed Llyn Lort Energy Park, to connect the Grug y Mynydd Collector Substation and the Cors y Carreg CSEC.
- 2.8.15 The UGC route would consist of two cables buried within trenches excavated to a minimum depth of 1.2m. The cables would be surrounded by suitable backfill material and warning tape on the upper surface to protect them from future excavation works.
- 2.8.16 There would be no permanent drainage system and there is no permanent lighting associated with the UGC route.

### **Cable Sealing End Compound**

- 2.8.17 The Cors y Carreg CSEC would have a maximum footprint of 80m x 50m. The maximum height for the CSEC is 13m for the exterior lighting. The remaining components are 7m in height, and the whole compound is to be enclosed by a 4m high fence. The Cors y Carreg CSEC would contain cable terminations, electrical equipment, support structures (including gantries) and a small control building. The compound would be surrounded by security fencing typically up to 4m high to protect the equipment.
- 2.8.18 There would be a permanent access road installed to connect the Cors y Carreg CSEC to the local road network providing access for operation and maintenance phase activities. Landscape planting would be provided around the Cors y Carreg CSEC to help screen the site.
- 2.8.19 There would be no oil-containing equipment present at the Cors y Carreg CSEC, therefore, no requirement for an oil interceptor and no foul drainage associated with the site. It is anticipated the Cors y Carreg CSEC access road would drain to

the adjacent surface chippings and free-draining sub-base, as such no piped drainage network is anticipated.

- 2.8.20 Should infiltration to the ground be deemed unfeasible, the preferred method for disposal of surface water runoff would be discharge to a surface water body/watercourse. Any proposed drainage systems would collect, treat, convey and attenuate surface water runoff. Where possible, attenuated flows would be discharged at agreed rates and provide betterment to the existing scenario.
- 2.8.21 Exterior lighting would be provided at the Cors y Carreg CSEC to allow for the safe movement and operation of equipment. The purpose of exterior lighting is to allow the safe movement of vehicles (using their headlights) and pedestrians between any two points that they might be reasonably expected to negotiate within the site perimeter. It is not intended to facilitate maintenance activities (planned or unplanned) for which it is assumed additional portable equipment would be employed.
- 2.8.22 Exterior lighting is typically installed on dedicated steel columns, typically a maximum of 13m in height. Luminaries would typically be LED type with directable light output to minimise light pollution, except at each access gate where PIR motion sensors operated with an "instant ON" facility to provide safe night entry. The installation would be designed to minimise visual intrusion outside the Cors y Carreg CSEC periphery.
- 2.8.23 The Cors y Carreg CSEC lights would not be permanently on. These would only be switched on during exceptional circumstances where access is required during night/low visibility periods.
- 2.8.24 Landscape planting would be provided at the Cors y Carreg CSEC to help screen the site, and any surplus spoil would be incorporated into landscaping proposals if possible.

### **Overhead Line**

- 2.8.25 The current design assumes approximately 171 steel lattice towers of the L7(c) design which would be at an average height of approximately 28.5m. The maximum tower height would be 36m and the minimum tower height would be 23m.

- 2.8.26 The tower base would consist of concrete foundations comprising:
- For all four legs the maximum footprint would be 12.5 x 12.5m<sup>2</sup> and 4.6m deep.
  - The steel per leg would be a maximum of 1500kg.
- 2.8.27 The OHL towers would have an average spacing between the towers of 276m, however, this would vary depending on site constraints.
- 2.8.28 There is no anticipated permanent lighting associated with the overhead line structures/conductors.

## **2.9 Maintenance**

### **Introduction**

- 2.9.1 This section describes the activities that are anticipated during the operation phase including site inspections and routine maintenance. It is split into four main components:
- Grug y Mynydd Collector Substation.
  - UGC route.
  - OHL (including Cors y Carreg CSEC).
  - Lower Frankton Switching Station.

### **Temporary Lighting**

- 2.9.2 There is the potential for temporary portable lighting to be used for fault response or planned/unplanned maintenance activities depending on the asset management strategy adopted by the Applicant.
- 2.9.3 The use of temporary portable lighting would typically utilise LED-type lights with directable light output to minimise light pollution.

### **Grug y Mynydd Collector Substation and Lower Frankton Switching Station**

- 2.9.4 The Grug y Mynydd Collector Substation and the Switching Station in the vicinity of Lower Frankton, would be unmanned during the operation phase, however, routine visits would be required to visually inspect the condition of equipment, structures and buildings for signs of damage or wear. Routine maintenance would also need to be undertaken on a three-year cycle for each circuit. This involves

electrical isolation of the equipment and checks. In addition, there would be maintenance of the auxiliary systems which would be tested monthly and maintained as required. If refurbishment or replacement works are required, this would involve activities similar to the construction phase but on a smaller scale and would involve vehicles to bring workers and materials to the site for the repairs and the removal of old equipment.

## **Underground Cables**

- 2.9.5 UGCs typically have a life expectancy of at least 40 years. During the operation phase, the cables would be subject to regular checks. Inspections using the fibre-optic cables that were installed alongside the underground cables during the construction phase would be undertaken approximately every three years. This would identify whether cable repairs were required.
- 2.9.6 When a repair is needed, the area where the fault is located would be accessed using a temporary access track. A working area would be established, similar to the construction phase (see section 2.5 Construction – Temporary Features), and the ground would be excavated. If a cable needs to be replaced, then that section of the cable (between two joints) would need to be removed, and new joints constructed.

## **Overhead Line (Including Cors y Carreg CSEC)**

- 2.9.7 The typical lifespan of an OHL and a CSEC would be at least 40 years, depending on the use and location. Throughout this duration, the OHL and Cors y Carreg CSEC would be subject to regular inspection from the ground (using a small van) or by helicopter to check for visible faults or signs of wear in line with existing maintenance requirements at any point in time. The inspections would confirm when refurbishment is required and indicate if plant/tree growth or development were at risk of affecting safety clearances.
- 2.9.8 There are two main types of refurbishments for OHLs:
- A fitting only refurbishment would be undertaken if the conductors were still in good condition. This type of refurbishment would involve removing and replacing the insulators, their associated fittings and the spacers that keep the conductors separate in the spans between each tower.
  - A full refurbishment would typically be needed at the end of the lifespan (40 years although towers have a typical life expectancy of 80 years) of the OHL.
- 2.9.9 Refurbishment would usually be carried out in two stages because the OHL has two circuits, one on each side of the OHL tower. This means that work can be



undertaken on one side only so that the other side can be kept 'live'. Once all the work has been completed on the first side, the circuit would be re-energised, and the opposite side switched off so that the work could be carried out on the other side.

- 2.9.10 The refurbishment works would require temporary access tracks, a small compound and, potentially, scaffolding to protect roads and other features during the work. Vans are used to carry workers in and out of the site and trucks are used to bring new materials and equipment to the site and remove old equipment. Temporary works including installation of access routes and installation of scaffolding to protect roads, railways and footpaths would be required as necessary for the overhead line refurbishment (similar to the initial construction requirements described in Section 2.5 Construction – Temporary Features). Similarly, the refurbishment of the Cors y Carreg CSEC would be similar to those described during the construction phase in Section 2.5 Construction – Temporary Features.

## 2.10 Decommissioning

- 2.10.1 NPS EN-1 paragraph 4.3.5 (Ref. 2.3) states that the ES should cover the decommissioning of a Project. There are currently no specific plans to decommission the Project, and it is expected that the transmission of electricity would continue for as long as there is a business case.
- 2.10.2 Decommissioning has been scoped out of the ES, however, a high-level summary of potential effects for each environmental topic would be included in an appendix to the Project Description chapter within the ES, including a description of likely methods for decommissioning.

## 2.11 References

- Ref. 2.1 Green GEN Cymru (2023a). Green GEN Phase Two Grid Connection Strategy. Available at: <https://d141qvydpnmd03.cloudfront.net/Green+GEN+Phase+2+Grid+Connection+Strategy.pdf> [Accessed 29/07/2024].
- Ref. 2.2 Green GEN Cymru (2023b). Green GEN Vyrnwy Frankton Routeing and Consultation Document. Available at: <https://d141qvydpnmd03.cloudfront.net/RCD-with-appendicies.pdf> [Accessed 29/07/2024].
- Ref. 2.3 Department for Energy Security & Net Zero (2023). Overarching National Policy Statement for Energy (EN-1). Available at:



<https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> [Accessed 19/11/2024].

## 3 Main Alternatives Considered

### 3.1 Introduction

3.1.1 This chapter sets out the preliminary consideration of reasonable alternatives to the Project in line with Regulation 14(2)(d) and Schedule 4, Paragraph 2 of the EIA Regulations (Ref. 3.1) which states that an Environmental Statement (ES) should include a:

*‘Description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effect.’*

3.1.2 National Policy Statements (NPSs) set out government policy on different types of national infrastructure development. As an application to be made under the Planning Act 2008 (Ref. 3.2), an NPS is the primary policy for the Secretary of States decision making on Nationally Significant Infrastructure Projects (NSIPs). For this Project, the Overarching NPS for Energy (EN-1) (Ref. 3.3) and the NPS on Electricity Networks Infrastructure (EN-5) (Ref. 3.4) provide the following guidance on the consideration of alternatives:

3.1.3 EN-1 Paragraph 3.3.8 makes clear that the government has considered alternatives to the need for new large-scale electricity infrastructure and has concluded that these, *‘would be limited to reducing total demand for electricity through efficiency measures or through greater use of low carbon hydrogen in decarbonising the economy; reducing maximum demand through demand side response; and increasing the contribution of decentralised and smaller-scale electricity infrastructure’*.

3.1.4 EN-1 Paragraph 4.3.15 advises on the need to include information about the reasonable alternatives that have been considered in the Environmental Statement, providing an indication of the main reasons for the choice, taking into account environmental, social and economic effects and including, where relevant, technical and commercial feasibility.

3.1.5 EN-1 Paragraph 4.3.22 refers to the level and urgent need for new energy infrastructure, stating that the Secretary of State should (subject to any relevant legal requirements), be guided by the following principles when deciding what weight should be given to alternatives:

- ‘The consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner.
- Only alternatives that can meet the objectives of the proposed development need to be considered’.

- 3.1.6 EN-1 Paragraph 4.3.23 advises that, ‘the Secretary of State should be guided in considering alternative proposals by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security, climate change, and other environmental benefits) in the same timescale as the proposed development.’
- 3.1.7 EN-1 Paragraph 4.3.27 states that where alternative proposals mean that the development cannot proceed, these can be excluded on the grounds that they are not important and relevant to the Secretary of State’s decision, while Paragraph 4.3.28 states that where vague or immature, alternatives can be excluded on the grounds that they are not important and relevant to that decision.
- 3.1.8 EN-5 Paragraph 2.9.14 requires that, ‘where the nature or proposed route of an overhead line will likely result in particularly significant landscape and visual impacts, the applicant should demonstrate that they have given due consideration to the costs and benefits of feasible alternatives to the line.’
- 3.1.9 EN-5 Paragraph 2.9.15 explains that the Environmental Statement should, ‘set out details of this consideration, including the applicant’s rationale for eschewing feasible alternatives to the overhead line, and the mitigation cost-calculation methodology that this rationale may rely upon’.
- 3.1.10 The alternatives that have been considered during the evolution of the Project and design process undertaken to date are set out, up to this stage of statutory consultation, for the Project. The overarching approach to routeing taken by the Applicant is based on the acknowledgement that the main impacts of OHL are visual, because of the size and scale of the OHL towers in comparison to the surrounding landscape. As a result, the visual effects cannot always be mitigated and therefore, careful routeing is pivotal in reducing the visual effects. However, other environmental and technical constraints need to be considered alongside and balanced with visual effects. Further details on the routeing process can be found in Green GEN Vyrnwy Frankton Routeing and Consultation Document (Ref. 3.5) and The Green GEN Cymru Approach to Routeing Grid Infrastructure Across England and Wales (Ref. 3.6). The Applicant has also considered fine grained design decisions which is outlined in more detail in Section 3.7. The ES

for the Project will provide a full description of alternatives considered for the Project.

## **3.2 Green GEN Cymru's Approach to Options Appraisal and Routeing**

- 3.2.1 The Applicant's appraisal process identified and compared the feasible options to provide the connections from proposed energy generation in Mid Wales to the National Electricity Transmission System (NETS). These options have been developed and investigated to allow a comparative assessment to be undertaken. The appraisal included: the consideration of different technologies, costs, and the desk-top investigation of options to identify key technical and environmental constraints. Further details on the options appraisal methodology can be found in the Green GEN Phase Two Grid Connection Strategy (Ref. 3.7), Green GEN Vyrnwy Frankton Routeing and Consultation Document (Ref. 3.5) and The Green GEN Cymru Approach to Routeing Grid Infrastructure Across England and Wales (Ref. 3.6).
- 3.2.2 The routeing process comprises the findings of each step informing the next step as the routeing design is progressively refined based on an increasingly detailed assessment. This is an iterative approach which enables the validity of previously applied assumptions to be confirmed and ensures confidence in the findings of each step before each subsequent step begins.
- 3.2.3 The routeing process for the Project is divided into the consideration of corridors (Steps A-D) and the consideration of route options (steps E-I) as shown below. The application of the routeing methodology, including the findings and confirmation of the preferred route, will be discussed within the remainder of this chapter.
- 3.2.4 Extract from the Green GEN Vyrnwy Frankton Routeing and Consultation Document (Ref. 3.5) outlining the routeing process.

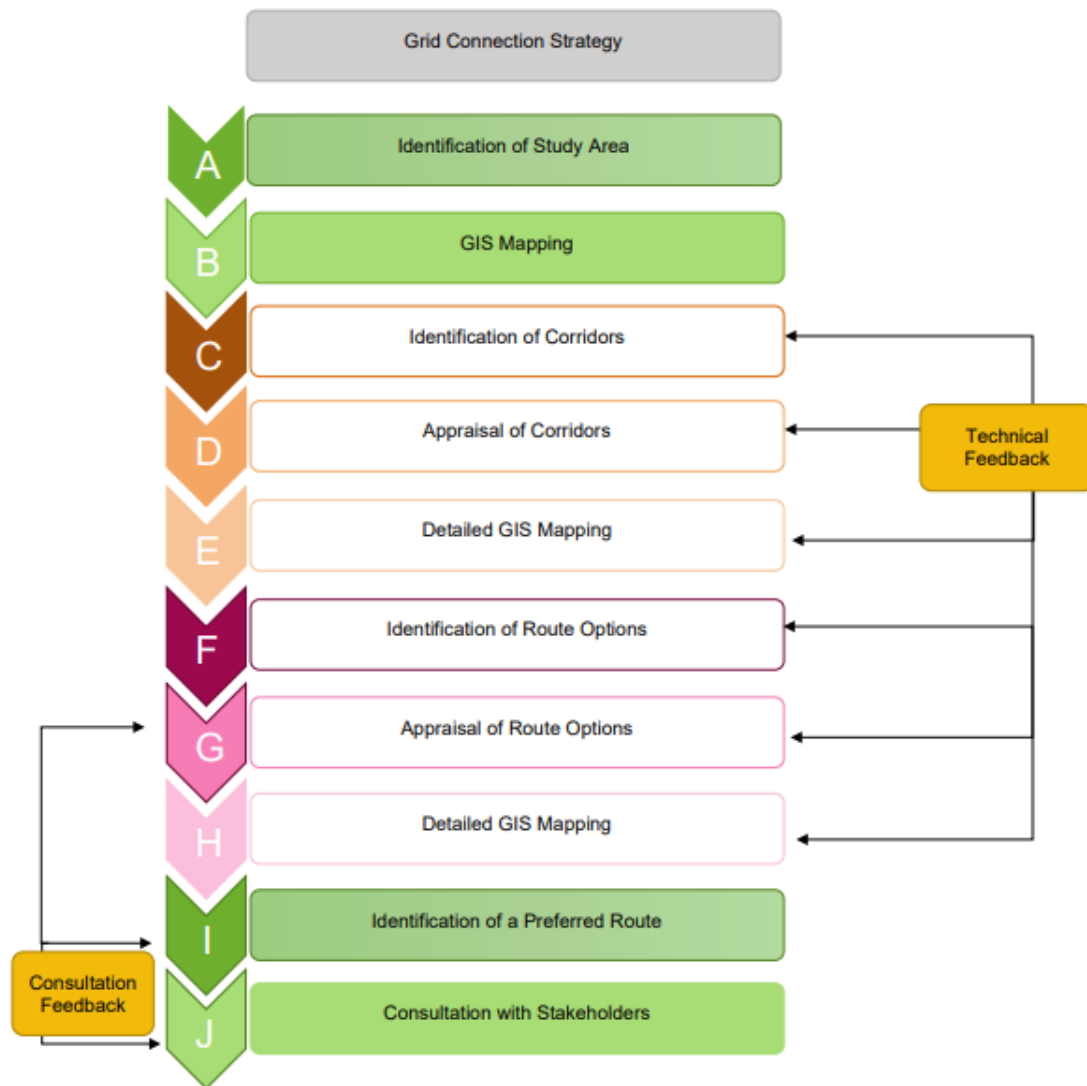


Figure 3-1 – Alternative Route Alignment

### 3.3 Strategic Option Development

- 3.3.1 Following the need for the Project being identified in the Green GEN Route Alignment Document (Ref. 3.8), the Applicant commenced its optioneering process to determine how best to achieve a connection between the proposed energy generation in Mid Wales and the NETS. The first stage in the options appraisal process was to determine a preferred strategic option listed below.
- 3.3.2 The Green GEN Cymru Phase Two Grid Connection Strategy (Ref. 3.7) assessed and considered ten potential connection options, within three geographical regions. In each geographical zone, potential ‘new substation’ locations were identified based on either the shortest route length and/or the ability to avoid nationally designated sites. The ten reasonable alternatives were:

### **North Zone**

- Trawsfynydd – Existing substation.
- Shrewsbury – New substation required.
- Ironbridge – Existing substation.
- Lower Frankton – New substation required.
- Chirk – New substation required.
- Gwyddelwern – New substation required.

### **East Zone**

- Bishops Wood – Existing substation

### **South Zone**

- Carmarthen – New substation required.
- Rhigos – Existing substation.
- Rassau – Existing substation.

- 3.3.3 When comparing the options, the East and South Zones had greater lengths of circuits, which would lead to greater electrical losses, higher costs and potentially greater environmental impacts.
- 3.3.4 Despite the Lower Frankton option not having the lowest associated costs, following the appraisal of the options, it was considered, on balance, the best-performing option, whilst having regard for environmental considerations and the need to deliver an economic and efficient solution to connect Bute Energy's Mid Wales Energy Parks to the NETS. Because of the aforementioned reasons, the Lower Frankton option would also ensure compliance with license obligations that the Applicant would be under as an Independent Distribution Network Operator (IDNO) Licence holder. The IDNO license enables the Applicant to operate electricity distribution networks that will support the growing demand for renewable energy infrastructure.
- 3.3.5 Therefore, the North Zone, Option 4 (Lower Frankton – New substation) was the preferred option as the grid connection option to connect energy generation in Mid Wales to the NETS.

### **Underground Cables and Overhead Lines**

- 3.3.6 When routeing the Project, Green GEN Cymru ensured the development adheres to the IDNO licence obligation to be 'economic and efficient'. Green GEN Cymru is able to achieve this by proposing a primarily overhead line (OHL) route as the

construction cost is significantly lower than alternative options, such as installing new underground cables (UGC).

- 3.3.7 As well as additional cost implications, UGC can result in power transmission loss compared to an OHL which will cause a reduction in system efficiency. Furthermore, there is the potential for greater environmental disturbance due to the soil disturbance during the construction period, subsequent maintenance activities and the greater land-take required to install UGC compared to an OHL. Where distribution lines are put underground, it also hinders the opportunities for connections for both new energy generators and users in the future as connections into an underground line require more intrusive and costly technologies with circuit outages being far more time lengthy than the equivalent OHL connection. Redesigning the Project to install further sections of UGC instead of sections of OHL would require extensive rerouting and cause a significant delay to programme and cost implications due to the route changes and extensive additional surveys required.

### **Supporting Structures**

- 3.3.8 Several different structures are available to support OHL conductors, all of which were considered by the Applicant. Although lattice towers would be taller than using wood pole alternatives, wooden poles can only carry three wires meaning that three to four wooden poles would be required to hold the equivalent capacity that can be accommodated on a single L7(c) lattice tower route.
- 3.3.9 For safety considerations, a significant lateral separation distance between parallel wooden poles would be required, which could lead to a swathe width of approximately 75m. Typically, wooden poles can be spaced between 80-100m apart but can increase up to 150m apart longitudinally. In comparison, L7(c) steel lattice towers are typically spaced between 200-250m apart. This, coupled with the lateral spacing requirements, could lead to wooden poles having greater environmental impacts and more restricted land use in the future.
- 3.3.10 When comparing L7(c) and L8 lattice towers, the larger (L8) towers used for 400kV conductors require a larger footprint, as well as additional steel. The additional height and width of the L8 towers would have a greater landscape and visual impact that would need to be considered. As circuits operating at 132kV would be sufficient to enable the full capacity of the proposed energy generation from mid Wales and other connecting projects to be transported to the NETS, a 400kV network would not be appropriate. Therefore, the Applicant determined that 132kV (L7(c)) towers strike the right balance in terms of deliverability,

economic viability, efficiency, and likely environmental impacts. This option would also provide sufficient flexibility to deliver green energy in the short and longer term.

## 3.4 Do-nothing Scenario

- 3.4.1 As discussed in Chapter 1: Introduction, the UK and Welsh Governments have recognised the risks associated with climate change. This has been reflected in their policy and legislation updates, such as NPS EN-3 (Ref. 3.9) which identifies renewable energy infrastructure as a critical national priority. This has been reiterated by Powys County Council and Shropshire Council, as the effects of climate change are already being felt within these regions.
- 3.4.2 The transition away from fossil fuels is a prerequisite to addressing climate change, which would require new renewable energy generation facilities. However, the electricity grid needs to be transformed to facilitate the integration of these alternative energy sources. This is being addressed by the new Energy Parks in Mid Wales. The proposed Llyn Lort Energy Park near Cefn Coch is one of the new Energy Parks planned, however, the current electricity network is unable to connect the proposed Energy Park to the NETS. Therefore, the Project is proposing to provide this connection in the form of a 132kV double circuit OHL and integral associated assets.
- 3.4.3 A 'do nothing' scenario would not lead to a project. The new electrical infrastructure required to connect the energy generation to the NETS, which has already outlined is vital in addressing the climate emergency. As such, a do-nothing option is not a credible solution and is not considered further.

## 3.5 Corridor Identification and Selection

- 3.5.1 Following the selection of the Strategic Option Development, the routeing and siting process commenced and is documented in the Routeing and Consultation Document (Ref. 3.5).
- 3.5.2 The selection of the preferred corridor consisted of several steps:
- **Step A:** Identification of study area.
  - **Step B:** GIS Mapping and Routeing Considerations.
  - **Step C:** Identification of Corridors.
  - **Step D:** Appraisal of Corridors.



## **Step A: Identification of Study Area**

- 3.5.3 A study area was first defined to deliver the Strategic Proposal between the proposed energy generation in Mid Wales and Lower Frankton. Initially, the study area was drawn to ensure it could accommodate a number of potential OHL options.
- 3.5.4 The study area was then refined to reflect the topography and to avoid geographically extensive 'areas of highest environmental value', such as National Parks and Special Protection Areas, whilst maintaining a reasonably direct route.

## **Step B: GIS Mapping of Corridor Routeing Considerations**

- 3.5.5 Once the study area was defined, routeing considerations were mapped reflecting the Holford Rules, considering several constraints relating to areas of high amenity value. The following environmental considerations were used to inform the identification of corridor options:
- National Parks.
  - Special Protection Areas (SPA).
  - Special Areas of Conservation (SAC).
  - Ramsar Sites.
  - Sites of Special Scientific Interest (SSSI).
  - National Nature Reserves (NNR).
  - Scheduled Monuments.
  - Conservation Areas.
  - Historic Parks and Gardens.
  - Wind farms which were operational, under construction, consented or with a valid planning application were mapped, as these should be avoided by the OHL where possible.
- 3.5.6 Residential properties were also mapped with 150m 'trigger for consideration' zones (zones within which the potential for visual effects needs particularly detailed consideration), as were areas of ancient woodland.
- 3.5.7 The following routeing considerations were also mapped as part of the corridor option mapping, as these would present challenges for the OHL route:
- Steep slopes: gradients over 10 degrees were mapped for information, and gradients over 22 degrees avoided where possible.

- 400kV, 275kV and 132kV OHLs: these were mapped for information only at this stage, as any new OHL will be required to maintain a safety clearance from existing OHLs.
- Areas of high ground: elevations of over 200m were mapped for information, and elevations over 450m avoided where possible.

### **Step C: Identification of Corridors**

3.5.8 The Holford Rules three, four, and five formed the basis for the landscape-led identification of corridors in the field. These Holford Rules state that OHL infrastructure is more widely visible from surrounding areas when located on higher ground, for example on ridges and skylines. Direct corridors with fewer 'bulky' angle structures are recommended, as is the avoidance of 'wirescape' (e.g. the cumulative effects of multiple OHLs). Therefore, consideration was given to the potential 'fit' of the proposed OHL within the landscape. The key objectives were as follows:

- Follow the grain of the landscape, following moderately open valleys and avoiding complex terrain.
- Minimise the exposure of towers on ridges and skylines.
- Avoid impacts on woodland where possible.
- Use woodland and topography as a backdrop to the line, or as a foreground screen.
- Minimise the number of crossings of linear features (e.g. roads and rivers), and when appropriate cross at a perpendicular angle.
- Avoid creating wirescapes with existing infrastructure (noting that in some cases it may be preferable to colocate routes than to spread effects across a wider area).
- Avoid key views from recreational locations, such as popular walking routes, summits and promoted viewpoints, including those outside the route corridors where appropriate.
- Avoid residential areas as far as practicable.
- Other things being equal, prefer the most direct alignment.

3.5.9 The topography of the defined study area informed the identification of corridors as the OHL is required to pass from the northern foothills of the Cambrian Mountains to the broad and low-lying floodplains east of the Oswestry Uplands. Three potential corridors along this stretch of the study area were identified. Two of the corridor options link the Meifod Valley in the south to the floodplains east of Oswestry. In contrast, the third option travels from the Meifod Valley to the Severn Valley (which lies to the southeast), before heading to the floodplains east

of Oswestry. The northwest and southeast of the study area were not suitable as the terrain meant that the OHL would cut across the grain of the landscape, meaning it would traverse ridges and valleys, and at a perpendicular angle, rather than following valleys as advised by the Holford Rules. To the northwest, west and southwest of these valleys, the Cambrian Mountains, Snowdonia National Park, and Bryniau Clwyd a Dyffryn Dyfrdwy/Clwydian Range and Dee Valley National Landscape form a constraint. Lastly, to the southeast of the study area, the Shropshire Hills National Landscape forms the edge of this boundary.

3.5.10 From the proposed Llyn Lort Energy Park to near the settlement of Glascoed, constraints such as topography, woodland and settlements restrict all three options to one corridor, which crosses areas of lower elevation around the Afon Banwy and Afon Einon, avoiding smaller hillforms and the larger settlement of Llanfair Caereinion to the southeast.

3.5.11 To the north of Glascoed, the northern and central corridor options generally follow the Meifod Valley, whereas the southern corridor follows the Severn Valley to the east. From near Llanymynech and Maesbrook, the landform transitions into a broad and gently undulating floodplain. However, areas of denser settlement, higher amenity values such as SSSIs and Registered Parks and Gardens, and localised areas of elevated restrict the options to one corridor, which heads north from Woolston across farmland towards to substation location.

### **Step D: Appraisal of Corridors**

3.5.12 The three corridor options were appraised relative to each other across a range of criteria in order to identify a preferred corridor.

3.5.13 The appraisal of corridor options was undertaken in the following stages:

- Identification of appraisal criteria, together with their reasoning for inclusion.
- Application of appraisal criteria to each corridor option, following the appraisal methodology.
- Comparative appraisal of corridor options to identify a preferred corridor.

3.5.14 The appraisal criteria were:

- Length of Corridor.
- Biodiversity and Geological Conservation.
- Landscape Sensitivity and Visual Amenity.
- Cultural Heritage.
- Forestry and Woodland.

- Hydrology and Flood Risk.
- Land Use.

3.5.15 The appraisal process involved making a professional judgement concerning the potential interaction between the OHL and the outlined environmental considerations, to avoid/minimise likely significant effects.

### **Preferred Corridor Selection**

3.5.16 Based on the balance of all criteria, corridor option one was selected as the preferred corridor. The primary considerations in its favour were:

- It is the shortest corridor.
- It is preferred in relation to landscape and visual amenity and cultural heritage.
- It contains the smallest area of Best and Most Versatile agricultural land, common land, open green space and committed development.

## **3.6 Route Option Identification and Selection**

3.6.1 Following on from the identification of the preferred corridor, potential route options were identified within it to link the proposed Cors y Carreg Cable Sealing End Compound (CSEC) location adjacent to the proposed Llyn Lort Energy Park with the proposed substation siting area in Shropshire (steps E and F).

### **Step E and F: GIS Mapping and Identification of Route Options**

3.6.2 Once the preferred corridor had been identified, potential routes were identified to link the proposed CSEC with the proposed substation siting area in Shropshire. As with the corridor options, the purpose of identifying route options is to compare the alternative route options to identify a preferred route.

3.6.3 The landscape-led approach aimed to define a proportionate number of route options for comparative appraisal against environmental and technical constraints. The route options were defined as having a width of 200m to allow for detailed design of the OHL in subsequent stages.

3.6.4 The constraints outlined at the corridor selection stage formed the basis for defining route options. The Holford Rules were considered, avoiding areas of highest amenity as far as possible.

- 3.6.5 Constraints of regional/local importance and areas of high amenity value on a smaller scale were also considered when identifying the route options which included:
- Local Nature Reserves (LNR) (Natural Resources Wales (NRW) and Natural England)), Local Wildlife Sites (LWS), Sites of Importance for Nature Conservation in Powys (SINC), The Royal Society for the Protection of Birds (RSPB) Reserves, Ramsar Sites, Special Landscape Areas (SLA), Powys Landscape Character Areas (LCA), Shropshire Landscape Character Types (LCT) etc.
  - Ancient Woodland (NRW and Natural England) and Other Woodland.
  - Geological Conservation Review Sites (NRW and Natural England) and Peaty Soils (BGS and NRW).
  - Registered Historic Landscapes (only in Wales) and Historic Environment Record.
  - Committed developments, residential properties, Common Land (OS and Defra), National Cycle Network, long-distance routes, public rights of way and existing OHLs.
- 3.6.6 The route from the proposed Llyn Lort Energy Park to the Shropshire substation was split into five sections. Each of the five sections had three route options, though these route options overlapped for part of the route in some areas. The five sections were numbered 1-5 from south to north. The route options in each section were identified as 'north (N)', 'central (C)', and 'south (S)'.

### **Step G: Appraisal of Route Options**

- 3.6.7 As with the corridor options, an environmental appraisal of route options was undertaken against a series of topic-based criteria. Details of the route options that were considered can be found in Figure 4.3: Corridor Options (Individual) of the Green GEN Vyrnwy Frankton Routeing and Consultation Document (Ref. 3.5).
- 3.6.8 A technical review of the route options was also undertaken to identify any potential technical constraints to the construction and operation of an OHL within each route option.

## 3.7 Route Options Appraisal Findings

### Step I: Identification of a Preferred Route

#### Environmental Appraisal

- 3.7.1 A summary of the preferred route and key judgements reflecting the balancing and decision-making using professional judgement that informed the decision is outlined below.

#### Section 1: Cefn Coch to Llangyniew

- 3.7.2 Although it is not the shortest route option, 1C is preferred in relation to landscape and visual amenity as it provides better opportunities to minimise effects on residential receptors, crosses fewer exposed valley areas near the A458 and utilises screening by existing woodland and valley sides. Option 1C also has the fewest interactions with designated and non-designated assets. In terms of land use, option 1C can avoid existing infrastructure, committed developments and contain the smallest area of common land.

#### Section 2: Llangyniew to Meifod

- 3.7.3 When comparing the landscape and visual amenity preference for option 2S against the other environmental considerations preference of option 2N, the preferred route is option 2N. This is primarily because option 2N is the shorter and more direct route, avoiding the SSSI, ancient woodland and non-designated parkland at Mathrafal.

#### Section 3: Meifod to Llansantffraid-ym-Mechain

- 3.7.4 Option 3C is preferred for the landscape and visual amenity criteria, as the route option follows the grain of the landscape along the valley, avoiding some of the more small-scale and intricate topography that is located near Plas yn Dinas and Collfryn. Additionally, option 3C is located further from and avoids crossing the A495 but crosses more 'trigger for consideration zones' for residential properties. However, there are potential opportunities during the detailed routeing to avoid the majority of the trigger zones. In contrast, option 3S is preferred in relation to cultural heritage, as the route option has fewer interactions with historic assets. Where option 3S does interact with historic assets there is greater potential for avoidance or minimising the potential impacts on assets in comparison to option 3N or option 3C.

- 3.7.5 In balancing all the environmental considerations, it is considered preferable to prioritise the landscape and visual amenity considerations over the cultural heritage issues, particularly in the vicinity of the Plas yn Dinas enclosure. There is potential to minimise the intervisibility issues at Plas yn Dinas by careful tower siting, therefore the preferred route is option 3C.

#### **Section 4: Llansantffraid-ym-Mechain to Llanymynech**

- 3.7.6 Option 4C is the slight preference in relation to the landscape and visual amenity criteria, as the route option avoids areas of denser settlement and provides better opportunities to minimise effects on residential receptors. Option 4C crosses less exposed valley areas and avoids passing in close proximity to visitor attractions at Llanymynech Hill Camp or Llanymynech Heritage Area. Option 4C also has the potential to utilise a crossing point on the B4398, within a short section of option 4N, which is less constrained than that section of option 4C. In contrast, option 4N is the preferred option in relation to the cultural heritage criterion as it has the fewest interactions with historic and heritage assets in comparison to option 4C and option 4S. Where option 4N does interact with historic assets there is greater opportunity to avoid or minimise the potential impacts on these assets in comparison to option 4C and option 4S.
- 3.7.7 In balancing the landscape and visual considerations with cultural heritage issues, the preferred route for this section is option 4C as there is potential to utilise the eastern-most end of option 4N to cross the B4398.

#### **Section 5: Llanymynech to Lower Frankton**

- 3.7.8 Option 5N is the preference for landscape and visual amenity, as the route provides opportunities to minimise effects on residential receptors and avoids areas of settlement to the south of the corridor. Option 5N uses the screening and backclothing afforded by existing woodland and valley sides, particularly near Aston Hall and Pant, avoids running parallel with the canal for long stretches, and minimises visual impact in views from the railway.
- 3.7.9 Option 5C is the preference in relation to cultural heritage as it is the furthest away from scheduled monuments, conservation areas and listed buildings at West Felton. Option 5C is also the preference regarding listed buildings and the non-designated park at Aston Hall.
- 3.7.10 Option 5S is the preference for forestry and woodland as it contains the smallest area of woodland and has the potential to avoid areas of other woodland through detailed design.

- 3.7.11 In balancing the landscape and visual considerations with cultural heritage and forestry and woodland, the preferred route is option 5N.

## **3.8 2023 Non-Statutory Consultation – Preferred Option**

- 3.8.1 The preferred route as described above was taken to non-statutory consultation in November 2023.

## **3.9 Changes Following 2023 Non-Statutory Consultation**

- 3.9.1 A summary of the key changes identified in response to the 2023 non-statutory consultation, subsequent development of the Project design, and further technical assessment is provided below.

## **3.10 Changes Outside the 2023 Preferred Corridor**

### **Meifod**

- 3.10.1 The preferred route near Mathrafal and Meifod at the southern end of the Meifod Valley was selected for a number of environmental reasons. However, consultation feedback requested to reroute to avoid the area used for the National Eisteddfod Festival.
- 3.10.2 Alternatives to the west and east were considered. From an environmental perspective there was no preference in terms of landscape and visual. Moving the route corridor to the west would still impact the site used for the National Eisteddfod. Moving the route corridor to the east would have brought the route corridor closer to Mathrafal Castle, a Scheduled Monument, but taken it further from the settlement and a SSSI. Moving to the east from a technical perspective would have increased the number of river crossings.
- 3.10.3 On balance a route to the west was preferred. Whilst not wholly avoiding the site for the National Eisteddfod this change has accommodated the feedback on the detailed use of the site and has minimised the potential impact on Mathrafal Castle.
- 3.10.4 The preferred route and the new overall preference can be seen in Figure 3.1.



### **Waen Fach (near Rhosddu)**

- 3.10.5 The preferred route at Waen Fach diverted away from the A495 to the south of the River Vyrnwy Consultation feedback requested rerouteing to avoid the chicken farm adjacent to the River Vyrnwy
- 3.10.6 Alternatives to the north and south were considered. Rerouteing to the north would minimise the potential impacts on the chicken farm. From a technical perspective, an option to the north would allow for a straighter alignment with a potentially less complex river crossing.
- 3.10.7 From the environmental perspective, there was no preference in landscape and visual terms as residential properties would be potentially affected by both options. A northern route would provide slightly more screening and backclothing to the majority of views and would be straighter, so less visually obtrusive.
- 3.10.8 From a heritage perspective, a northern option would be less visible from Bryngwyn Wood where there is a Scheduled Hillfort with a registered park and garden behind. Routeing to the north would also be further from Listed Castle Cottage reducing the likely impact on this designated asset
- 3.10.9 In balancing the environmental constraints and technical considerations, the overall preference at Waen Fach was to move to the north of the preferred route for the detailed routeing.
- 3.10.10 The preferred route and the new overall preference can be seen in Figure 3.1.

### **Pentref to Brenfield Farm**

- 3.10.11 The preferred route between Llansantffraid-ym-Mechain and Llanymynech provided opportunities to minimise effects on denser areas of residential properties and settlements. It crosses a less exposed section of the valley near to Carreghoha Locks where existing woodland will provide some screening to minimise visual effects and avoids passing in close proximity to visitor attractions at Llanymynech Hill Camp or Llanymynech Heritage Area
- 3.10.12 Consultation feedback requested rerouteing from Pentref to Brenfield Farm, crossing the A483 to avoid impacting Llandysilio.
- 3.10.13 From an environmental appraisal, in terms of heritage, moving the preferred route to the north would reduce the potential harm to Church of St. Tysilio and associated Sundial and School-house Listed Buildings. It would also take the

route further away from properties in Llandysilio. It would however be closer to properties, such as Ty Coch, at the crossing point of the A483, and closer to the buildings at Llanymynech Conservation Area. However, there is sufficient separation to help preserve setting. These conclusions were reaffirmed by the landscape assessment. There was no preference from an engineering perspective for retaining the preferred route or moving to the north.

3.10.14 In balancing the environmental constraints and the technical considerations, the overall preference was to move the preferred route further north of the A483 away from Llandysilio.

3.10.15 The preferred route and the new overall preference can be seen in Figure 3.1

### **Crickheath**

3.10.16 The preferred route alignment between Pant and Crickheath provides better opportunities to minimise effects on residential receptors (particularly in Pant and Llanymynech) and avoids areas of settlements to the south of the corridor e.g. West Felton. The preferred route uses the screening and backclothing afforded by existing woodland and valley sides, particularly near Aston Hall and Pant, avoids areas of elevation and potential skylining near Rednal Moss, avoids running parallel with the canal for long stretches, and minimises visual impact in views from the railway. However, the preference for option 5N was 'slight' in most cases, with option 5C also recognised as being a slight preference for residential visual amenity (see Section 3.6 Route Options Appraisal Findings).

3.10.17 Consultation feedback requested rerouteing to increase the distance between the preferred route and Crickheath.

3.10.18 From the environmental appraisal, in terms of landscape, utilising option 5C would reduce the magnitude of the likely visual effects on residential properties at Crickheath and users of the Montgomery Canal, whilst maintaining some distance from properties to the south near Llwyntidmon Hall and Maesbrook. There may be more visibility of this route corridor from areas of higher ground to the east within Pant and Llanymynech, since the screening provided by woodland on the western edge of Pant would be reduced, but it would be viewed at a greater distance than from Crickheath. There was no preference from an engineering perspective between options 5C and 5N.

3.10.19 As landscape is a key consideration for routeing overhead lines and the preference was marginal, considering the environmental constraints and

consultation feedback, the overall preference was to move the preferred route to option 5C.

3.10.20 The preferred route and the new overall preference can be seen in Figure 3.1.

### **2025 Statutory Consultation – Preferred Option**

3.10.21 Following the 2023 non-statutory consultation feedback the Project has been developed to form the 2025 preferred draft alignment, shown in Figure 3.1.

## **3.11 References**

- Ref. 3.1 Ministry of Housing, Communities, and Local Government (MHCLG) (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: <https://www.legislation.gov.uk/ukxi/2017/572/schedule/4> [Accessed 29/07/2024].
- Ref. 3.2 Ministry of Housing, Communities, and Local Government (MHCLG) (2008). Planning Act 2008. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents> [Accessed 24/07/2024].
- Ref. 3.3 Department for Energy Security & Net Zero (2023). Overarching National Policy Statement for Energy (EN-1). Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> [Accessed 19/11/2024].
- Ref. 3.4 Department for Energy Security & Net Zero (2023). National Policy Statement for electricity networks infrastructure (EN-5). Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5> [Accessed 19/11/2024].
- Ref. 3.5 Green GEN Cymru (2023). Green GEN Vyrnwy Frankton Routeing and Consultation Document. Available at: <https://d141qvydpnmd03.cloudfront.net/RCD-with-appendicies.pdf> [Accessed 29/07/2024].
- Ref. 3.6 Green GEN Cymru (2023a). Approach to Routeing Grid Infrastructure Across England and Wales. Available at: [A4\\_Approach+to+Routeing+Grid+Infrastructure+Across+England+and+Wales.pdf](#) [Accessed 17/12/2024].
- Ref. 3.7 Green GEN Cymru (2023b). Green GEN Phase Two Grid Connection Strategy. Available at: <https://d141qvydpnmd03.cloudfront.net/Green+GEN+Phase+2+Grid+Connection+Strategy.pdf> [Accessed 29/07/2024].

- Ref. 3.8 Green Generation Energy Networks Cymru. Route Alignment Document. Available at: <https://greengenvyrnwyfrankton.com/en/>
- Ref. 3.9 Department for Energy Security & Net Zero (2023). National Policy Statement for renewable energy infrastructure (EN-3). Available at: [National Policy Statement for renewable energy infrastructure \(EN-3\) - GOV.UK](#) [Accessed 02/01/2025].

## **4 Consultation**

### **4.1 Overview**

4.1.1 This chapter outlines both the approach to statutory consultation and the technical engagement that has been undertaken to date with stakeholders and about the Project's design development. The focus of the technical engagement has been to enable our environmental specialists to consult with key stakeholders to agree methodologies and approaches to assessment. Technical engagement will be ongoing as part of the development of the Project design, including approaches to mitigation preparation of the Environmental Statement (ES) and application for development consent.

### **4.2 Approach to Consultation**

4.2.1 The Planning Act 2008 (Ref. 4.1) sets out the requirements for consultation and publicity before any application for a Development Consent Order (DCO) is made.

4.2.2 The Planning Act requires certain bodies and groups of people to be consulted at the pre-application stage. Sections 42 – 44 of the Act and Regulations (Ref: The Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009) set out details of who should be consulted, including local authorities, other statutory bodies, and persons having an interest in the land to be developed.

4.2.3 Section 47 of the Act sets out the applicant's statutory duty to consult local communities, setting-out the steps that an applicant must undertake in its consultation with the local community. This includes under Section 47(1) the preparation of a statement, describing how the applicant proposes to engage with people living within the vicinity of the project, and under Section 47(2) a requirement to consult local authorities in respect of such a statement i.e. a prospective Statement of Community Consultation ('SoCC').

4.2.4 There is a duty to publicise the application under Section 48, in accordance with the relevant provisions of the 2009 Regulations (Ref: The Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009), to include a deadline for receipt of responses to publicity.

- 4.2.5 Finally, Section 49 of the Act requires the applicant to have regard to the relevant responses to all consultation and publicity under Sections 42, 47 and 48 through the preparation of a Consultation Report to be submitted to the Secretary of State, as part of the DCO application.
- 4.2.6 The Applicant is consulting on its proposals for the Project so that feedback from stakeholders and communities can be considered in the decisions made on the Project.
- 4.2.7 The Applicant is delivering a two-stage consultation process.
- Stage One: A non-statutory consultation on emerging proposals. Non-statutory consultations are not legally binding, but there are agreed best practices to ensure a good quality consultation is completed.
  - Stage Two: A statutory consultation on a developed design together with preliminary environmental assessments. Statutory consultations are bound by legal requirements, in this instance The Planning Act 2008.

### **Stage One Consultation**

- 4.2.8 The Applicant undertook the first stage of consultation (non-statutory consultation) between 6 September and 18 October 2023. This consultation included stakeholder notification and briefings, community webinars, and public events in the communities closest to the Project. The consultation asked for feedback on the following:
- The proposed search area for the collector substation and cable sealing end compound in Powys.
  - The preferred route for the connection through Powys and Shropshire.
- 4.2.9 Each PEIR topic chapter has a section that outlines relevant consultations undertaken with stakeholders to date.

### **Stage Two Consultation**

- 4.2.10 The second stage (statutory consultation), of which this PEIR is an important component, is taking place in Spring 2025 and will aim to obtain feedback on the following:
- The proposals for the Grug y Mynydd Collector Substation, the Cors y Carreg CSEC, and the Lower Frankton Switching Station including indicative layouts.
  - The proposals for the Underground Cable Route (UGC) within the proposed Llyn Lort Energy Park.

- The proposed route for the overhead line connection including sites for the infrastructure required.
- Proposals for associated land use during construction, such as lay down areas.
- Proposed transport routes and vehicle movements.
- Preliminary environmental information associated with the proposals at this stage.

## **4.3 Organisations for Technical Engagement**

### **Statutory Environmental Bodies**

4.3.1 Statutory environmental bodies (SEBs) are advisory bodies and key stakeholders. The Project is engaging with the following SEBs regarding the Project proposals:

- CADW.
- Environment Agency.
- Historic England.
- Natural England.
- Natural Resource Wales.

### **Environmental Organisations**

4.3.2 The Project is engaging with the following environmental organisations:

- Malverley Internal Drainage Board.
- Clwyd-Powys Archaeological Trust.
- Brecon Beacon National Park Authority.
- Canal & Rivers Trust.
- Clwyd-Powys Archaeological Trust.
- Malverley Internal Drainage Board.
- Welsh Government- Land Quality Advice Service (LQAS).

### **Third Party Asset Owners and Operators**

4.3.3 The Project is engaging with the below third-party asset owners and operators.

- Local Highway Authorities.
- National Grid.
- Network Rail.

## Local Authorities

4.3.4 The Project is engaging with the following local authorities:

- Powys County Council.
- Llansantffraid & Deytheur Community Council.
- Llanymynech and Pant Parish Council.
- Shropshire Council.
- Whittington Parish Council

4.3.5 The Project is engaging with the above local authorities on all the environmental topics covered in this Preliminary Environmental Information Report (PEIR).

## Other Key Stakeholders

4.3.6 The Project is engaging with the below key stakeholders.

- Fire and Rescue authorities.
- Public Health Wales.
- Public Health England.

## 4.4 Responding to Consultation

4.4.1 Comments received to the non-statutory consultation have been recorded and carefully considered. How the Applicant has regard to the feedback is reported in the Stage One Consultation Report (Ref. 4.2). Feedback received to the statutory consultation will be considered and details of how the Applicant has had regard to the feedback it will be reported in a Consultation Report.

4.4.2 This would accompany the application for development consent as required by Section 37(3)(c) of the Planning Act 2008 (Ref. 4.1).

4.4.3 Each PEIR topic chapter has a section that outlines relevant consultations undertaken with stakeholders to date.

## 4.5 EIA work completed to date

### Scoping

4.5.1 Regulation 8 of the EIA Regulations (Ref. 4.3) outlines the Environmental Impact Assessment (EIA) scoping process, which determines which topics should be included in the ES, and the way in which they should be assessed.



- 4.5.2 Following these requirements, the Applicant submitted the Scoping Report for the Project to the Planning Inspectorate in January 2024 (Ref. 4.4). The Planning Inspectorate provided a Scoping Opinion on behalf of the Secretary of State in March 2024 (Ref. 4.5). This included several items that the Applicant is to consider when producing the ES.
- 4.5.3 The Applicant issued a Scoping Report to the Planning Inspectorate on 22 January 2024. Scoping is an early step in the Environmental Impact Assessment (EIA) process, ensuring the assessment process focuses on the likely significant effects associated with a project. Scoping also provides an opportunity for stakeholders to comment on the proposed methodologies, identify sources of baseline information and raise any specific issues that they consider require assessment. The Scoping Opinion adopted by the Secretary of State at the Department for Energy Security & Net Zero on 4 March 2024 was subsequently published on 20 May 2024. Following the receipt of the Scoping Opinion, the original scope of survey and assessment has been amended to incorporate the advice included within the Scoping Opinion. The teams will continue to engage with key stakeholders on the survey findings, assessments, the maturing project design including mitigation proposals.

## **4.6 Next Steps**

- 4.6.1 The Applicant will continue to engage with the relevant stakeholders through meetings and targeted discussions where appropriate, in addition to the statutory consultation taking place in Spring 2025.
- 4.6.2 Ongoing and meaningful engagement with key stakeholders is a core part of the project. Relationships have been built with the stakeholders which has now created an opportunity to discuss and agree specific technical approaches with the environmental specialist's topic areas. This has created a platform for effective communication to take place in the statutory consultation stage.
- 4.6.3 From statutory consultation, comments will be collated and considered when amending the Project design. Environmental considerations will be a key factor in the process, ensuring that potential environmental effects associated with the proposed changes are understood and considered as part of the decision making.

## 4.7 References

- Ref. 4.1 Ministry of Housing, Communities, and Local Government (MHCLG) (2008). The Planning Act c. 29 (2008). Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents> [Accessed 29/07/2024].
- Ref. 4.2 Green Generation Energy Networks Cymru. Green GEN Vyrnwy Frankton Project Stage One Consultation Report. Available at: <https://greengenvyrnwyfrankton.com/en/>
- Ref. 4.2 Ministry of Housing, Communities, and Local Government (MHCLG) (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: <https://www.legislation.gov.uk/uksi/2017/572/regulation/8> [Accessed 29/07/2024].
- Ref. 4.3 Green GEN Cymru (2024). Green GEN Vyrnwy Frankton Scoping Report. Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/wales/green-gen-vyrnwy-frankton/?ipcsection=docs> [Accessed 29/07/2024].
- Ref. 4.4 Planning Inspectorate (2024). Green GEN Vyrnwy Frankton Scoping Opinion. Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/wales/green-gen-vyrnwy-frankton/?ipcsection=docs> [Accessed 24/07/2024].

## 5 Environmental Assessment Methodology

### 5.1 Introduction

- 5.1.1 Environmental Impact Assessment (EIA) is a process that is used to identify and mitigate the likely significant effects that would occur because of a Project.
- 5.1.2 This EIA is being undertaken in compliance with:
- The Infrastructure Planning (Environmental Impact Assessment). Regulations 2017 (EIA Regulations) (Ref. 5.1).
  - The Planning Act 2008 (Ref. 5.2).
  - NPS EN-1 (Ref. 5.3).
  - NPS EN-5 (Ref. 5.4).
- 5.1.3 The full list of guidance documents is detailed at the start of each Topic Chapter.
- 5.1.4 The information gathered is considered by the decision-making body when determining consent. Three main EIA documents are produced by an applicant as part of the Nationally Significant Infrastructure Project (NSIP) pre-application process:
- Scoping Report and Scoping Opinion: The Scoping Report outlines the likely significant effects of a Project, whilst presenting data collected and the proposed assessment methodology and approach that would be used during the EIA process. The Scoping Report for the Project was issued to the Planning Inspectorate in January 2024 (Ref. 5.5) and the Scoping Opinion was received in March 2024 (Ref. 5.6).
  - Preliminary Environment Information Report (PEIR) (prepared for statutory consultation): The PEIR sets out the information to *'enable consultees to develop an informed view of the likely significant environmental effects of the proposed development'* as per Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects: Guidance on the pre-application stage for Nationally Significant Infrastructure Projects (Ref. 5.7). The purpose of the PEIR is to present the environmental information available at the time consultation is undertaken. It is used by stakeholders to provide a well-informed response to that consultation. The PEIR is produced at a time when there is not a full understanding of all environmental effects of the Project. The PEIR presents the work undertaken to conclude whether there are likely to be significant effects for each discipline that has been scoped in. The PEIR also

outlines any additional work that would be presented in the Environmental Statement (ES) to validate these conclusions.

- ES: The ES presents the results of the EIA undertaken for the Project. It identifies the likely significant effects that would result if the Project is implemented, and any proposed mitigation to avoid or reduce those significant effects to a non-significant level. The ES is submitted as part of the application for development consent and is examined and considered by the examining authority as part of their recommendation report and following decision-making process by the Secretary of State.

- 5.1.5 There will be additional documents produced as part of the application for development consent, which will be secured through the DCO and which will the environmental measures and mitigation identified within the EIA. The overarching control document is the Outline Construction Environmental Management Plan (OCEMP), however, technical chapters have identified control documents in their respective chapters that are likely to be required at this stage of the assessment (subject to ongoing discussion with stakeholders and the maturing project design).

## **5.2 Environmental Impact Assessment Process**

### **General EIA and PEIR Approach**

- 5.2.1 This chapter outlines the methodology which would be used to assess the potential significance of effects on the natural, human, and built environment because of the Project.
- 5.2.2 The scope of the assessment is informed by the Scoping Opinion received in March 2024. The scope has since been updated based on the responses given in the Scoping Opinion received in March 2024. Where the Planning Inspectorate has requested that aspects should be scoped back into the assessment, these have been included within the assessment presented in this PEIR and will be included within the ES, unless further information (also documented in the ES) is provided to justify scoping them out.
- 5.2.3 The assessments and conclusions presented within this PEIR are preliminary and are based on the proposed Project design and assumptions described within this PEIR, which can be found in Chapter 2: Project Description and later in this section. Any topic that has specific assumptions or assessment parameters has detailed them within the technical chapter. All assessment work has and continues to apply a precautionary approach, in that where limited information is

available (in terms of the proposals for the Project) a realistic worst-case scenario is assessed for both construction and operational phases of the project. In order to ensure a robust assessment of the likely significance of the environmental effects of the Project is being undertaken adopting the principles of the 'Rochdale Envelope' approach where appropriate, in line with PINS Advice Note Nine (Using the Rochdale Envelope) (Ref. 5.8). This involves assessing a limit of deviation and the maximum (or where relevant, minimum) parameters for elements of the Project where flexibility needs to be retained. The design of the Project will continue to be progressed and there will be a need to continue refining the design up to the detailed design stage, requiring a certain level of flexibility to be maintained.

- 5.2.4 The limits of deviation and parameters will be defined within the Application drawings and the draft DCO. The limits of deviation and parameters-based approach presents the maximum envelope within which the built development may be undertaken, and an assessment of the limits of deviation and parameters ensures a 'worst case' assessment of the full area within which the Project could be brought forward. This ensures the assessment of environmental effects associated with the Project will be the worst case, and that the actual development to be carried out within the limit of deviation parameters would be no worse than the effects reported. The final assessment will be presented within the ES submitted with the application for development consent.
- 5.2.5 Each assessment chapter within this PEIR includes a description of the proposed methodology for determining the significance of effects for each scoped in aspect.
- 5.2.6 The PEIR follows a receptor-based assessment approach. Receptors are those aspects of the environment which may be sensitive to change because of the Project.

## **5.3 Geographical Scope**

- 5.3.1 The Project's draft Order Limits include the land required permanently and temporarily to construct and operate the Project. The Project's draft Order Limits encompass the land required to construct the Project, including construction compounds, bellmouths, access points, land required for permanent above-ground and below-ground features, and rights of access, both temporary during construction and permanent for maintenance.
- 5.3.2 The Project's draft Order Limits include the Limits of Deviation (LoD) which represent the dimensions within which the final alignment and associated

features are expected to be installed. This PEIR assumes that the alignment would lie anywhere within the vertical and lateral LoD specified in Chapter 2: Project Description and takes a reasonable worst-case approach when undertaking the assessment. The same approach will be adopted for the ES

- 5.3.3 The purpose of undertaking consultation is to obtain feedback on the draft proposals. Feedback received during the consultation may result in changes being made to the design, which in turn could affect the Order Limits, the LoD and the associated environmental effects. These changes will be explained in the ES along with any associated changes, positive or negative, to the likely significant effects.
- 5.3.4 The study area for this PEIR, and within the ES, is, and will be, based on the distance over which an impact is likely to occur. The study areas are defined in each of the topic chapters within this PEIR and vary between topics.

## 5.4 Temporal Scope

- 5.4.1 The EIA process considers the effects that are expected to arise during the construction and operation phases of the Project and compares them with the current and future baseline. This is covered within each of the topic chapters. Decommissioning is scoped out of the ES, however, a high-level summary of potential effects will be included.
- 5.4.2 It is anticipated that the application for development consent would be made in 2026. Should consent be granted in 2027, it is anticipated that access and construction of the Project would commence in 2027, starting with enabling works including, site clearance activities, and the installation of construction compounds and access roads. It is expected the main construction works would continue through to 2029. While the phasing of the programme is yet to be confirmed, further information will be outlined in the ES.

## 5.5 Biodiversity Net Gain

- 5.5.1 The Environment Act 2021 (Ref. 5.9) includes a requirement for NSIPs to deliver at least 10% Biodiversity Net Gain (BNG) from November 2025. The NPS EN-1 (Department for Energy Security and Net Zero) also states that *‘Although achieving biodiversity net gain is not an obligation on applicants, Schedule 15 of the Environment Act 2021 contains provision, which when commenced, mean the Secretary of State may not grant an application for a Development Consent Order*

*unless satisfied that a biodiversity gain objective is met in relation to the onshore development in England to which the application relates.'*

- 5.5.2 The 10% BNG target is not mandated for NSIPs until November 2025. The Applicant has committed to deliver at least a 10% BNG in relation to the Project and further details are included within Chapter 7: Ecology. Whilst the approach to measuring biodiversity units will follow the statutory Defra metric, the approach to providing net gain and minimising impacts through routing of the Project aligns with the approach for Planning Policy Wales Net Benefit for Biodiversity.

## **5.6 Embedded, Good Practice and Essential Mitigation Measures (and Enhancement)**

- 5.6.1 As discussed in Chapter 2: Project Description, three types of mitigation have been assumed to be incorporated into the Project and preliminary assessment – embedded, good practice, and essential mitigation.
- 5.6.2 Environmental mitigation measures (as noted in Schedule 4, Paragraph 7 of the EIA Regulations (Ref. 5.1)) have been defined within each topic chapter in this PEIR. Any opportunities for environmental enhancement over and above essential mitigation measures (if required) and BNG will be described within the ES.

## **5.7 Assessment of Residual Effects and Determination of Significance**

- 5.7.1 The preliminary assessment within this PEIR provides an assessment of residual effects for each topic chapter, which are the effects likely to arise following the implementation of essential mitigation together with an indication of whether these effects are likely to be significant. This assessment will be reviewed and updated within the ES to accompany the application for development consent to comply with the EIA Regulations.
- 5.7.2 Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects: Guidance on the pre-application stage for Nationally Significant Infrastructure Projects. (Ref. 5.7), paragraph 12 states:

*'There is no prescribed format for PEI. However, depending on the availability of material, applicants are encouraged to prepare this as an early draft of the Environmental Statement and include it as such as part of the statutory*



*consultation under sections 42, 47 and 48 of the Planning Act. If applicants decide to take a different approach, they should be clear with consultees about the status of the PEI.'*

5.7.3 The PEIR sets out the information to 'enable consultees to develop an informed view of the likely significant environmental effects of the proposed development' (Ref. 5.7).

5.7.4 Regulation 5(2) of the EIA Regulations (Ref. 5.1) state that:

*'the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on: (a) population and human health, (b) biodiversity, (c) land, soil, water, air and climate, (d) material assets, cultural heritage and the landscape; and e) the interaction between the factors referred to in subparagraphs (a) to (d).'*

5.7.5 The first step is to assign a sensitivity or an inherent value to a receptor. Sensitivity is how easily the receptor is affected by change and value is a measure of its inherent worth. Table 5.1 provides broad definitions of sensitivity or value. The sensitivity or value of aspects specific to each discipline will be defined in each topic chapter.

5.7.6 It should be noted that not all topics will follow the same approach as described. Where appropriate, alternative approaches are outlined within the respective PEIR and subsequent topic chapters. The same approach will be adopted in the ES.

Table 5-1 – Value and Sensitivity Criteria

Value / Sensitivity	General Criteria
Very High	Of value, importance, or rarity on an international scale and with very limited potential for substitution; very sensitive to change or has very little capacity to accommodate change.
High	Of value, importance, or rarity on a national scale and with limited potential for substitution; and/or sensitive to change or has little capacity to accommodate change.
Medium	Of value, importance, or rarity on a regional scale and with limited potential for substitution; and/or moderately



Value / Sensitivity	General Criteria
	sensitive to change, or moderate capacity to accommodate change.
Low	Of value or importance on a local scale; not particularly sensitive to change or has considerable capacity to accommodate change.
Negligible	Abundant or of little environmental value; resistant to or has a considerable capacity to accommodate change.

5.7.7 The second step of the assessment would be to determine the likely magnitude of the potential impact. This is the scale of the change caused to the baseline conditions which considers both the degree of change from the baseline and the duration and/or reversibility of the effect. The assessment of magnitude will include all embedded, good practices, and essential mitigation measures to identify potential likely significant residual effects. Table 5.2 presents the generalised magnitude criteria.

*Table 5-2 – Magnitude of Change Criteria*

Magnitude	General Criteria
Large	Adverse: Total loss or major alteration to key elements or features of the baseline conditions to the extent that post-development character or composition of baseline conditions will be fundamentally changed. Beneficial: Large scale or major improvement of quality; extensive restoration or enhancement; major improvement in attribute quality.
Medium	Adverse: Loss or alteration to one or more key elements or features of the baseline conditions to the extent that post-development character or composition of the baseline conditions will be materially changed. Beneficial: Benefit to, or addition of key characteristics, features or elements; improvements of attribute quality.
Small	Adverse or beneficial: Changes arising will be detectable but not material; the underlying character or composition of the baseline conditions will be like the pre-development situation.

Magnitude	General Criteria
Very small	Adverse or beneficial: Very little change from baseline conditions. Change is barely distinguishable from the pre-development situation.
No change	Adverse or beneficial: No change from baseline conditions.

5.7.8 The third step in the process is considering the likely significance of an effect on a receptor in relation to the sensitivity or value of the receptor and the magnitude of the potential impact. The matrix shown in Table 5.3 has been used as the basis for assigning significance to an effect. For example, a highly sensitive receptor subject to a large magnitude of change would experience a major effect. Whereas a low sensitivity receptor with a medium magnitude of change would suffer a minor effect.

5.7.9 Professional judgment has been used to determine the significance within the PEIR and will also be used in the ES. This is of particular relevance where the assessment is based on a qualitative approach and the significance of is a matter of judgement rather than a quantified outcome. Explanatory text will be provided in each topic chapter to explain how professional judgement, where used, has determined the significance value.

5.7.10 The influence of impact duration and reversibility on the overall significance will also be considered as part of the determination of magnitude and sensitivity to change.

5.7.11 The matrix of significance can be seen below in Table 5.3.

*Table 5-3 – Matrix of Significance*

Value/Sensitivity of Receptor	Magnitude of Change			
	Large	Medium	Small	Very Small
High	Major	Major	Moderate	Minor/ Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very Low	Minor/Negligible	Negligible	Negligible	Negligible

- 5.7.12 Under the EIA Regulations (Ref. 5.1), the significant effects of the Project on the environment must be reported in the ES. A significant effect in the context of the EIA Regulations within the ES will be taken to mean one of moderate or major adverse or beneficial significance. While the effects of minor or negligible significance are not considered to be significant effects on the environment but reflect that there may be some differences from the baseline conditions.

### **Cumulative**

- 5.7.13 Each topic chapter will assess the significance of potential intra-project and inter-project cumulative effects.
- 5.7.14 Each environmental discipline within the EIA will identify the likely interactions between the topic and other topics on a receptor and identify the potential for cumulative impacts from intra-project effects. The assessment will also consider the cumulative effects arising from the construction and operation phases of the Project in combination with other developments within the study area referred to as inter-project cumulative effects.
- 5.7.15 The full approach and methodology for the cumulative assessment is outlined in Chapter 20: Cumulative.

## **5.8 Monitoring**

- 5.8.1 Schedule 4, Paragraph 7 of the EIA Regulations (Ref. 5.1) outlines that, where appropriate, the ES should include a description of any proposed monitoring arrangements where likely significant effects have been identified. The monitoring of significant effects requirements would be detailed within the ES topic chapters to include clear and proportionate objectives for monitoring, the parameters to be monitored, the methodology for the monitoring, a timescale for implementation, identification of the party who would be responsible for the monitoring, and an outline of the remedial actions to be undertaken should results be adverse. For statutory consultation, this PEIR identifies preliminary monitoring requirements which will be validated and updated in the ES to support in the application for development consent.

## **5.9 Environmental Topics**

- 5.9.1 Following receipt of the Scoping Opinion, the following topics have been scoped into assessment for the PEIR and will also form the scope of the assessment for

the ES. Each topic chapter will include an explanation of any specific methodology used for the purpose of the assessment.

5.9.2 The technical topic chapters presented in this PEIR are:

- Landscape and Visual Amenity.
- Ecology.
- Ornithology.
- Historic Environment.
- Traffic and Transport.
- Noise and Vibration.
- Water Resources.
- Geology and Hydrogeology.
- Air Quality.
- Soils and Agriculture.
- Health and Wellbeing.
- Major Accidents and Disasters.
- Greenhouse Gas Emissions.
- Socio-economics.

## 5.10 References

- Ref. 5.1 Ministry of Housing, Communities, and Local Government (MHCLG) (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: <https://www.legislation.gov.uk/ukxi/2017/572/contents> [Accessed 24/07/2024].
- Ref. 5.2 Ministry of Housing, Communities, and Local Government (MHCLG) (2008). Planning Act 2008. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents> [Accessed 24/07/2024].
- Ref. 5.3 Department for Energy Security & Net Zero (2023). Overarching National Policy Statement for Energy (EN-1). Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> [Accessed 19/11/2024].
- Ref. 5.4 Department for Energy Security & Net Zero (2023). National Policy Statement for electricity networks infrastructure (EN-5). Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5> [Accessed 19/11/2024].
- Ref. 5.5 Green GEN Cymru (2024). Green GEN Vyrnwy Frankton Scoping Report. Available at:

- <https://infrastructure.planninginspectorate.gov.uk/projects/wales/green-gen-vyrnwy-frankton/?ipcsection=docs> [Accessed 29/07/2024].
- Ref. 5.6 Planning Inspectorate (2024). Green GEN Vyrnwy Frankton Scoping Opinion. Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/wales/green-gen-vyrnwy-frankton/?ipcsection=docs> [Accessed 24/07/2024].
  - Ref. 5.7 Planning Inspectorate (2024). Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects: Guidance on the pre-application stage for Nationally Significant Infrastructure Projects. Available at: <https://www.gov.uk/guidance/planning-act-2008-pre-application-stage-for-nationally-significant-infrastructure-projects> [Accessed 24/07/2024].
  - Ref. 5.8 Planning Inspectorate (2018) Nationally Significant Infrastructure Projects – Advice Note Nine: Rochdale Envelope. Available at: <https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope> [Accessed 30/01/2025].
  - Ref. 5.9 UK Government (2021). The Environment Act c. 30 2021. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents> [Accessed 29/07/2024].

## 6 Landscape and Visual Amenity

### 6.1 Introduction

- 6.1.1 This Chapter presents the preliminary environmental information relating to landscape and visual amenity matters and provides the results of the preliminary assessment of the potential effects that are likely to result from the Project (described in Chapter 2: Project Description).
- 6.1.2 This chapter describes:
- Legislation, Policy and Guidance.
  - Consultation and Engagement.
  - Assessment Methodology and Significance Criteria.
  - Baseline Conditions.
  - Preliminary Mitigation Measures.
  - Preliminary Likely Significant Effects; and
  - Next Steps.
- 6.1.3 The Project's draft Order Limits, which illustrate the boundary of the Project, are illustrated on Figure 6.1 Project Location Plan.
- 6.1.4 There are interrelationships related to the potential effects on Landscape and Visual Amenity and other environmental topics. Therefore, the following chapters must also be referred to when reading this chapter:
- Chapter 2: Project Description.
  - Chapter 5: Environmental Assessment Methodology.
  - Chapter 7: Ecology.
  - Chapter 9: Historic Environment.
  - Chapter 10: Traffic and Transport.
  - Chapter 19: Socio-economics, Recreation and Tourism.
  - Chapter 20: Cumulative

## 6.2 Legislation, Policy and Guidance

### Legislation

#### European Landscape Convention

- 6.2.1 The European Landscape Convention (ELC) (Ref. 6.1), is the first international convention to focus specifically on landscape. It was signed by the UK Government in February 2006 and became binding from March 2007. As it is a convention of the Council of Europe, and not the European Union, Brexit has not affected its status, and the UK remains a signatory.
- 6.2.2 The ELC defines landscape as an area: ‘perceived by people, whose character is the result of the action and interaction of natural and / or human factors’. This definition reflects the idea that landscapes ‘evolve through time, as a result of being acted upon by natural forces and human beings’. It also underlines that a ‘landscape forms a whole, whose natural and cultural components are taken together, not separately.’
- 6.2.3 One of the Convention’s defining principles is that it applies to all landscapes, including ordinary or even degraded landscapes, as well as those that are afforded formal protection.
- 6.2.4 The effect of the Project upon all landscapes is considered within this preliminary assessment and will continue to be considered during the remaining stages of the its design and fully reported on in the ES.

#### The Hedgerows Regulations, 1997

- 6.2.5 The Hedgerows Regulations (Ref. 6.2) seek to prevent the removal of most countryside hedgerows without the Project first submitting a hedgerow removal notice to the local planning authority.
- 6.2.6 The regulations specify the criteria to be used to determine which hedgerows are important. These include considerations upon the value of the hedgerows from an archaeological, historical, landscape or ecological perspective.
- 6.2.7 The effect of potential hedgerow retention and / or removal is considered within this preliminary assessment and will continue to be considered during the remaining stages of the Project’s design and fully reported on in the ES.

## **Policy**

### **National Policy – Wales and England**

#### **Overarching National Policy Statement (NPS) for Energy (EN-1) (2024) (Ref. 6.3)**

- 6.2.8 Table 6.1 sets out the broad matters contained in EN-1 in relation to landscape and visual amenity effects and describes how these are considered within this chapter and will be considered within the Environmental Statement (ES).



Table 6-1 – Relevant Sections of National Policy Statement for Energy (EN-1) 2024

Policy Reference	Policy Context	How it will be considered
<p>Section 5.10 Landscape and Visual</p>	<p><u>Landscape &amp; Visual – general matters:</u></p> <p><i>5.10.6 ‘Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate.’</i></p>	<p>Landscape and visual amenity matters have already been, and will continue to be, considered during the remaining stages of the Project’s design.</p> <p>This PEIR and the ES will demonstrate how adverse effects have been minimised and how opportunities for creating possible benefits and/or enhancements have been recognised, and/or incorporated into the design, delivery and operation of the Project.</p> <p>The ongoing visual assessment of the Project will continue to include consideration of effects during construction (noting that these are temporary) and operation (including maintenance), and, if necessary, effects arising from possible light pollution.</p>
	<p><u>National Parks &amp; other nationally valued landscapes:</u></p> <p><i>5.10.7 ‘National Parks, the Broads and AONBs have been confirmed by the government as having the highest status of protection in relation to landscape and natural beauty. Each of these designated areas has specific statutory purposes. Projects should be designed sensitively given the various siting, operational, and other relevant constraints. For development proposals located within</i></p>	<p>Where the Project is within, or within the setting of a National Park and/or an Area of Outstanding Natural Beauty (AONB) (known now commonly as ‘National Landscapes’), the highest status of protection in relation to landscape will be conferred, and effects upon its ‘natural beauty’ and ‘special qualities’ have been considered.</p>

Policy Reference	Policy Context	How it will be considered
	<p><i>designated landscapes the Secretary of State should be satisfied that measures which seek to further purposes of the designation are sufficient, appropriate and proportionate to the type and scale of the development.'</i></p> <p><i>5.10.8 'The duty to seek to further the purposes of nationally designated landscapes also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. In these locations, projects should be designed sensitively given the various siting, operational, and other relevant constraints. The Secretary of State should be satisfied that measures which seek to further the purposes of the designation are sufficient, appropriate and proportionate to the type and scale of the development.'</i></p>	
	<p>Locally valued landscapes &amp; landscape character assessments:</p> <p><i>5.10.12 'Outside nationally designated areas, there are local landscapes that may be highly valued locally. Where a local development document in England or a local development plan in Wales has policies based on landscape or waterscape character assessment, these should be paid particular attention. However, locally valued landscapes should not be used in themselves to refuse consent, as this may unduly restrict acceptable development.'</i></p>	<p>The Project has also had regard for valued local landscapes – in particular where a local authority's development document has policies based on landscape character assessments.</p> <p>The emerging Landscape and Visual Impact Assessment (LVIA) will continue to use such landscape character assessments (in particular the Project-specific landscape character assessment – see section 6.5 Baseline conditions) as a means of assessing landscape impacts relevant to the Project.</p>

Policy Reference	Policy Context	How it will be considered
	<p><u>Sensitive visual receptors:</u></p> <p><i>5.10.14 ‘The Secretary of State will have to judge whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the project.’</i></p>	<p>The LVIA will continue to consider the effects of the Project upon the visual amenity of the communities (i.e. residents and visitors) of individual settlements and scattered areas of dwellings when within the public domain.</p> <p>In contrast the Residential Visual Amenity Assessment (RVAA) will assess the effects upon occupants of individual residential properties (or groups of properties), that lie within 150m of the Project’s towers or other infrastructure, within their homes and/or curtilage – see section 6.4 Assessment methodology and significance criteria.</p>
	<p><u>LVIA guidance and cumulative effects:</u></p> <p><i>5.10.16 ‘The applicant should carry out a landscape and visual impact assessment and report it in the ES, including cumulative effects (see Section 4.3). Several guides have been produced to assist in addressing landscape issues.’</i></p>	<p>The LVIA will continue to be prepared and will be reported on in the ES.</p> <p>Cumulative effects are reported upon in Chapter 20: Cumulative Effects.</p> <p>The ‘<i>Guidelines for Landscape and Visual Impact Assessment (Third Edition)</i>’ (Ref. 6.4) will be the primary guidance document for the LVIA.</p>
	<p><u>Landscape Character Assessments and related planning policy:</u></p> <p><i>5.10.17 ‘The landscape and visual assessment should include reference to any landscape character assessment</i></p>	<p>The LVIA will utilise landscape character assessments (in particular the Project-specific landscape character assessment – see chapter section 6.5 Baseline conditions)</p>

Policy Reference	Policy Context	How it will be considered
	<p><i>and associated studies as a means of assessing landscape impacts relevant to the proposed project. The applicant's assessment should also take account of any relevant policies based on these assessments in local development documents in England and local development plans in Wales.'</i></p>	<p>as a means of assessing landscape impacts relevant to the Project.</p> <p>Relevant policies, based upon these assessments, will also be referenced in the LVIA.</p>
	<p><u>Consideration of landscape and visual amenity matters at an early stage:</u></p> <p><i>Paragraph 5.10.19 'The applicant should consider landscape and visual matters in the early stages of siting and design, where site choices and design principles are being established. This will allow the applicant to demonstrate in the ES how negative effects have been minimised and opportunities for creating positive benefits or enhancement have been recognised and incorporated into the design, delivery and operation of the scheme.'</i></p>	<p>Landscape and visual amenity matters have been a considered from the outset of the Project. In particular, during the identification and appraisal of route options set out in the 'Green GEN Vyrnwy Frankton Routeing and Consultation Document' (Ref. 6.5). The decisions made with regards to how adverse effects have been minimised and how opportunities for creating enhancements have been recognised and incorporated into the design, delivery and operation of the Project, will be set out in this PEIR and in the ES.</p>
	<p><u>Consideration of the effects on landscape components and nationally designated landscapes:</u></p> <p><i>Paragraph 5.10.20 'The assessment should include the effects on landscape components and character during construction and operation. For projects which may affect a National Park, The Broads or an AONB the assessment should include effects on the natural beauty and special qualities of these areas.'</i></p>	<p>The effects on landscape components and upon the natural beauty and 'special qualities' of National Parks and AONBs' (known now commonly as 'National Landscapes') are considered in this PEIR and will continue to be considered in the ES.</p>

Policy Reference	Policy Context	How it will be considered
	<p><u>Assessment scenarios and the effects of lighting:</u></p> <p><i>Paragraph 5.10.21 ‘The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity. This should include light pollution effects, including on dark skies, local amenity, and nature conservation.’</i></p>	<p>The LVIA will consider the effects of the Project during construction and operation, and how these can be minimised.</p> <p>This will include light pollution effects.</p>
	<p><u>Landscape and visual amenity effects of noise and light pollution, and other emissions:</u></p> <p><i>Paragraph 5.10.22 ‘The assessment should also address the landscape and visual effects of noise and light pollution, and other emissions (see Section 5.2 and Section 5.7), from construction and operational activities on residential amenity and on sensitive locations, receptors and views, how these will be minimised.’</i></p>	<p>The LVIA will consider the effects of the Project (including those arising from possible light pollution) during construction and operation, and how these can be minimised.</p>
	<p><u>Landscape Management Plans:</u></p> <p><i>Paragraph 5.10.24 ‘Applicants should consider how landscapes can be enhanced using landscape management plans, as this will help to enhance environmental assets where they contribute to landscape and townscape quality.’</i></p>	<p>An Outline Landscape Management Plan shall accompany all proposed landscape interventions that form part of the Project.</p>
	<p><u>Existing permitted infrastructure with a similar magnitude of impact on equally sensitive receptors:</u></p>	<p>Examples of existing permitted infrastructure with a similar magnitude of impact on equally</p>

Policy Reference	Policy Context	How it will be considered
	<p><i>Paragraph 5.10.25 ‘In considering visual effects it may be helpful for applicants to draw attention, in the supporting evidence to their applications, to any examples of existing permitted infrastructure they are aware of with a similar magnitude of impact on equally sensitive receptors. This may assist the Secretary of State in judging the weight they should give to the assessed visual impacts of the proposed development.’</i></p>	<p>sensitive receptors will be referenced, where appropriate, within the LVIA.</p>
	<p><u>Off-site landscape proposals:</u></p> <p><i>Paragraph 5.10.28 ‘Depending on the topography of the surrounding terrain and areas of population it may be appropriate to undertake landscaping off site. For example, filling in gaps in existing tree and hedge lines may mitigate the impact when viewed from a more distant vista. 5.10.28 Depending on the topography of the surrounding terrain and areas of population it may be appropriate to undertake landscaping off site. For example, filling in gaps in existing tree and hedge lines may mitigate the impact when viewed from a more distant vista.’</i></p>	<p>The further development of the Project will consider the use of off-site landscape measures to assist in the mitigation of adverse landscape and visual amenity effects.</p>
	<p><u>Users of Publicly accessible areas and paths:</u></p> <p><i>Paragraph 5.11.30 ‘Public Rights of way, National Trails, and other rights of access to land are important recreational facilities for example for walkers, cyclists and horse riders. The Secretary of State should expect applicants to take appropriate mitigation measures to address adverse effects on coastal access, National Trails, other rights of way and open access land and, where</i></p>	<p>The consideration of the visual effects of the Project upon users of public rights of way (PRoW), National Trails, public open space, open access land and promoted routes, will take into consideration the current character and attractiveness of such routes and areas.</p>

Policy Reference	Policy Context	How it will be considered
	<p><i>appropriate, to consider what opportunities there may be to improve or create new access. In considering revisions to an existing right of way, consideration should be given to the use, character, attractiveness, and convenience of the right of way.'</i></p>	

### National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024) (Ref. 6.6)

6.2.9 EN-5 sets out more specific direction on the assessment of effects related to overhead power lines. Matters relevant to landscape and visual amenity effects, and how these are considered within this chapter and will be considered within the ES, is set out in Table 6.2.

Table 6-2 – Relevant Sections of National Policy Statement for Electricity Networks Infrastructure (EN-5) 2024

Policy Reference	Policy Context	How it will be considered
<p>Section 2.9 Applicant Assessment</p>	<p><u>OHL</u>: <i>Paragraph 2.9.7 'While the government does not believe that the developers of overhead lines is incompatible in principle with developers' statutory duty under section 9 of the Electricity Act, to have regard to visual and landscape amenity and to mitigate possible impacts thereon, in practice new overhead lines can give rise to adverse landscape and visual impacts.'</i></p>	<p>The LVIA will continue to identify adverse landscape and visual amenity effects arising from the OHL parts of the Project.</p>



Policy Reference	Policy Context	How it will be considered
	<p><u>Substations and sealing end compounds:</u></p> <p><i>Paragraph 2.9.9: ‘New substations, sealing end compounds (including terminal towers), and other above-ground installations that serve as connection, switching, and voltage transformation points on the electricity network may also give rise to adverse landscape and visual impacts.’</i></p>	<p>The LVIA will continue to identify adverse landscape and visual amenity effects arising from the proposed new Grug y Mynydd Collector Substation, Cors y Carreg cable sealing end compound (CSEC) and Lower Frankton Switching Station.</p>
	<p><u>Cumulative effects:</u></p> <p><i>Paragraph 2.9.10 ‘Cumulative adverse landscape ... and visual impacts may arise where new overhead lines are required along with other related developments such as substations, wind farms, and/or other new sources of generation.’</i></p>	<p>Cumulative effects are reported upon in Chapter 20: Cumulative.</p>
	<p><u>Mitigation:</u></p> <p><i>Paragraph 2.9.11: Landscape and visual benefits may arise through the reconfiguration, rationalisation, or undergrounding of existing electricity network infrastructure. Though mitigation of the landscape and visual impacts arising from overhead lines and their associated infrastructure is usually possible, it may not always be so, and the impossibility of full mitigation in these cases does not countermand the need for overhead lines.</i></p> <p><i>Paragraph 2.9.12: ‘However, in nationally designated landscapes (for instance, National Parks, The Broads and</i></p>	<p>The consideration of reconfiguration, rationalisation, or undergrounding of existing electricity network infrastructure as part of the Project, was considered as part of the identification and appraisal of route options (Ref. 6.5).</p>



Policy Reference	Policy Context	How it will be considered
	<p><i>Areas of Outstanding Natural Beauty) even residual impacts may well make an overhead line proposal unacceptable in planning terms.'</i></p>	
	<p><u>Use of the Holford and Horlock Rules:</u></p> <p><i>Paragraph 2.9.13: 'Where possible, applicants should ensure that the principles detailed in Sections 2.11.16-2.11.19 [this should read 2.10.16-2.10.19] below are embodied in the design of their proposed overhead line route and its associated infrastructure. Applicants should also offer proposals (for instance those detailed in Section 2.10 below) for additional mitigation.'</i></p>	<p>The planning of the proposed OHL route and the siting of its associated infrastructure took into consideration the Holford Rules. The Rules will continue to be embodied into the further design of the Project.</p>
	<p><u>Consideration of feasible alternatives:</u></p> <p><i>Paragraph 2.9.14: 'Where the nature or proposed route of an overhead line will likely result in particularly significant landscape and visual impacts, as would be assessed through landscape, seascape and visual impact assessment, the applicant should demonstrate that they have given due consideration to the costs and benefits of feasible alternatives to the overhead line. This could include – where appropriate – rerouting, underground or subsea cables and the feasibility e.g. in cost, engineering or environmental terms of these. Applicants should note the position on nationally designated landscapes at section 2.9.20 below.'</i></p> <p><i>Paragraph 2.9.15 'The ES should set out details of this consideration, including the applicant's rationale for</i></p>	<p>Consideration of the costs and benefits of feasible alternatives to the proposed OHL is set out in the Green GEN Phase Two Grid Connection Strategy prepared in 2023 (Ref. 6.7).</p>

Policy Reference	Policy Context	How it will be considered
	<p><i>eschewing feasible alternatives to the overhead line, and the mitigation cost-calculation methodology that this rationale may rely upon.'</i></p>	
	<p><u>Undergrounding:</u></p> <p><i>Paragraph 2.9.20: 'Although it is the government's position that overhead lines should be the strong starting presumption for electricity networks developments in general, this presumption is reversed when proposed developments will cross part of a nationally designated landscape (i.e. National Park, The Broads, or Area of Outstanding Natural Beauty).'</i></p> <p><i>Paragraph 2.9.21: 'In these areas, and where harm to the landscape, visual amenity and natural beauty of these areas cannot feasibly be avoided by re- routing overhead lines, the strong starting presumption will be that the applicant should underground the relevant section of the line.'</i></p> <p><i>Paragraph 2.9.22: 'However, undergrounding will not be required where it is infeasible in engineering terms, or where the harm that it causes (see section 2.11.4) is not outweighed by its corresponding landscape, visual amenity and natural beauty benefits. Regardless of the option, the scheme through its design, delivery, and operation, should seek to further the statutory purposes of the designated landscape. These enhancements may go beyond the</i></p>	<p>The effects on the landscape, visual amenity and natural beauty of National Parks, and the potential subsequent mitigation for these, are considered in this PEIR and will continue to be considered in the ES.</p>

Policy Reference	Policy Context	How it will be considered
	<p><i>mitigation measures needed to minimise the adverse effects of the scheme.'</i></p>	
	<p><u>Early stage mitigation:</u></p> <p><i>Paragraph 2.10.1: 'The applicant should consider and address routing and avoidance/minimisation of environmental impacts both onshore and offshore at an early stage in the development process.'</i></p>	<p>Avoidance and minimisation of landscape and visual amenity effects, through careful routeing of the Project, was carried out at an early stage (see Ref. 6.5), and has continued between receipt of the Scoping Opinion and the preparation of this PEIR.</p>
	<p><u>General landscape and visual amenity-related mitigation:</u></p> <p><i>Paragraph 2.10.5: 'In addition to good design in accordance with the Holford and Horlock rules (please see paragraphs 2.9.16 - 2.9.19), and the consideration of undergrounding or rerouting the line where possible, the principal opportunities for mitigating adverse landscape and visual impacts of electricity networks infrastructure are:</i></p> <ul style="list-style-type: none"> <li><i>• consideration of network reinforcement options (where alternatives exist) which may allow improvements and/or extensions to an existing line rather than the building of an entirely new line;</i></li> <li><i>• selection of the most suitable type and design of support structure in order to minimise the overall visual impact on the landscape. In particular, ensuring that towers are of the smallest possible footprint and internal volume; and</i></li> </ul>	<p>Consideration of the Holford and Horlock rules has been undertaken throughout the routeing and siting of the Project's OHL and associated infrastructure (see Ref. 6.5).</p> <p>Consideration of possible undergrounding or rerouteing of the OHL, has also been considered, see Chapter 3: Alternatives, of this PEIR.</p> <p>Consideration of the potential reinforcement of the existing network is not applicable to the Project as there is no existing network.</p> <p>Consideration of the type of OHL support structure is set out in Green GEN Phase Two Grid Connection Strategy prepared in 2023 (Ref. 6.7).</p> <p>Consideration of the potential rationalisation, reconfiguration, and/or undergrounding of</p>

Policy Reference	Policy Context	How it will be considered
	<ul style="list-style-type: none"> <li><i>the rationalisation, reconfiguration, and/or undergrounding of existing electricity networks infrastructure in the vicinity of the proposed development.'</i></li> </ul>	<p>existing electricity networks infrastructure in the vicinity of the Project is set out in Green GEN Phase Two Grid Connection Strategy prepared in 2023 (Ref. 6.7).</p>
	<p><u>Specific landscape and visual amenity mitigation:</u></p> <p><i>Paragraph 2.10.6: 'Additionally, there are more specific measures that might be taken, and which the Secretary of State could mandate through DCO requirements if appropriate, as follows:</i></p> <ul style="list-style-type: none"> <li><i>landscape schemes, comprising off-site tree and hedgerow planting, are sometimes used for larger new overhead line projects to mitigate potential landscape and visual impacts, softening the effect of a new above ground line whilst providing some screening from important visual receptors. These may be implemented with the agreement of the relevant landowner(s), or the developer may compulsorily acquire the land or land rights in question. Advice from the relevant statutory authority may also be needed; and</i></li> <li><i>screening, comprising localised planting in the immediate vicinity of residential properties and principal viewpoints can also help to screen or soften the effect of the line, reducing the visual impact from a particular receptor.'</i></li> </ul>	<p>The potential application of mitigation such as that listed in paragraph 2.10.6 is set out in section 6.6 Preliminary mitigation measures of this PEIR.</p>

Policy Reference	Policy Context	How it will be considered
	<p><u>Long term management of mitigation:</u></p> <p><i>Paragraph 2.10.8: 'Furthermore, since long-term management of the selected mitigation schemes is essential to their mitigating function, a management plan, developed at least in outline at the conclusion of the examination, and which sets out proposals within a realistic timescale, should secure the integrity and benefit of these schemes. This should also uphold the landscape commitments made to achieve consent, alongside any pertinent commitments to environmental and biodiversity net gain.'</i></p>	<p>An Outline Landscape Management Plan shall accompany all proposed landscape interventions that form part of the Project.</p>

## National Policy – Wales

### Future Wales: The National Plan 2040

- 6.2.10 Future Wales – the National Plan 2040 (2021) (Ref. 6.8) is the Welsh Government’s national development framework, setting the direction for development in Wales to 2040, indicating where investment in infrastructure and development should be located.
- 6.2.11 Matters relevant to landscape and visual amenity effects, and how these are considered within this chapter and will be considered within the ES, is set out in Table 6.3.

Table 6-3 – Relevant policies of Future Wales: The National Plan 2040 (2021)

Policy Reference	Policy Context	How it will be considered
Policy 17	<p><u>Pre-assessed Areas for Wind Energy:</u></p> <p>Page 95: <i>‘In Pre-Assessed Areas for Wind Energy the Welsh Government has already modelled the likely impact on the landscape and has found them to be capable of accommodating development in an acceptable way. ... New strategic grid infrastructure for the transmission and distribution of energy should be designed to minimise visual impact on nearby communities.</i></p>	<p>Measures required to minimise visual impact of the Project’s grid infrastructure for the transmission and distribution of energy (i.e. the proposed Grug y Mynydd Collector Substation, underground cable between this and the Cors y Carreg CSEC, the CESC itself, the OHL and Lower Frankton Switching Station) have been incorporated into the routeing and siting of the Project (see Ref. 6.5), and will continue to be incorporated through the Project’s further design.</p>

### Planning Policy Wales Edition 12 (2024) (Ref. 6.9)

- 6.2.12 Planning Policy Wales Edition 12 sets out the current land use planning policy for Wales. It provides a policy framework that local planning authorities use in the preparation of their development plans and when making planning decisions.

6.2.13 Matters relevant to landscape and visual amenity effects, and how these are considered within this chapter and will be considered within the ES, is set out in Table 6.4.

Table 6-4 – Relevant policies of Planning Policy Wales – Edition 12

Policy Reference	Policy Context	How it will be considered
Strategic and Spatial Choices	<p><u>Character:</u></p> <p><i>Paragraph 3.9: ‘The special characteristics of an area should be central to the design of a development. The layout, form, scale and visual appearance of a proposed development and its relationship to its surroundings are important planning considerations. A clear rationale behind the design decisions made, based on site and context analysis, a strong vision, performance requirements and design principles, should be sought throughout the development process and expressed, when appropriate, in a design and access statement.’</i></p>	<p>The special characteristics of the LVIA Study Area have been considered from the outset of the Project. In particular, during the identification and appraisal of route options (Ref. 6.5).</p> <p>The rationale behind design decisions (which were based upon analysis of the route option and their landscape context, plus performance requirements and design principles in relation to the Holford Rules), will be set out in this PEIR, ES, Green GEN Phase Two Grid Connection Strategy (Ref. 6.7), Green GEN Route and Alignment Document (Ref. 6.10).</p>
	<p><u>Distinctiveness:</u></p> <p><i>Paragraph 3.10: ‘In areas recognised for their particular landscape, townscape, cultural or historic character and value it can be appropriate to seek to promote or reinforce local distinctiveness. In those areas, the impact of development on the existing character, the scale and siting of new development, and the use of appropriate building materials (including where possible sustainably produced materials from local sources), will be particularly important.’</i></p>	<p>The design development of the Project has had regard for valued landscapes, townscapes and areas of cultural and/or historic character (as recognised in national and local planning policies and character assessments – including LANDMAP).</p> <p>The impacts on such areas, and the potential subsequent mitigation for these, are considered in this PEIR and will continue to be considered in the ES.</p>
	<p><u>Appraising Context:</u></p>	<p>Detailed analysis of the landscape character of the Site and it’s context has underpinned</p>



Policy Reference	Policy Context	How it will be considered
	<p><i>Paragraph 3.14: ‘Site and context analysis should be used to determine the appropriateness of a development proposal in responding to its surroundings. This process will ensure that a development is well integrated into the fabric of the existing built environment. The analysis process will highlight constraints and opportunities presented by existing settlement structure and uses, landscape, biodiversity, water environment, movement, infrastructure, materials and resources, soundscape and built form which will need to be considered when formulating proposals.’</i></p>	<p>the development of the Project’s current design - in particular during the identification and appraisal of route options (Ref. 6.5), and will continue to do so during ongoing design development.</p> <p>This process has, and will continue to highlight constraints and opportunities presented by existing landscapes.</p>
	<p>Development in the Countryside:</p> <p><i>Paragraph 3.60: ‘All new development should be of a scale and design that respects the character of the surrounding area.’</i></p>	<p>The character of the LVIA study area was analysed during the identification and appraisal of route options (Ref. 6.5), and will continue to be taken into consideration through the further design development of the Project – in particular the Project-specific landscape character assessment.</p>
<p>Productive and Enterprising Places</p>	<p><u>Electricity Grid Network and Energy Storage:</u></p> <p><i>Paragraph 5.7.9: ‘The Welsh Government’s preferred position on new power lines is that, where possible, they should be laid underground. However, it is recognised that a balanced view must be taken against costs which could render otherwise acceptable projects unviable. Where undergrounding of lines is not possible or applicable, proactive engagement with energy companies and the public to mitigate the visual impact of any potential new transmission lines should take place.’</i></p>	<p>The potential environmental and technical aspects of undergrounding the Project was considered as part of the identification and appraisal of route options (Ref. 6.5).</p> <p>Discussion upon the relative cost of undergrounding is set out in Chapter 3: Alternatives.</p> <p>Measures to minimise the visual impact of those parts of the Project that are proposed to be overhead transmission line, was also</p>

Policy Reference	Policy Context	How it will be considered
		considered as part of the identification and appraisal of route options (see Ref. 6.5), and will continue to be incorporated through the Project's further design.
	<p><u>Impact Minimisation:</u></p> <p><i>Paragraph 5.9.21: 'Prior to an application being submitted, developers for renewable and low carbon energy developments should, wherever possible, consider how to avoid, or otherwise minimise, adverse impacts through careful consideration of location, scale, design and other measure.'</i></p>	Measures to minimise the Project's impacts upon landscape character and visual amenity, was considered as part of the identification and appraisal of route options (see Ref. 6.5), and will continue to be incorporated through the Project's further design.
Distinctive and Natural Places	<p><u>Landscapes:</u></p> <p><i>Paragraph 6.3.3: 'All the landscapes of Wales are valued for their intrinsic contribution to a sense of place, and local authorities should protect and enhance their special characteristics, whilst paying due regard to the social, economic, environmental and cultural benefits they provide, and to their role in creating valued places. Considering landscape... when proposing development is key to sustaining and enhancing their special qualities, and delivering the maximum well-being benefits for present and future generations as well as helping to deliver an effective and integrated approach to natural resource management over the long term.'</i></p>	<p>The impact upon the special characteristics of all landscapes through the LVIA Study Area was considered as part of the identification and appraisal of route options (see Ref. 6.5), and will continue to be taken into consideration through the further design development of the Project – in particular through the Project-specific landscape character assessment.</p> <p>The preliminary residual effects will be identified in this PEIR and will continue to be considered in the ES.</p>
	<p><u>National Parks and Areas of Outstanding Natural Beauty:</u></p> <p><i>Paragraph 6.3.5: The statutory landscape designations that apply in Wales are National Parks, and AONBs. Planning</i></p>	Where the Project is within, or within the setting of a National Park, the effects upon its 'special qualities' are considered in this

Policy Reference	Policy Context	How it will be considered
	<p><i>authorities have a statutory duty to have regard to National Parks and AONB purposes. This duty applies in relation to all activities affecting National Parks and AONBs, whether those activities lie within, or in the setting of, the designated areas. ... planning authorities should have regard to their identified special qualities in the exercise of their functions... ’</i></p>	<p>PEIR and will continue to be considered in the ES.</p>
	<p><u>National Parks:</u></p> <p><i>Paragraph 6.3.6: ‘In National Parks, planning authorities should give great weight to the statutory purposes of National Parks, which are to conserve and enhance their natural beauty, wildlife and cultural heritage, and to promote opportunities for public understanding and enjoyment of their special qualities.’</i></p>	<p>In the consideration of effects upon National Parks, the conservation and enhancement of its natural beauty will be given due regard in this PEIR and in the ES.</p>
	<p><u>The Special Qualities of National Parks:</u></p> <p><i>Paragraph 6.3.9 ‘The special qualities of designated areas should be given weight in the development planning and the development management process. Proposals in National Parks and AONBs must be carefully assessed to ensure that their effects on those features which the designation is intended to protect are acceptable. The contribution that development makes to the sustainable management of the designated area must be considered.’</i></p>	<p>The consideration of effects upon the special qualities of National Parks will be given due regard in this PEIR and in the ES.</p>
	<p><u>Major Development in Designated Landscapes:</u></p> <p><i>Paragraph 6.3.10 ‘Major developments should not take place in National Parks or AONBs except in exceptional circumstances. This may arise where, after rigorous</i></p>	<p>The requirement for the Project is set out in the Route Alignment Document (Ref. 6.10).</p>

Policy Reference	Policy Context	How it will be considered
	<p><i>examination, there is demonstrated to be an overriding public need, refusal would be severely detrimental to the local economy and there is no potential for locating the development elsewhere or meeting the need in some other way. Any construction and restoration must be carried out to high environmental standards. Consideration of applications for major developments should therefore include an assessment of:</i></p> <ul style="list-style-type: none"> <li>• <i>the need for the development, in terms of national considerations and the impact of permitting it or refusing it upon the local economy;</i></li> <li>• <i>the cost of and scope for providing the development outside the designated area or meeting the need for it in some other way; and</i></li> <li>• <i>any detrimental effect on the environment and the landscape, and the extent to which that could be moderated and/or mitigated.'</i></li> </ul>	<p>Consideration of locating the Project elsewhere formed part of the identification and appraisal of route options (Ref. 6.5).</p> <p>Consideration of the costs and benefits of feasible alternative locations and or solutions to the Project are set out in see Chapter 3: Alternatives.</p> <p>Measures to minimise the effect of the Project on the landscape of National Parks, will continue to be incorporated through the Project's further design.</p>
	<p><i>Characteristics of Local Landscapes:</i></p> <p><i>Paragraph 6.3.12: 'Planning authorities should provide for the conservation and, where appropriate, enhancement of local landscapes.'</i></p>	<p>The impact upon the local landscapes through the LVIA Study Area was considered as part of the identification and appraisal of route options (see Ref. 6.5), and will continue to be taken into consideration through the further design development of the Project – in particular through the Project-specific landscape character assessment.</p>

Policy Reference	Policy Context	How it will be considered
		<p>The preliminary residual effects will be identified in this PEIR and will continue to be considered in the ES.</p>
	<p><i>Landscape Information:</i></p> <p><i>Paragraph 6.3.19: ‘LANDMAP is an important information resource, methodology, and monitoring baseline for the landscapes of Wales, which can help inform planning for the sustainable management of natural resources in an area... LANDMAP assessments can help to inform ... development management decisions, landscape character assessment,... local distinctiveness, design, and landscape sensitivity studies.’</i></p> <p><i>Paragraph 6.3.21: ‘Planning authorities should draw upon LANDMAP in the... development management process.’</i></p>	<p>LANDMAP was utilised as a key resource during the identification and appraisal of route options (see Ref. 6.5), and will continue to be utilised through the further design development of the Project – in particular through the Project-specific landscape character assessment.</p>
	<p><i>Lighting:</i></p> <p><i>Paragraph 6.8.1: ‘There is a need to balance the provision of lighting... with the need to:</i></p> <ul style="list-style-type: none"> <li><i>• protect the natural and historic environment including wildlife and features of the natural environment such as tranquillity;</i></li> <li><i>• retain dark skies where appropriate;</i></li> <li><i>• prevent glare and respect the amenity of neighbouring land uses; and</i></li> <li><i>• reduce the carbon emissions associated with lighting.’</i></li> </ul>	<p>The LVIA will include consideration of effects of light pollution during the Project’s construction (noting that these are temporary) and operation (including maintenance), particularly where they may impact tranquillity and the visual amenity of people.</p>

## **National Policy – England**

### **National Planning Policy Framework (NPPF)**

- 6.2.14 Paragraph 5 of the NPPF (most recently updated by the Department for Levelling Up, Housing and Communities in 2024) (Ref. 6.11) confirms that the Framework does not contain specific policies for Nationally Significant Infrastructure Projects (NSIP), and that these are instead to be determined in accordance with the decision-making framework in the Planning Act 2008 and relevant NPS for major infrastructure.

## **Local Policy - Wales**

### **Powys Adopted Local Development Plan (2011-2026)**

- 6.2.15 The Powys Adopted Local Development Plan (Ref. 6.12) sets out the policies of Powys County Council (PCC) policies in relation to development and land use in Powys over a fifteen-year plan period from 2011 to 2026.
- 6.2.16 Policies within the Powys Local Development Plan that are relevant to landscape and visual amenity matters are set out in Table 6.5.

Table 6-5 – Relevant policies of the Powys Adopted Local Development Plan (2011-2026)

Policy Reference	Policy Context	How it will be considered
Policy DM4 - Landscape	<p><i>'Proposals for new development outside the Towns, Large Villages, small Villages and Rural Settlements defined in the Settlement hierarchy must not, individually or cumulatively, have an unacceptable adverse effect, on the valued characteristics and qualities of the Powys landscape. All proposals will need to:</i></p> <p><i>1. Be appropriate and sensitive in terms of integration, siting, scale and design to the characteristics and qualities of the landscape including its: topography; development pattern and features; historical and ecological qualities; open views; and tranquillity.</i></p>	<p>The likely impact upon the valued characteristics and qualities of the Powys landscape including its: topography; development pattern and features; historical and ecological qualities; open views; and tranquillity, was considered as part of the identification and appraisal of route options (see Ref. 6.5), and will continue to be taken into consideration through the further design development of the Project – in particular through the Project-specific landscape character assessment.</p> <p>The preliminary residual effects will be identified in this PEIR and will continue to be considered in the ES.</p>
	<p><i>2. Have regard to LANDMAP, Registered Historic Landscapes, adjacent protected landscapes (National Parks and Areas of Outstanding Natural Beauty) and the visual amenity enjoyed by users of both Powys landscapes and adjoining areas.</i></p>	<p>LANDMAP, the presence of Registered Historic Landscapes and protected landscapes, and the visual amenity of receptors in Powys landscapes and in adjoining areas was considered as part of the identification and appraisal of route options and will continue to be taken into consideration through the further design development of the Project. In particular,</p>



Policy Reference	Policy Context	How it will be considered
		<p>through the Project-specific landscape character assessment.</p> <p>The preliminary residual effects will be identified in this PEIR and will continue to be considered in the ES.</p>
	<p><i>Proposals which are likely to have a significant impact on the landscape and/or visual amenity will require a Landscape and Visual Impact Assessment to be undertaken.'</i></p>	<p>The LVIA contained in the ES will be used to communicate the potential significant effects of the Project.</p>
<p>Policy DM7 - Dark Skies and External Lighting</p>	<p><i>Development proposals involving external lighting will only be permitted when a lighting scheme has been provided that demonstrates that the lighting will not individually or cumulatively cause:</i></p> <ol style="list-style-type: none"> <li><i>1. Unacceptable levels of light pollution especially in the countryside.</i></li> <li><i>2. An unacceptable adverse effect on the visibility of the night sky.</i></li> <li><i>3. A nuisance or hazard to highway users including pedestrians, and local residents.</i></li> </ol>	<p>The LVIA will include consideration of effects of light pollution during the Project's construction (noting that these are temporary) and operation (including maintenance), particularly where they may impact tranquillity and the visual amenity of people.</p>
<p>Policy DM13</p>	<p><i>Development proposals must be able to demonstrate a good quality design and shall have regard to the qualities and amenity of the surrounding area, local infrastructure and resources.</i></p>	<p>The Project has had regard for the qualities and amenity of the surrounding area (including local distinctiveness and sense of place, and the amenity of users of established tourism assets and attractions and residents), through the identification and</p>



Policy Reference	Policy Context	How it will be considered
	<p><i>Proposals will only be permitted where all of the following criteria, where relevant, are satisfied:</i></p> <ol style="list-style-type: none"> <li><i>1. Development has been designed to complement and/or enhance the character of the surrounding area in terms of siting, appearance, integration, scale, height, massing, and design detailing.</i></li> <li><i>2. The development contributes towards the preservation of local distinctiveness and sense of place.</i></li> <li><i>3. Any development within or affecting the setting and/or significant views into and out of a Conservation Area has been designed in accordance with any relevant adopted Conservation Area Character Appraisals and Conservation Area Management Plans, or any other relevant detailed assessment or guidance adopted by the Council.</i></li> <li><i>4. The development does not have an unacceptable adverse impact on existing and established tourism assets and attractions.</i></li> <li><i>11. The amenities enjoyed by the occupants or users of nearby or proposed properties shall not be unacceptably affected by levels of noise, dust, air pollution, litter, odour, hours of operation, overlooking or any other planning matter.</i></li> </ol>	<p>appraisal of route options (see Ref. 6.5). These will continue to be taken into consideration through the further development of the Project - in particular through the Project-specific landscape character assessment and on-going detailed design.</p> <p>The preliminary residual effects will be identified in this PEIR and will continue to be considered in the ES.</p> <p>The consideration of impacts upon the setting and/or significant views into and out of a Conservation Area will be considered in detail within Chapter 9: Historic Environment. The LVIA will record, however, the increased sensitivity of receptors on account of the presence of the Conservation Area. Notwithstanding this, it must be noted that there are no Conservation Area Appraisals (in which important views from such areas are usually identified) for any of the Conservation Areas within the LVIA Study Area within Powys.</p>

## **Local Policy - England**

### **Shropshire Local Development Framework: Adopted Core Strategy 2011**

- 6.2.17 The Shropshire Local Development Framework: Adopted Core Strategy, March 2011 (Ref. 6.13) sets out the policies of Shropshire Council (SC) for the future use and development of land in Shropshire during the period up to 2026.
- 6.2.18 Policies within the Shropshire Local Development Framework: Adopted Core Strategy, March 2011 that are relevant to landscape and visual amenity matters are set out in Table 6.6.

Table 6-6 – Relevant policies with the ‘Shropshire Local Development Framework: Adopted Core Strategy, March 2011’

Policy Reference	Policy Context	How it will be considered
<p>Policy CS6 Sustainable Design and Development Principles</p>	<p><i>‘To create sustainable places, development will be designed to a high quality using sustainable design principles, to achieve an inclusive and accessible environment which respects and enhances local distinctiveness and which mitigates and adapts to climate change. This will be achieved by: ... ensuring that all development:</i></p> <ul style="list-style-type: none"> <li><i>• Protects, restores, conserves and enhances the natural, built and historic environment and is appropriate in scale, density, pattern and design taking into account the local context and character, and those features which contribute to local character, having regard to national and local design guidance, landscape character assessments...;</i></li> <li><i>• Contributes to the health and wellbeing of communities, including safeguarding residential and local amenity...;</i></li> </ul> <p><i>Is designed to a high quality, consistent with national good practice standards, including appropriate landscaping ... and taking account of site characteristics ... ;’</i></p>	<p>The Project has had regard for local distinctiveness, landscape character and visual amenity through the identification and appraisal of route options (see Ref. 6.5). These will continue to be taken into consideration through the further development of the Project - in particular through the Project-specific landscape character assessment and on-going detailed design. The latter will include consideration of the inclusion of site-appropriate landscape proposals to mitigate adverse effects.</p>
<p>Policy CS17 Environmental Networks</p>	<p><i>‘Development will identify, protect, enhance, expand and connect Shropshire’s environmental assets, to create a multifunctional network of natural and historic resources. This will be achieved by ensuring that all development:</i></p>	<p>The Project has had regard for the protection of Shropshire’s landscape and visual amenity-related environmental assets</p>

Policy Reference	Policy Context	How it will be considered
	<ul style="list-style-type: none"> <li>• <i>Protects and enhances the diversity, high quality and local character of Shropshire’s natural, built and historic environment, and does not adversely affect the visual, ecological, geological, heritage or recreational values and functions of these assets, their immediate surroundings or their connecting corridors;</i></li> <li>• <i>Contributes to local distinctiveness, having regard to the quality of Shropshire’s environment, including landscape, biodiversity and heritage assets, such as the Shropshire Hills AONB, the Meres and Mosses and the World Heritage Sites at Pontcysyllte Aqueduct and Canal and Ironbridge Gorge;</i></li> <li>• <i>Does not have a significant adverse impact on Shropshire’s environmental assets and does not create barriers or sever links between dependant sites;’</i></li> </ul>	<p>through the identification and appraisal of route options (see Ref. 6.5).</p> <p>This included consideration of the local landscape character and distinctiveness.</p> <p>These will continue to be taken into consideration through the further development of the Project - in particular through the Project-specific landscape character assessment and on-going detailed design.</p> <p>The preliminary residual effects will be identified in this PEIR and will continue to be considered in the ES.</p>

## Guidance

6.2.19 The preliminary assessment and the current design of the Project has been informed by the following guidance documents:

### **National Guidance – Wales and England**

#### **National Infrastructure Commission Design Group:**

- Design Principles for National Infrastructure, (2019) (Ref. 6.14).
- Project Level Design Principles Guidance, (2024) (Ref. 6.15).

#### **National Grid:**

- The Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines (2003) (Ref. 6.16).
- The Horlock Rules: Guidelines for design and siting of substations, (2009) (Ref. 6.17).

#### **Landscape Institute:**

- Guidelines for Landscape and Visual Assessment, 3<sup>rd</sup> Edition (GLVIA3), (2013) (Ref. 6.4).
- GLVIA3 Statement of Clarification 01/13, (2013) (Ref. 6.18).
- GLVIA 3 Statement of Clarification 01/14, (2014) (Ref. 6.19).
- GLVIA 3 Statement of Clarification 02/14, (2014) (Ref. 6.20).
- Landscape Character Reading List - Technical Information Note 05/15, (2015) (Ref. 6.21).
- Technical Information Note 08/15 - Landscape Character Assessment, (2016) (Ref. 6.22).
- Technical Guidance Note 06/19 - Visual Representation of Development Proposals, (2019) (Ref. 6.23).
- Residential Visual Amenity Assessment - Technical Guidance Note 02/19, (2019) (Ref. 6.24).
- Assessing Landscape Value Outside National Designations – Technical Guidance Note 02/21, (2021) (Ref. 6.25).
- Notes and Clarifications on Aspects of GLVIA3 - Technical Guidance Note 01/24, (2024) (Ref. 6.26); and
- Advice Note 01/11 Photography and photomontage in landscape and visual amenity impact assessment, (2019) (Ref. 6.27).
- National Guidance – Wales.

#### **Welsh Government:**

- Technical Advice Note 12 – Design, (2016) (Ref. 6.28).

### **Natural Resources Wales**

- Using LANDMAP in Landscape and Visual Assessments GN46, (updated 2024) (Ref. 6.29).

### **National Guidance – England**

#### **Ministry of Housing, Communities and Local Government**

- National Design Guide', (2021) (Ref. 6.30).
- Planning Practice Guidance, (*dates = various*) (Ref. 6.31) – *in respect of landscape character and National Parks.*

### **Natural England**

- An Approach to Landscape Character Assessment, (2014) (Ref. 6.32).

### **Local Guidance – Wales**

#### **Powys County Council**

- Supplementary Planning Guidance – Landscape, (2019) (Ref. 6.33).

## **6.3 Consultation and Engagement**

- 6.3.1 This section contains a summary of the landscape and visual amenity-related matters raised within the Environmental Impact Assessment (EIA) Scoping Opinion (and the Applicant's responses to these), and the subsequent engagement with stakeholders.

### **Response to the EIA Scoping Opinion**

- 6.3.2 The Scoping Opinion was received from the Planning Inspectorate (PINS) in March 2024. The landscape and visual amenity-related matters raised by PINS and other stakeholders and how these requirements will be addressed by the Applicant are set out in Table 6.7.

Table 6-7 - Summary of EIA Scoping Opinion in Relation to Landscape and Visual Amenity

ID	Matter	Inspectorate's comments	Project Response
3.2.1	<p>Impacts on the following receptors – construction and operation:</p> <p>Eryri/ Snowdonia National Park;</p> <p>Bryniau Clwyd a Dyffryn Dyfrdwy/ Clwydian Range and Dee Valley Area of Outstanding Natural Beauty (AONB)); and</p> <p>Shropshire Hills AONB.</p>	<p>The Inspectorate agrees that impacts on Snowdonia National Park and on National Landscapes are not likely to result in significant effects and can be scoped out of further assessment.</p>	<p>Noted. Such impacts have, therefore, been scoped out.</p>
		<p>NRW has highlighted (Appendix 2 of this Opinion) that the Scoping Corridor and Provisional Landscape and Visual Impact Assessment Study Area overlap with the area of search for the North East Wales National Park [(NEW-NP)] Designation Project. The Applicant is advised to keep the timescales for future designation under review and make efforts to agree the approach to assessment with NRW. Depending on the progress of this</p>	<p>Engagement with Natural Resources Wales (NRW) and a review of its NEW-NP 'evidence' documentation has been undertaken (see Table 6.8) to understand the reasoning behind the inclusion/or not, of the landscapes closest to the Project's draft Order Limits within the AoS; the proposed NEW-NP's emerging 'special qualities' and the 'forces for change' that may potentially shape its landscape.</p>

ID	Matter	Inspectorate's comments	Project Response
		<p>Project at the time of any DCO application, the ES should either include an assessment assuming a worst case where the area of search (AoS) has been designated as the NEW-NP, or assess impacts on any new National Park designation.</p>	<p>Engagement will be undertaken with stakeholders with regard to the proposed NEW-NP.</p> <p>The effect of the Project on the emerging 'special qualities' of the proposed NEW-NP has been considered in this preliminary assessment (see section 6.7 Preliminary Likely Significant Effects) and will be considered within the LVIA.</p>
3.2.2	<p>Impacts on Special Landscape Areas (SLA) – construction and operation</p>	<p>The Scoping Report states that the nearest SLAs are over 5km from the Scoping Corridor and that due to the intervening distance, intervening topography and the scale and nature of the Project, no effects are anticipated on the special qualities of SLAs.</p> <p>The Inspectorate agrees that impacts on SLAs are not likely to result in significant effects and can be scoped out of further assessment.</p>	<p>Noted. Such impacts have, therefore, been scoped out.</p>
3.2.3	<p>Cumulative effects on landscape and visual amenity receptors – construction</p>	<p>Paragraph 7.46 of the Scoping Report indicates that cumulative effects on landscape and visual receptors would only be considered in relation to the operational phase of the Project. Having regard to the nature and</p>	<p>Noted. Such impacts have, therefore, been scoped out.</p>



ID	Matter	Inspectorate's comments	Project Response
		<p>characteristics of the Project, the Inspectorate is content with this approach. Cumulative effects on landscape and visual receptors during construction of the Project can be scoped out.</p>	
3.2.4	<p>Impacts on the following receptors – construction and operation:            Visual receptors located beyond 3km of the Project (with the exception of any very high sensitivity receptors up to 5km); and            Visual receptors located outside the Zone of Theoretical Visibility (ZTV)</p>	<p>A 3km LVIA Study Area is proposed for the purposes of the ES and the Scoping Report proposes to scope out impacts on visual receptors beyond 3km (with the exception of any very high sensitivity receptors up to 5km), on the basis that effects are unlikely to be significant. Sufficient information, such as ZTV mapping, has not been provided to demonstrate that significant effects would not occur beyond 3km and as such, the Inspectorate is not in a position to scope this matter out of the ES. The ES should include an assessment of impacts on any visual receptors located beyond 3km of the Project which are likely to result in significant effects. The Inspectorate considers that the study area, ZTV and visualisations presented in the ES should represent the extent of the likely impacts from construction and operation of the</p>	<p>The ZTV has been shared with PCC and Canal and River Trust (CRT), and will be shared with Shropshire Council and NRW during the process of engagement with them, to agree matters such as the LVIA study area, receptors and representative viewpoint locations.</p> <p>More distant viewpoints up to 5km from the Project are considered where there is the potential for significant visual effects to arise beyond the 3km study area, for example where there are particularly sensitive visual receptors and where topography allows more far-reaching views.</p>

ID	Matter	Inspectorate's comments	Project Response
		<p>Project and all proposed structures including the collector substation. The Applicant should make effort to agree the study area and methodology for the ZTV with relevant consultation bodies including local authorities. On this basis, the Inspectorate agrees that any impacts on visual receptors located outside of the ZTV, once ground truthed by field work, are unlikely to result in significant effects. This matter can be scoped out of further assessment.</p>	

### Engagement Undertaken to date

6.3.3 Table 6.8 provides a summary of the engagement undertaken to inform the LVIA to date.

Table 6-8 – Summary of engagement undertaken.

Consultee	Date and method of engagement	Summary of issues raised	Consultee response / action taken
NRW (NEW-NP project team)	25/11/2024 (meeting held on MS Teams)	Discussion upon the consultation for the proposed NEW-NP.	<ul style="list-style-type: none"> <li>The proposed NEW-NP officers are aware of the Project and the 'potential conflicts' it and other developments pose to the potential designation of the proposed NEW-NP, and they indicated that would like to find a solution to them ahead of them issuing a potential Designation Order to the Welsh Government.</li> <li>The proposed NEW-NP officers requested location details of the Project.</li> <li>They encouraged a response to the consultation that particularly made observations upon: the individual proposed NEW-NP's Candidate Area 'Evaluation Areas'; and upon the relevance, or otherwise, of the NEW-NP's proposed 'Special Qualities'.</li> </ul>
CRT	25/11/2024 (email)	LVIA Technical Note sent to case officer.	The LVIA Technical Note outlining the proposed approach to assessment and containing the ZTV has been shared with CRT and we are awaiting response. The results of discussions with CRT regarding receptors and representative viewpoint locations will be captured within the ES.

Consultee	Date and method of engagement	Summary of issues raised	Consultee response / action taken
NRW (NEW-NP project team)	06/12/2024 (email and online-form)	Response to NRW's NEW-NP consultation.	<ul style="list-style-type: none"> <li>• Responses were made by the Applicant with regards to the:</li> <li>• Need for the Project.</li> <li>• NEW-NP Candidate Area containing parts of the zone designated as 'Pre-assessed Area for Wind Energy' in 'Future Wales: The National Plan 2040' in the vicinity of the Project</li> <li>• The fact that LANDMAP analysis assesses less attributes in the south-eastern Candidate Area compared to the Clwydian Range, Dee Valley, and Berwyn Range, which are noted for their 'Outstanding Scenic Beauty.'</li> <li>• Presence of landscapes within the Candidate Area (such as the 'Llanfyllin Valley and Hills', and 'Vyrnwy and Banwy Valley and Hills'), which display many of the attributes of landscapes that have been excluded from the proposed NEW-NP.</li> <li>• Validity of using trunk roads as the boundaries to the proposed NEW-NP when there are other, more suitable, defensible boundaries.</li> <li>• Justification for an alternative boundary to the NEW-NP which, more appropriately, uses topographical features, woodlands, and areas with higher LANDMAP landscape and visual quality such as Moel y Llyn and Dyfnant Forest, and which better aligns with landscape character and , LANDMAP assessments.</li> </ul>

Consultee	Date and method of engagement	Summary of issues raised	Consultee response / action taken
PCC (appointed landscape consultant)	17/12/2024	LVIA Technical Note sent to case officer.	<p>The LVIA Technical Note outlining the proposed approach to assessment and containing the ZTV has been shared with PCC and response is awaited.</p> <p>The results of discussions with PCC regarding the LVIA Study Area, receptors and representative viewpoint locations will be captured within the ES.</p>

## 6.4 Assessment Methodology and Significance Criteria

- 6.4.1 This section sets out the specific methodology to determine the preliminary effects of the Project upon landscape character and visual amenity. Subsequently, the overarching preliminary assessment methodology, as described in Chapter 5: Methodology has not been applied.
- 6.4.2 In order to do so, this section first describes how the LVIA's Study Area has been determined (including the preparation of the ZTV), then outlines the baseline data collected (including site surveys) that has informed the assessment, and further data to be collected / analysis to be undertaken.
- 6.4.3 The approach taken is based on GLVIA3 (and its supporting guidance / technical information notes) as set out in Section 6.3 Consultation and engagement. Collectively these promote a LVIA that is proportional to the scale and nature of the Project and the likely landscape and visual effects.

### Study Area

- 6.4.4 GLVIA3 (Ref. 6.4) provides guidance on defining an LVIA Study Area. Paragraph 5.2 of GLVIA3 states the Study Area should be '*...based on the extent of the Landscape Areas likely to be significantly affected either directly or indirectly*' or '*on the extent of the area from which the development is potentially visible, defined as the Zone of Theoretical Visibility, or a combination of the two.*'
- 6.4.5 Subsequently, the preliminary LVIA Study Area has been informed by the preparation of ZTV plans (see Figures 6.4, 6.5, 6.12 and 6.13) for the Project's operational above ground elements, i.e. the:
- Grug y Mynydd Collector Substation – with maximum dimensions of 250m x 150m and a maximum height - above ground levels of 13m (see Figures 6.4 & 6.13).
  - Steel lattice towers – which vary in height between 23m - 36m above ground levels and have an average height of approximately 28.5m (see Figures 6.5 & 6.13).
  - Lower Frankton Switching Station – with maximum dimensions of 250m x 150m and a maximum height- - above ground levels of 13m (see Figures 6.4 & 6.13).

- 6.4.6 A ZTV of the underground section was not prepared as there would be no permanent above-ground elements upon completion of the construction works.
- 6.4.7 A ZTV of the Cors y Carreg CESC (which has dimensions of 80m x 50m and which contains electricity transmission components that rise a maximum of 7m above ground levels) was not prepared as it lies immediately adjacent to the terminal OHL tower (so therefore forms part of the proposed towers ZTV – Figures 6.5 & 6.13).
- 6.4.8 A ZTV of the Project’s construction activity was not prepared as the effects of this are temporary and are not expected to exceed the height of the related-operational above ground elements.
- 6.4.9 The ZTVs were first prepared using OS Terrain 5 data as the digital terrain model (DTM), and so provide ‘Bare Earth’ visibility of the Project – see Figures 6.4 and 6.5. Following this, the digital layers of OS Vector Map Local (showing existing woodland) and OS MasterMAP (showing existing buildings) were added and extruded 15m and 6m above ground levels, respectively, to form the digital surface model (DSM). From this, the ‘Screening Features’ ZTVs, which indicate the more likely visibility of the Project, were prepared (see Figures 6.12 & 6.13).
- 6.4.10 The ZTVs do not, however, allow for the additional screening and filtering effects of smaller areas of existing trees and hedgerows which are found in many places throughout the LVIA Study Area. The ZTVs also do not account for any proposed mitigation planting that may occur as part of the Project.
- 6.4.11 The ZTVs have been prepared using a schedule of proposed tower heights (which range from 23m to 36m above ground levels) and the maximum sizes for the Collector Substation and Lower Frankton Switching Station i.e. 250m long, 150m wide and 13m, above ground level, in height.
- 6.4.12 The colours used on the ZTVs (and as set out in the legend of Figures 6.5 and 6.13) to indicate the potential visibility of the particular Project components show an increasing intensity to demonstrate how many towers may be theoretically visible.
- 6.4.13 The ZTVs will be refined and updated for the ES, taking into account any design changes following feedback on the PEIR from statutory consultation.
- 6.4.14 Based on the ZTV ‘Screening Features’ plans prepared (Figures 6.12 & 6.13) and experience of assessing other substation and OHL infrastructure of this scale (and the mechanisms to construct them), it is considered that significant effects

on landscape character and visual amenity are unlikely to occur beyond the 3km. This is partly because the ‘apparent height’ of the largest of the Project’s proposed towers (i.e. those that rise to 36m above ground levels) when observed by a visual receptor 3km away would only be approximately 7mm high in the landscape. At 5km they would be 4mm. These calculations have been derived from the work carried out by Cyngor Sir Ynys Mon / Isle of Anglesey County Council, Cyngor Gwynedd / Gwynedd Council and Parc Cenedlaethol Eryri / Eryri National Park entitled ‘Wind Turbines & Pylons - Guidance on the Application of Separation Distances from Residential Properties’ in 2014 (Ref. 6.34)

- 6.4.15 The 3km distance accords with NRW guidance ‘*GN46: Using LANDMAP in Landscape and Visual Impact Assessments*’ (Ref. 6.26), which states that a suitable study area for pylons and poles should be 2km for structures under 25m and between 2km to 5km for structures between 26m to 49m.
- 6.4.16 In order to determine the extent of the area from which the Project’s construction activity may also be potentially visible from, the LVIA Study Area (see Figure 6.1) used in this preliminary assessment comprises the area within a 3km offset on either side of the Project’s draft Order Limits.
- 6.4.17 More distant visual receptors up to 5km from the Project, however, will be considered where there is the potential for significant visual effects to arise due to particularly high receptor sensitivity (so satisfying Scoping Opinion comment 3.2.4 – as identified in Table 6.7). This could include highly sensitive viewpoints in nationally designated landscapes, or locations where the topography allows more far-reaching views of the Project. The location of these viewpoints will be informed by future analysis of the ZTV mapping supplemented by field work and will be agreed with stakeholders.
- 6.4.18 Visibility of the construction and operation (and maintenance) phases of the Project is likely to be considerably less where UGC is proposed i.e. between the Grug y Mynydd Collector Substation and the Cors y Carreg CSEC. Subsequently, the LVIA Study Area comprises a 1km buffer on either side of the Project’s draft Order Limits for the underground section of the route. Given, however, that the 3km offsets around the Collector Substation and the first tower after the UGC considerably overlap with each other, there is no reflection of the 1km offset from the UGC within the Project’s overall LVIA Study Area, as shown on Figure 6.1.
- 6.4.19 The LVIA Study Area will be reviewed in the light of feedback received during statutory consultation, ongoing site surveys, and following the updating of ZTVs



as the Project develops, in order to assist in capturing all potentially significant effects in the ES.

## **Baseline data collection**

### **Desk Study**

6.4.20 Baseline conditions of the Project were established during a desk study using the following sources:

#### **Mapping and data**

- Ordnance Survey (OS) Maps at 1:50,000, 1:25,000, 1:10,000 scales (Ref. 6.35).
- Aerial photography, Google Earth, and Google Maps Street View (Ref. 6.36).
- Open-source GIS data.
- Aerial imagery.
- OS Terrain5 data.
- OS MasterMAP data.

#### **Landscape Character Assessment Publications**

- NRW's National Landscape Character Area Profiles (NLCA), (Ref. 6.37).
- Powys Landscape Character Assessment, (2022) (Ref. 6.38).
- NE's National Character Areas (NCAs), (Ref. 6.39).
- Shropshire Landscape Character Typology, (2006) (Ref. 6.40).
- NRW'S LANDMAP, (Ref. 6.41).

#### **Designated Landscape Publications**

- The 'Summary of Evidence' prepared by NRW regarding the potential creation of the proposed NEW-NP, (Ref. 6.42).

### **Site Visits and Surveys**

6.4.21 Following the extensive field work carried out to inform the routeing scoping stages, further surveys have been undertaken to gain a greater understanding of the landscape character and visual amenity baseline of the LVIA Study Area and identify provisional viewpoint locations (see Table 6.9).

6.4.22 Field work included visits to the Project's draft Order Limits, settlements, recreational areas and routes. Field work has also been undertaken during different seasons to fully understand the maximum level of visibility as part of the landscape and visual baseline.

- 6.4.23 Further visits to the LVIA study area, particularly in respect of gathering data for the Project specific landscape character assessment and capturing photography from representative viewpoint locations at different times of year, will occur through 2025.

### **Environmental Impact Assessment methodology**

- 6.4.24 The general approach to identifying effects upon landscape character and visual amenity involves combining a consideration of the sensitivity of landscape and visual amenity receptors with the likely magnitude of impact upon them.
- 6.4.25 Landscape receptors are described in paragraph 3.21 of GLVIA3 (Ref. 6.4) as: ‘the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape in different areas.’
- 6.4.26 Visual amenity receptors are described in the same paragraph as: ‘the people who will be affected by changes in views or visual amenity at different places.’
- 6.4.27 The landscape and visual amenity receptors under consideration are set out in section 6.5 Baseline conditions.

### **Receptor Sensitivity**

- 6.4.28 Determining the sensitivity involves combining a consideration of the susceptibility of receptors to the type of change potentially brought about by the Project and the value of the receptor affected.

### **Landscape Receptor Sensitivity**

- 6.4.29 GLVIA3 (Paragraph 3.26) states that the sensitivity of the landscape character resource, and the receptors identified to be representative of this, should be determined by consideration of the ‘susceptibility’ of the receptor with the receptor’s relative ‘value’.

### **Landscape Receptor Susceptibility**

*‘Susceptibility’ is defined in GLVIA3 (paragraph 5.40) as ‘the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the Project without undue consequences of the baseline situation...’*

- 6.4.30 Reasoned professional judgement, guided by the indicative descriptions set out in Table 6.9, is used to determine the ‘susceptibility’ of landscape receptors.

Table 6-9 – Susceptibility of Landscape Receptors

Susceptibility (Indicative)	Description
<i>High</i>	The landscape receptor is less able to accommodate the type of change that the Project may bring about without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape offer limited opportunities for accommodating the change without its key characteristics being fundamentally altered, leading to a different landscape character.
<i>Medium</i>	The landscape receptor is partly able to accommodate the type of change that the Project may bring about without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape offer some opportunities for accommodating the change without its key characteristics being fundamentally altered.
<i>Low</i>	The landscape receptor is more able to accommodate the type of change that the Project may bring about without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape are resilient to being changed by the Project.

6.4.31 The ‘susceptibility’ that is determined is not absolute and relates to the type of change that is proposed. As a particular receptor may exhibit differing levels of ‘susceptibility’, a narrative commentary is provided to describe and justify the indicative grading levels ascribed to that, or the intermediate grading between them. Where intermediate ratings are given e.g. ‘low/medium’, this indicated a grading that is both less than ‘medium’ and more than ‘low’, rather than one which varies across the range.

6.4.32 The use of intermediate ratings in this way is consistent with the guidance set out in paragraph 3.27 of GLVIA3 (Ref. 6.4) and applies to all other similar categorisations across the rest of the methodology.

## Landscape Receptor Value

- 6.4.33 In contrast to ‘susceptibility’, the categorisation of landscape ‘value’ of a landscape receptor relates purely to its existing baseline, and as such is independent of any development proposal.
- 6.4.34 ‘Value’ is defined in the GLVIA3 (paragraph 5.19) as ‘...that relative value that is attached to different landscapes by society, bearing in mind that a landscape may be valued by different stakeholders for a variety of reasons...’
- 6.4.35 It goes on to state that ‘a review of existing landscape designations is usually a starting point in understanding landscape value, but the value attached to undesignated landscape value also needs to be carefully considered and individual elements of the landscape – such as trees, buildings or hedgerows may also have value. All need to be considered where relevant.’
- 6.4.36 Paragraph 5.20 of GLVIA3 and the Landscape Institute’s 2021 publication - ‘*Assessing Landscape Value Outside National Designations – Landscape Institute*’ (Ref. 6.25) indicates the information required to determine value of landscape receptors:
- Information about areas recognised by statute such as National Parks, National Landscapes (AONBs).
  - Local planning documents for local landscape designations.
  - Information on features such as Conservation Areas, Listed Buildings, tree Preservation Orders, important hedgerows, historic or cultural sites.
  - Art and literature, identifying value attached to particular areas or views.
  - Material on landscapes of local or community interest, such as local green spaces, village greens or allotments.
  - Any evidence that indicates whether the landscape has particular value to people that would suggest that it is of greater than community value.
- 6.4.37 Taking this, and the eight criteria identified within Box 5.1 of GLVIA3, into account, Table 6.10 provides an indicative grading of the factors contributing to landscape receptor value.

Table 6-10 – Landscape Receptor Value

Criterion (Italic text taken from GLVIA3, Box 5.1)	Grade	Description
<p>Landscape Quality / Condition</p> <p>‘A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.’</p>	<i>High</i>	Landscape in good condition with intact elements that are well-managed.
	<i>Medium</i>	Landscape is in fair condition with some intact elements and limited signs of management.
	<i>Low</i>	Landscape is in poor condition with few intact elements and limited signs of management.
<p>Scenic Quality</p> <p>‘The term used to describe landscapes that appeal primarily to the senses (primarily, but not wholly the visual senses).’</p>	<i>High</i>	Landscape is of high scenic quality, usually recognised in some form of landscape designation (local or national).
	<i>Medium</i>	Landscape is of moderate scenic quality.
	<i>Low</i>	Landscape is of low scenic quality.
<p>Rarity</p> <p>‘The presence of rare elements or features in the landscape or the presence of rare characteristics.’</p>	<i>High</i>	Landscape has several rare elements or characteristics.
	<i>Medium</i>	Landscape has few rare elements or characteristics.
	<i>Low</i>	Landscape has no rare elements or characteristics.
Representativeness	<i>High</i>	The area displays most of the characteristics of the corresponding identified area of distinct landscape character.

Criterion (Italic text taken from GLVIA3, Box 5.1)	Grade	Description
‘Whether the landscape contains a particular character and/or features or elements which are considered particularly important examples.’	<i>Medium</i>	The area displays some of the characteristics of the corresponding identified area of distinct landscape character.
	<i>Low</i>	The area displays few or none of the characteristics of the corresponding identified area of distinct landscape character.
Conservation Interest  ‘The presence of features of wildlife, earth science or archaeological or historical interest can add to the value of the landscape as well as having value in their own right.’	<i>High</i>	Landscape has several different conservation interests, often of national or international importance.
	<i>Medium</i>	Landscape has some conservation interests, often regional or local importance.
	<i>Low</i>	Landscape has few or no conservation interests.
Recreation Value  ‘Evidence that the landscape is valued for recreational activity where experience of the landscape is important.’	<i>High</i>	Landscape is highly valued for recreation, likely to have many PRow and potentially including some national trails or national cycle routes and/or a well-used destination public open space.
	<i>Medium</i>	Landscape is locally valued for recreation, likely to have PRow and cycle routes, and local/neighbourhood public open spaces.
	<i>Low</i>	Landscape is not greatly valued for recreation and is likely to be lacking in PRow or public open space.

<b>Criterion</b> <i>(Italic text taken from GLVIA3, Box 5.1)</i>	<b>Grade</b>	<b>Description</b>
<p>Perceptual Aspects</p> <p>‘A landscape may be valued for its perceptual qualities, notably wilderness and/or tranquillity.’</p>	<i>High</i>	Landscape has an overwhelming sense of aesthetic quality, low levels of human influence, and/or high sense of tranquillity/remoteness.
	<i>Medium</i>	Landscape has a moderate sense of aesthetic quality, moderate levels of human influence, and/or moderately tranquil/remote.
	<i>Low</i>	Landscape has a low degree of aesthetic quality, human influence is readily apparent and/or is not considered particularly tranquil or remote.
<p>Cultural Associations</p> <p>‘Some landscapes are associated with particular people, such as artists or writers, or events in history that contribute to perceptions of the natural beauty of the area.’</p>	<i>High</i>	Landscape has strong associations with people, literature or historic events that link directly with the characteristics and landscape elements/features of the area.
	<i>Medium</i>	Landscape has associations with people, literature or historic events that link with the characteristics and elements of the area but do not necessarily rely solely on them.
	<i>Low</i>	Landscape has no associations that link with the characteristics and landscape elements/features of the area.

6.4.38 Reasoned professional judgement, guided by a combination of the indicative descriptions in Table 6.10, is used to determine what the relative ‘value’ of each landscape receptor is, i.e. ‘high’, ‘medium’ or ‘low’, or, where necessary (as a particular landscape receptor may exhibit differing levels of ‘value’), intermediate grades between those. A narrative commentary is provided, to describe and justify the indicative ‘value’ level ascribed to each receptor.

### Overall Landscape Receptor Sensitivity

6.4.39 The ‘susceptibility’ and ‘value’ are considered, by use of reasoned professional judgement, to derive an overall ‘sensitivity’ for each receptor as graded per the criteria set out in Table 6.11 below.

Table 6-11 – Landscape Receptor Sensitivity

Landscape Sensitivity (indicative)	Description
<i>High</i>	The key characteristics and qualities of the landscape are highly susceptible to change from the type and scale of the project being assessed; and/or the value of the landscape is medium-high to high. Key landscape characteristics are highly vulnerable and unable to accommodate the project without significant consequences for character.
<i>Medium</i>	Some of the key characteristics and qualities of the landscape are susceptible to change from the type and scale of the project being assessed; and/or the value of the landscape is medium-low to medium. Although the landscape may be able to absorb some development if sensitively sited and designed, it may introduce new inappropriate characteristics or result in a change in character. Parts of the landscape may have potential to accommodate the project in some defined situations without significant character change or adverse effects.
<i>Low</i>	Key characteristics and qualities of the landscape are robust or degraded and are not susceptible to change; and/or the value of the landscape is low. The landscape is unlikely to be adversely affected by the type and scale of the project being assessed.



- 6.4.40 The 'sensitivity' that is determined is not absolute and relates to the type of change that is proposed. Reasoned professional judgement, guided by the indicative descriptions in Table 6.11, is used to determine what the relative 'sensitivity' of each landscape receptor is, i.e. 'high', 'medium' or 'low', or, where necessary (as a particular landscape receptor may exhibit differing levels of 'sensitivity'), intermediate grades between those. A narrative commentary is provided, to describe and justify the 'sensitivity' level ascribed to each receptor.

#### **Visual Receptor Sensitivity**

- 6.4.41 This part of the assessment is concerned with the potential effects that may occur to the visual amenity of specific groups of people (the visual receptors) from within the public domain of the LVIA Study Area (or the public domain outside of this – see response to Scoping Opinion item 3.2.4 set out in Table 6.12), as a result of the Project. This includes groups such as settlement communities (residents and visitors), recreational users of publicly accessible areas, people travelling through the LVIA Study Area, and those in their place of work, etc. The assessment of effects on settlement communities focuses on the visual amenity of users of public spaces and streets, though views from groups of dwellings will also be noted in the descriptions.
- 6.4.42 GLVIA3 states that the nature of visual amenity receptors, commonly referred to as their sensitivity, should be assessed in terms of the combination of the susceptibility of the receptor (to the type of change proposed from the baseline situation), with the value attached to the receptor.

#### **Visual Receptor Susceptibility**

- 6.4.43 As described in GLVIA3, the 'susceptibility' of visual receptors to changes in visual amenity is a function of the 'occupation or activity of people experiencing the view' and *'the extent to which their attention is focussed on the views and visual amenity they experience at particular locations.'*

Table 6-12 – Susceptibility of Visual Receptor

Criteria	Classification Visual Susceptibility	
	Occupation or activity	Degree of attention on the view
<i>Very High</i>	<p>Receptors engaged in specific recreational activities purely for enjoyment of the landscape.</p> <p>Communities where views contribute significantly to the landscape setting enjoyed by residents.</p> <p>People passing through the location by means of ‘active travel’ only.</p>	<p>Views are the paramount part of the experience of the landscape.</p>
<i>High</i>	<p>Receptors engaged in specific recreational activities largely for enjoyment of the landscape.</p> <p>Communities where views contribute largely to the landscape setting enjoyed by residents.</p> <p>People passing through the location by means of ‘active travel’ only.</p>	<p>Views are an important part of the experience of the landscape.</p>
<i>Medium</i>	<p>People undertaking recreational activities where the landscape around them is a moderate part of the enjoyment of the activity.</p> <p>Communities where views contribute only moderately to the landscape setting enjoyed by residents.</p> <p>People passing through the area largely using means of ‘active travel’.</p>	<p>Views are relevant to the experience or activity but not central to it.</p>

Criteria	Classification Visual Susceptibility	
	Occupation or activity	Degree of attention on the view
<i>Low</i>	<p>People undertaking recreational activities where the landscape around them is a minor part of the enjoyment of the activity.</p> <p>Communities where views contribute little to the landscape setting enjoyed by residents.</p> <p>People passing through the area in vehicles or on railway lines at relatively moderate speeds.</p>	<p>People are mostly focused on the activity being undertaken, rather than the view.</p>
<i>Very Low</i>	<p>People working where the setting or views of the surrounding landscape is not important to their work.</p> <p>Communities where views contribute very little to the landscape setting enjoyed by residents.</p> <p>People passing through the area in vehicles or on railway lines at relatively higher speeds.</p>	<p>People are focused on the activity being undertaken, rather than the view.</p>

- 6.4.44 The 'susceptibility' that is determined is not absolute and relates to the visual context that receptors are within. As a particular receptor may exhibit differing levels of 'susceptibility', a narrative commentary is provided to describe and justify the indicative grading levels ascribed to that or the intermediate grading between them.

#### **Visual Receptor Value**

- 6.4.45 GLVIA3 (paragraph 6.3.7) suggests that when considering the value of a visual receptor, account should be taken of the 'value attached to particular views, for example in relation to heritage assets, or through planning designations' and 'indicators of the value attached to views by visitors, for example through appearances in guidebooks or on tourist maps, provision for their enjoyment (such as parking places, sign boards and interpretative material) and references to them in literature or art...'
- 6.4.46 Drawn from the guidance within GLVIA3, this is recorded as 'very high', 'high', 'medium', 'low' or 'very low', as shown in Table 6-13Table 6.13. As a particular visual receptor may exhibit differing levels of 'value', a narrative commentary is provided to describe the professional judgement used to justify the indicative grading levels ascribed to that or the immediate grading between them.

Table 6-13 – Visual Receptor Value

Value (indicative)	Description
<i>Very High</i>	<p>Static views experienced by receptors are widely known/ well frequented / well promoted as a viewpoint and/or beauty spot and are located in publicly accessible parts of landscapes and/or cultural/historical sites of international / national value (e.g. UNESCO World Heritage Sites, National Parks, National Landscapes) or along National Trails.</p> <p>The cultural associations of the visual experience are recognised in art, literature or other media. The view relates to the experience of multiple other features, for example heritage assets.</p> <p>Note: the visual amenity assessment will consider people as receptors and not heritage asset itself. Impacts on heritage assets and their setting will be considered in Chapter 9: Historic Environment.</p>
<i>High</i>	<p>Un-promoted, but well known/ well frequented, static and/or sustained kinetic views experienced by receptors located in publicly accessible parts of landscapes and/or cultural/historical sites of international / national value (e.g. UNESCO World Heritage Sites, National Parks, National Landscapes) or along National Trails.</p> <p>The view relates to the experience of another feature, for example a heritage asset.</p>
<i>Medium</i>	<p>Static and / or sustained kinetic views experienced by receptors located in publicly accessible parts of landscapes and or cultural/historical sites of regional level (e.g. country parks and National Trust / Cadw / English Heritage attractions,) or along regional trails / long distance paths / promoted scenic drives or tourist routes. Or recognised by local authority planning designations.</p>
<i>Low</i>	<p>Views across the landscape which may be recognised at the local level, e.g., village design guides/statements / Neighborhood Plans or Conservation Area appraisals and include landscape features relevant at a local level.</p> <p>Static views from dense settlement areas of clear perceptual value (e.g. at village greens).</p>

Value (indicative)	Description
<i>Very Low</i>	Views from locations with no recognised local importance. Views which are characterised by common landscape features / with no variety or distinctiveness / are not identified or visited specifically for the view.

## Overall Visual Receptors Sensitivity

6.4.47 The 'susceptibility' and 'value' are considered together, by use of reasoned professional judgement, guided by the indicative descriptions in Table Table 6.14, to derive an overall 'sensitivity' for each receptor of Very High, High, Medium, Low, Very Low, or immediate grades between them. A narrative commentary will be provided, to describe and justify the 'sensitivity' level ascribed to each receptor.

Table 6-14 – Visual Receptor Sensitivity

Visual Sensitivity (indicative)	Description
<i>Very High</i>	Visitors and / or communities at locations which provide key: static and well frequented, promoted and known views (in media, art and/or literature) in areas / at sites / on trails of international / national value where views are the paramount part of the experience of the landscape / contribute significantly to a community's setting.
<i>High</i>	Visitors and / or communities at locations which provide static and / or sustained kinetic; well frequented, well known (in media, art and/or literature), but un-promoted views in areas / at sites / on trails of international / national value where views are an important part of the experience of the landscape / contribute largely to a community's setting.
<i>Medium</i>	Visitors and / or communities at locations which provide static and / or sustained kinetic views in areas / at sites / on trails of regional value where views are a moderately important part of the experience of the landscape / contribute moderately to a community's setting.
<i>Low</i>	Visitors and / or communities at locations which provide static and / or sustained kinetic views in areas / at sites / on trails of local value, where people have a limited opportunity to enjoy the view due either to the speed of travel or because their attention is elsewhere.
<i>Very Low</i>	Visitors and / or communities at locations which provide few static and / or sustained kinetic views and are in areas / at sites / on trails of very low value, where people have a limited

Visual Sensitivity (indicative)	Description
	opportunity to enjoy the view due either to the speed of travel or because their attention is elsewhere.

### **Magnitude of Impact upon Landscape and Visual Amenity Receptors**

- 6.4.48 This involves determining the nature of the impact likely to occur (termed in GLVIA3 as the 'magnitude of change') to the receptors as a result of the Project, with mitigation measures embedded in place.
- 6.4.49 A receptor's magnitude of impact should be assessed in terms of size and scale; geographical extent; and duration and reversibility. Judgements on these will be considered together to derive an overall magnitude of predicted change for each receptor, which will be determined through informed professional judgement guided by the indicative criteria set out in Table 6.15 and Table 6.16 below.
- 6.4.50 The magnitude of both landscape and visual change is described as large, medium-large, medium, medium-small, small, negligible or no change. The rationale in support of the assessment is set out for each receptor so that it is clear how each judgement has been made.



## Magnitude of Impact upon Landscape Receptors

Table 6-15 – Magnitude of Change to the Landscape Resource (based on GLVIA3)

Landscape Magnitude of Change (Indicative)	Description
<i>Large</i>	<p>Considerable change to the landscape receptor over a wide area, or an intensive change over a limited area with dramatic consequences for the elements, character and quality of the baseline.</p> <p>The project will form a dominant element, and post development the baseline situation will be fundamentally changed, potentially creating a different landscape character.</p>
<i>Medium-Large</i>	<p>Substantial change to the landscape receptor over a wide area, or a considerable change over a limited area, with consequences for the elements, character and quality of the baseline.</p> <p>The Project will form a prominent landscape element and post development the baseline situation will be substantially changed.</p>
<i>Medium</i>	<p>Noticeable change to the landscape receptor over a wide area, or a conspicuous change over a limited area, with some consequences for the elements, character and quality of the baseline.</p> <p>The Project will form a conspicuous landscape element and post development the baseline situation may be noticeably changed.</p>
<i>Medium-Small</i>	<p>Slight change to the landscape receptor over a wide area or noticeable change over a limited area, with few consequences for the elements, character and quality of the baseline landscape.</p> <p>The Project will be perceptible but post development, the baseline landscape may exhibit some differences but will be largely unchanged.</p>

Landscape Magnitude of Change (Indicative)	Description
<i>Small</i>	<p>Inconspicuous change to the landscape receptor over a wide area or slight change over a limited area, with very limited consequences for elements, character and quality of the baseline landscape.</p> <p>The Project will be just perceptible and post development, the baseline landscape will appear largely unchanged.</p>
<i>Negligible</i>	<p>Almost indiscernible change to the landscape receptor, with no consequences for elements, character and quality of the baseline landscape.</p> <p>The Project will be barely perceptible and post development, the baseline landscape will appear unchanged.</p>
<i>No Change</i>	<p>The assessment may also identify receptors upon which no landscape change is anticipated.</p>

### Magnitude of Impact upon Visual Receptors

Table 6-16 – Magnitude of Change to Visual Amenity (based on GLVIA3)

Visual Magnitude of Change (Indicative)	Description
<i>Large</i>	<p>The Project would form a dominant element in receptors’ visual experience and result in a dramatic change to the character and quality of the existing views.</p>

Visual Magnitude of Change (Indicative)	Description
	<p>Typically, this would be where a Project would be seen in very close proximity with a large proportion of the views affected by no or minimal screening/filtering or backclothing of views.</p> <p>The Project would dominate typical views and may also be long-term in duration and seen by many people.</p>
<i>Medium-Large</i>	<p>The Project would be a prominent feature in receptors' existing visual experience and result in a substantial change to the character and quality of existing views.</p> <p>Typically, this would be where a Project would be seen in close proximity with a large proportion of views affected and only a small degree of screening / filtering / backclothing.</p> <p>The Project would affect the main focus of typical views and may also be long-term in duration and seen by many people.</p>
<i>Medium</i>	<p>The Project would be a conspicuous element in receptor's visual experience and result in a noticeable change to the character and quality of the existing views.</p> <p>Typically, this would be where a Project would be seen at a relative moderate distance, in views where a moderate proportion of them is affected, and a moderate degree of screening / filtering / backclothing.</p> <p>The Project would be clearly visible and well-defined. It may be also medium-term in duration and seen by a relative moderate number of people.</p>
<i>Medium-Small</i>	<p>The Project would form a small part of receptors' visual experience and result in a slight change to the character and quality of the existing views.</p>

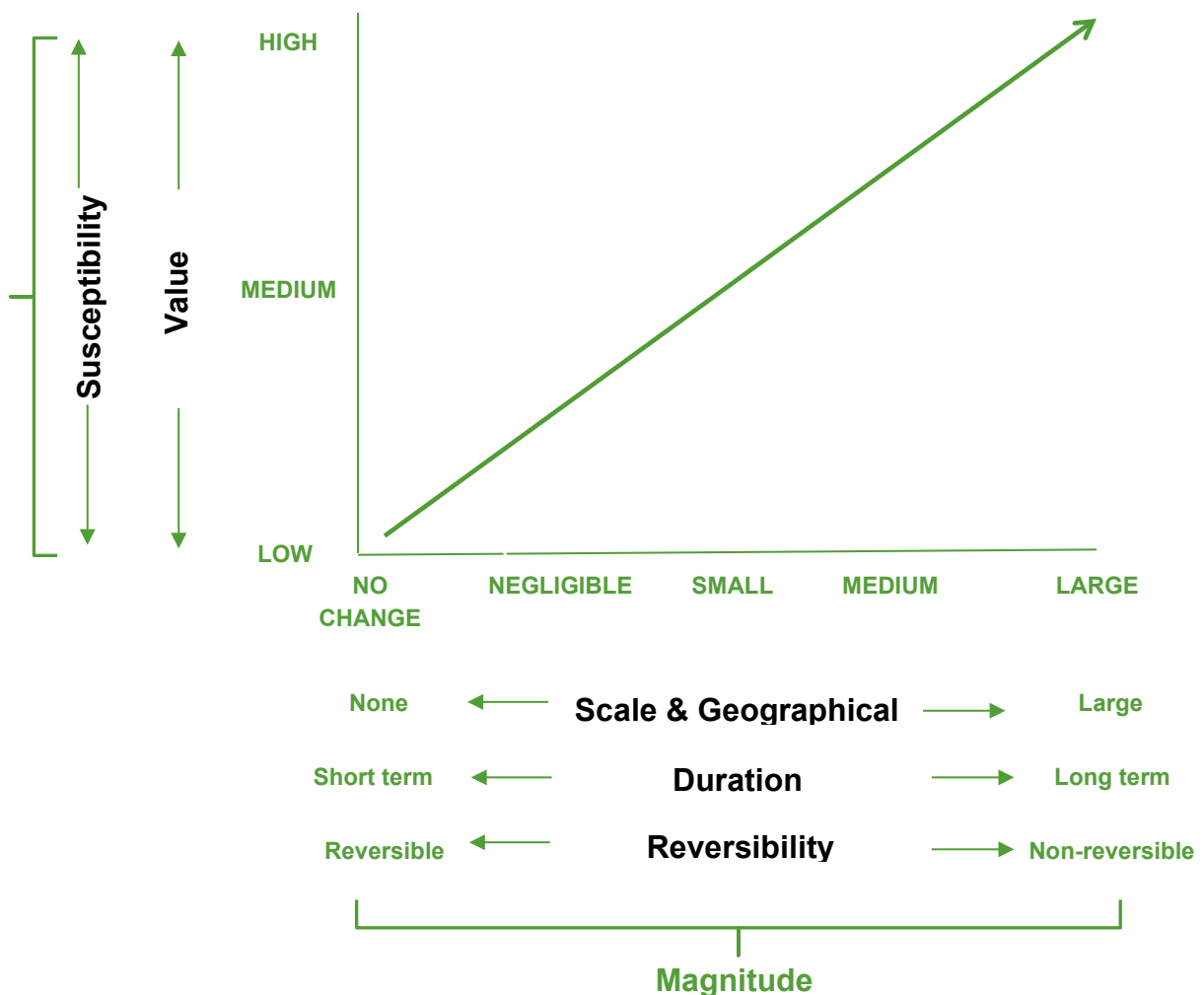
Visual Magnitude of Change (Indicative)	Description
	<p>Typically, this would be where a Project would be seen in distant views, where only a small proportion of the view is affected, where there is a relative high degree of filtering / screening / backclothing.</p> <p>The project would be visible but indistinct and / or partially obscured. It would be seen only briefly and by few people.</p>
<i>Small</i>	<p>The Project would be a perceptible part in receptors' visual experience but result in a relatively inconspicuous change to existing views.</p> <p>Typically, this would be where the Project would form a part of a long-distance panoramic views and / or where a very small proportion of views are affected, and / or where there is a relative high degree of filtering / screening / backclothing.</p> <p>The Project would be just discernible and / or partially obscured. It would be seen only briefly and by few people.</p>
<i>Negligible</i>	<p>Almost indiscernible change to receptors' visual experience, with no consequences for the character and quality of the existing views.</p> <p>The Project would be barely perceptible and post development, the baseline view would appear predominantly unchanged.</p>
<i>No Change</i>	<p>The assessment may identify areas where no visual change is anticipated.</p>

6.4.51 The criteria levels outlined in Table 6.15 and Table 6.16 are indicative only. In all cases, a narrative commentary is provided as part of this assessment to describe and justify the criteria levels ascribed to each receptor. In line with GLVIA3, no numerical or formal weighting system is applied and described in the assessment to determine the magnitude of impact.

### Significance Criteria

6.4.52 Judgements of sensitivity and magnitude are then combined (as indicatively demonstrated in Diagram 6.1) to form a judgement of the overall significance of effect.

Diagram 6-1 – Significance of Effect



6.4.53 Using Diagram 6.1 and the guidance in Paragraphs 5.56 and 6.44 of GLVIA3 the effects have been categorised as major, moderate, minor or negligible / no effect (or immediate grades between them).

- 6.4.54 Major, Major/Moderate and Moderate effects are considered significant in the context of the EIA Regulations, insofar that:
- Significant landscape effects are those where the Project creates a fundamental and irreversible alteration to a receptor's overall landscape character and/or key landscape characteristics (after taking into account the embedded mitigation measures). This could include small but critical changes to very highly sensitive landscapes but could also be comprehensive changes to areas with more limited landscape sensitivity.
  - Significant visual amenity effects are those where the Project becomes the defining element in a visual receptors' experience, considering the particular aspects of their sensitivity (after taking into account the embedded mitigation measures). This could include small irreversible but critical changes to the amenity of very highly sensitive visual receptors but could also be comprehensive irreversible changes to that experienced by visual receptors with more limited sensitivity.
- 6.4.55 Diagram 6.2 describes, indicatively, those effects are likely to be significant and those that are less likely to be significant.

Diagram 6-2 – Significance of Landscape and Visual Effects

	Effects less likely to be significant		Effects likely to be significant
Landscape Character Effect	The Project is reasonably well accommodated within the landscape and / or does not contrast with its key characteristics. It does not substantially undermine the special qualities or valued characteristics of the landscape. The effect is small in scale, short-lived and/or easily reversible.	-	The Project contrasts with the character of the landscape, forming a clear feature which substantially alters its valued characteristics and/or special qualities. The effect is large in scale, long-lasting and/or difficult to reverse.
Visual Amenity Effect	The Project is seen at locations where attention is less focussed on surroundings, affects relatively few receptors and/or is limited in value. The Project is generally well accommodated in views and the effect is typically small in scale, short-lived and/or easily reversible.	-	The Project is seen at locations where attention is focussed on surroundings, affects many receptors and views are of high value. The Project is a contrasting or clear element in the view and the effect is large in scale, long-lasting and/or difficult to reverse.

- 6.4.56 As indicated in paragraph 5.77 of GLVIA3 ‘where assessments of significance place landscape effects between these extremes, judgements must be made about whether or not they are significant, with full explanations of why these conclusions have been reached’.
- 6.4.57 The final decision on the level of effect and therefore significance ultimately relies on professional judgement which, in the assessment, is informed by the recognised guidance listed earlier in this section. All judgements will be explained by qualitative text justifying the criteria levels ascribed. This will draw out the important issues and describe the underlying rationale which have been used to determine the judgement.
- 6.4.58 It must be additionally noted that effects that are not considered to be significant should not be disregarded in the decision-making process.
- 6.4.59 The nature of effects will be described as positive (beneficial), negative (adverse) or neutral (where there the positive and negative effects of the Project equalise). The effects of transmission infrastructure upon landscape and visual amenity receptors have been assumed to be negative and have been determined as such within the preliminary assessment unless otherwise stated.
- 6.4.60 This preliminary assessment has been undertaken based on Project design information and baseline studies currently available. As such the assessment will be updated for the ES as the design evolves and further baseline data collected and analysed.

### **Methodology of Further Work**

- 6.4.61 The following additional surveys, data gathering, graphic representation and assessments will take place between the PEIR and the application for development consent:

#### **Local Landscape Character Assessment**

- 6.4.62 Preparation of a LVIA Study Area-specific local landscape character assessment (LLCA), as outlined in section 6.5 baseline conditions, to provide a consistent level of detail upon which the landscape character effects of the Project can be assessed.



### **Representative Viewpoint Photography**

- 6.4.63 Photography from the agreed representative viewpoints will be carried out in accordance with the Landscape Institute's '*TGN 06/19 Visual Representation of Development Proposals*' (Ref. 6.23).

### **Viewpoint and Visualisations**

- 6.4.64 Visualisations of the Project from representative viewpoints will be used to help consider and illustrate changes to visual amenity during operation (and maintenance) phase of the Project. NRW, PCC, Shropshire Council and CRT will be consulted with to determine those viewpoints upon which visualisations will be prepared.
- 6.4.65 Visualisations will be prepared in accordance with the Landscape Institute's '*TGN 06/19 Visual Representation of Development Proposals*' (Ref. 6.23) and will include a combination of wirelines and photomontages. In most cases, photomontage views will be provided to illustrate the likely appearance of the OHL overlaid on to a photograph. In some cases, it may be more appropriate to show a wireline view, depicting the scale of the development from a particular point of view, but not superimposed onto a photograph. This may be because clear photography may not be obtainable from a specific location due to screening or access issues.

### **Further Assessment within the ES**

- 6.4.66 The ES will present a full detailed assessment based upon the methodology set out in this chapter, but further developed where necessary setting out the factors which will be considered in forming a judgement on the significance of landscape and visual effects.

### **Landscape and Visual Amenity-related mitigation**

- 6.4.67 The ES will provide details of embedded mitigation measures which will be informed by the findings of the further baseline studies, LLCA and statutory consultation.

### **Residential Visual Amenity Assessment**

- 6.4.68 The Scoping Report stated that where the Project's towers or other infrastructure were proposed within 150m of a known residential property, a RVAA, prepared in accordance with the Landscape Institute's Technical Guidance Note (Ref. 6.24), will be undertaken to assess the effects upon the visual amenity of the occupants of individual residential properties (or groups of properties) within their homes

and/or curtilage. This is in contrast to the LVIA, which will assess the effects of the Project upon residential communities as a whole from the public domain.

- 6.4.69 The RVAA guidance recommends that the study area for consideration of such assessments 'should be determined on a case-by-case basis taking both the type and scale of Project, as well as the landscape and visual context, into account', but also notes that 'when assessing effects of overhead transmissions lines, generally only those properties within 100 – 150 metres of the finalised route are potentially considered for inclusion in a RVAA.' Despite being over five times greater than the average height of the proposed towers, the LVIA within the ES will take the precautionary approach of assessing all those that lie within 150m of a tower or other infrastructure.
- 6.4.70 Figure 6.6 shows those residential properties that lie within 150m of the Project's draft Order Limits (which includes, for example, areas of construction access). As the design of the Project progresses, following statutory consultation, and the precise location of towers and other infrastructure is defined, the number of properties for RVAA consideration is likely to be reduced.
- 6.4.71 Further refinement is likely following the initial fieldwork (undertaken from publicly accessible locations within the vicinity of the affected properties), as this may reveal that the existing screening properties of other (non-residential) buildings or vegetation are sufficient to de-scope a property or group of properties from requiring a RVAA.
- 6.4.72 A separate RVAA will be undertaken for each eventual scoped-in property, or group of properties. Should the effects breach the RVA threshold they would be reported on within the ES. If they are not judged to be above the threshold they are not considered to be material to planning decisions.

### **Assumptions and Limitations**

- 6.4.73 The following limitations and assumptions have been identified:
- The assessment has been undertaken based on the preliminary design information available at this time. This preliminary assessment is part of an iterative design process and will be updated for the ES as the design evolves.
  - All conclusions and assessments are, by their nature, preliminary. All assessment work has applied, and continues to apply, a precautionary approach in that where limited in-formation is available (in terms of the proposals for the Project and full baseline information), a realistic worst-case scenario is assessed.

- The preliminary assessment assumes that the proposed towers, overhead lines, substations and CSEC have not been fully erected (nor the underground cable buried), at the point in time that the effects of the construction phase are considered. Instead, it is assumed that construction phase impacts have arisen from the presence of temporary construction compounds (including vehicular parking and material storage) and haul roads, and working areas (including the presence and movement of plant).
- The preliminary assessment of construction phase effects assumes the worst-case scenario whereby the peak level of the Project's construction activity is taking place closest to the receptor being assessed.

## 6.5 Baseline Conditions

### Existing Baseline

#### General Location of the Study Area

- 6.5.1 As shown on Figure 6.1, the LVIA Study Area is located within both Wales and England, in the administrative areas of PCC (Wales) and Shropshire Council (England).
- 6.5.2 It extends north-east from the Esgair Cwmowen uplands near Foel Fawr and Cefn Coch, across the Afon Banwy river valley and the A458 road, between Llanefyl in the north and Llanfair Caereinion to the south. The elevated platform of Moel Bentyrch (approx. 330m above ordnance datum (AOD)) lies to the east of Llanerfyl and Rhiw-hiriath (approx. 310m AOD) lies to the west of Llanfair Caereinion. Further to the north-east, the LVIA Study Area includes the confluence of the Afon Banwy river valley and the valley of the Afon Efyrrwy / River Vyrnwy near Mathrafal and Newbridge.
- 6.5.3 From here, the Study Area tracks the length of the Dyffryn Miefod / Meiford Valley, and the landforms either side, as far as Llansantffraidd-ym-Mechain. The Project's route turns due east, from here, to Four Crosses, creating a Study Area that extends as far as Llanymynech Hill (approx. 225m AOD) in the north and the more gently rolling landforms to the west of Arddleen / Arddlin in the south.
- 6.5.4 As the Project's route crosses from Wales to England, it turns north-eastward again. From Llanymynech to Maesbury Marsh, the Study Area predominantly includes the relatively level floodplains of the River Morda, being bounded by the landform around the Sweeny Mountain (approx. 190m AOD) to the north-west and the very gently rolling landscape between Knockin and Kinnerley to the south-east.

- 6.5.5 From here, the Project's route continues north-eastwards into the lowland moors south of Ellesmere near Lower Frankton, following near to the Montgomery Canal.

### **Landscape-related Designations**

- 6.5.6 The Project is not within, or within the setting of any existing national landscape-designation i.e. a National Park and/or National Landscape (an AONB).

### **The Proposed North-West Wales National Park**

- 6.5.7 Approximately 6km of the Project's draft Order Limits (across 2no. separate sections) is located within the 'Candidate Area' of the proposed NEW-NP (see Figure 6.2). From south to north, the first section lies between Pont Hen-fail within the floodplain of the Afon Banwy, adjacent to the A458, and Pencaedu, at the crossing of the A495 and B4382 – a distance of 4.3km. The second section of the route enters the proposed NEW-NP near Mathrafal and exits at Maesnewydd – a distance of 2.0km.
- 6.5.8 The proposed NEW-NP lies within 3km of the draft Order Limits for a further 14km approximately, from Maesnewydd in the south-west to near Pent-y-geulan in the north-east. This predominantly encompasses the valley of Dyffryn Meifod, but also includes the area at the confluence of the River Vyrnwy and River Tanat between Llansantffraidd-ym-Mechain and Llanymynech.
- 6.5.9 NRW have prepared a suite of evidence base documents to support the consideration of the proposed NEW-NP (Ref. 6.42) and within this is a 'Special Qualities Report'. Page 32 of the report states that the proposed NEW-NP's special qualities will '*help define the vision and objectives for enhancing the purposes of designation*' and that they are of '*most value in the planning context, especially in relation to development occurring in the setting.*' In essence, they define what makes a National Park distinctive and explain why it is of value to the nation. They are also the key factors against which the impacts of a development will be assessed.
- 6.5.10 The Special Qualities Report (page 9) also states that NRW's criteria for 'special qualities' '*embrace distinctive characteristics* [the unique components that give the area its sense of place] *and key features* [the landmarks, locations, or landscape features that are regionally distinctive]."
- 6.5.11 Page 4 of the report lists the distinctive characteristics as:
- Extensive views.

- Tranquillity and remoteness.
- Cultural associations.
- Welshness
- Sense of place.

6.5.12 The key features it lists are:

- Recreation.
- Scheduled monuments.
- Dark night skies.
- Tourism.
- Historic and heritage assets.
- Wildlife.
- The old extraction industries.

6.5.13 The Special Qualities Report (page 5) used these factors to propose a range of special qualities grouped under six headings. Page 14 of the accompanying '*Forces for Change for NEW-NP Area of Search Report*' elaborates on the definition of these:

- **1) An inspiring space that promotes mental, physical and spiritual health and wellbeing:** '*this reflects the experience of the landscape and the access and recreation opportunities it provides.*';
- **2) A place with cohesive communities and distinctive settlement patterns:** '*this reflects the cultural associations, events and language of the area, both past and present.*';
- **3) A story of human interaction with the landscape over millennia:** '*this reflects the historic features of the landscape, including physical features and associations.*';
- **4) A home to internationally and locally important species and habitats:** '*this reflects the diversity of species and habitats both in protected areas and in the wider landscape.*';
- **5) A distinctive, complementary and contrasting landscape:** '*this reflects the key landscape features and experiential qualities of the area.*'; and
- **6) A landscape providing benefits beyond its borders:** '*this reflects the ecosystem services provided by the area.*'

- 6.5.14 The *'Forces for Change for NEW-NP Area of Search Report'* also describes the current and emerging factors that the identified Special Qualities are vulnerable to, and which the designation of the proposed NEW-NP would assist in addressing. Those relevant to the Vyrnwy Frankton Project are:
- *'Climate change: An overarching force for change which can impact the other four categories of force for change. This includes climate change mitigation, such as renewables and energy efficiency, and adaptation actions to increase resilience'*; and
  - *'Built development and infrastructure: A force for change which encompasses a range of built development including new housing, business, industry, retail, transport, renewable energy and grid infrastructure minerals, quarrying and waste.'*
- 6.5.15 With indirect reference to the OHL part of the Project, paragraph 9.38 of the *'Forces for Change for NEW-NP Area of Search Report'* acknowledges that:
- 'New development can visually alter perceptions of scenic quality, tranquillity, wildness, remoteness and escape from the more settled and developed lowlands. Where development is poorly related to its landscape context, it can draw unnecessary attention and create a sense of visual impact. Long views are noted from many of the upland ridges, hillslopes and places elevated slightly above adjacent valleys. The scale and siting of new built features such as agricultural buildings, telecoms, power lines and wind turbines can draw the eye and interrupt views.'*
- 6.5.16 Page 61 of the report acknowledges, however, that the proposed NEW-NP will *'already contain existing powerlines at its narrowest point near Rhualt and travel through the area down the Morwynion Valley'*, and along the Afon Alun valley. The presence of other power lines within, and/or near to other parts of proposed NEW-NP is not sufficiently detracting to exclude them from the recommended Candidate Area.
- 6.5.17 Paragraph 5.27 of the report acknowledges that electricity *'transmission infrastructure is [both] a key potential force for change, and critical in achieving net zero'*. This point is repeated in the discussion on page 4 of the report which notes that it is an element required to help address climate change factor: *'To address climate mitigation and to meet net zero, the landscape will need to accommodate new development, infrastructure and changes in land cover. For example renewable energy development and transmission.'*

## Landscape Baseline

6.5.18 Existing landscape character assessment publications exist at national and regional levels across the LVIA Study Area.

### National Level

#### ***Wales - NRW's National Landscape Character Assessment***

6.5.19 NRW's National Landscape Character Assessment defines the distinct landscapes at a national level across the entirety of Wales (Ref. 6.33). Those National Landscape Character Areas (NLCAs) that the LVIA Study Area crosses through are shown on Figure 6.3, and comprise the following:

- NLCA 17 - Bryniau a Dyffrynnoedd Trefaldwyn/Montgomeryshire Hills and Vales.
- NLCA 19 - Dyffryn Hafren/Severn Valley.
- NLCA 21 - Bryniau'r Canolbarth/Cambrian Mountains.

#### ***England – NE's National Character Area Profiles – L6***

6.5.20 NE's National Character Area Profiles defines the distinct landscapes at a national level across the entirety of England (Ref. 6.39). Those National Character Areas (NCAs) that the LVIA Study Area crosses through are shown on Figure 6.3, and comprise the following:

- NCA 63 - Oswestry Uplands.
- NCA 61 - Shropshire, Cheshire and Staffordshire Plain.

### Reginal Level

#### ***Wales - The Powys County Council Landscape Character Assessment – L6***

6.5.21 The PCC Landscape Character Assessment (PCC-LCA) (Ref. 6.38) provides a more detailed classification of the landscape within the south-western half of the LVIA Study Area. Those Landscape Character Areas identified within the PCC-LCA that the LVIA Study Area crosses through are shown on Figure 6.3 and comprise the following:

- No. 5 – Dyfnant Forest/Llanbrynmair moors.
- No. 6 – Tanat Valley.
- No. 7 – Llanfyllin Farmland.
- No. 8 – Severn Farmlands.
- No. 9 – Pont Logel.
- No. 10 – Guilsfield.



- No. 12 – Tregynon.
- No. 14 – Banwy Valley.
- No. 17 – Esgair Cwmowen.
- No. 19 – Carno Valley.

### ***England - The Shropshire Council Landscape Character Typology***

6.5.22 The Shropshire Council Landscape Character Typology (SLCT) (Ref. 6.40) provides a more detailed classification of the landscape within the north-eastern half of the LVIA Study Area. Those Landscape Character Types identified within the SLCT that the LVIA Study Area crosses through are shown on Figure 6.3 and comprise the following:

- High Enclosed Pasture.
- Upstanding Enclosed Commons.
- Pasture Hills.
- Upland Smallholdings.
- Settled Pastoral Farmland.
- Principal Settled Farmland.
- Riverside Meadows.
- Estate Farmlands.
- Lowland Moors.
- Enclosed Lowland Heaths.
- Sandstone Hills.
- Wooded Hills and Farmlands.
- Timbered Plateau Farmlands.
- Principal Timbered Farmlands.
- Wooded River Gorge.
- Wooded Estatelands.
- Urban.

### **Other Assessments**

#### ***Wales – LANDMAP***

6.5.23 NRW's LANDMAP (Ref. 6.41) is an online resource which provides analysis of existing landscape character, quality and condition across Wales, as well as data upon existing geology, habitats and cultural elements. It comprises five themed datasets, known as 'aspects', comprising the following:

- Geological Landscape.
- Landscape Habitat.
- Visual and Sensory.



- Historic Landscape.
- Cultural Landscape.

6.5.24 The LANDMAP ‘*aspect area*’ citations note an ‘*overall evaluation*’ for each area, which is based on a scale ranging from ‘*low*’ (‘*little or no importance*’) to ‘*outstanding*’ (‘*nationally important*’). The criteria which inform the overall evaluation judgement for each aspect are noted in the NRW LANDMAP methodologies for each respective aspect area. LANDMAP ‘*aspect areas*’ and their respective ‘*overall evaluations*’ within the LVIA Study Area are shown on Figures 6.7 to 6.11.

### ***The Proposed North-West Wales National Park***

6.5.25 Amongst the suite of evidence base documents prepared by NRW to support the consideration of the proposed NEW-NP (Ref. 6.42), is a landscape evaluation of the original ‘*Area of Search*’. The ‘*Evaluation Report*’ divides the ‘*Area of Search*’ into 32no. distinct Evaluation Areas (EA) and assesses each against NRW’s criteria for:

- Being areas of nationally important and recognised natural beauty; and
- For offering opportunities for the enjoyment of open-air recreation.

6.5.26 Those ‘*Evaluation Areas*’ identified within the Evaluation report that the LVIA Study Area crosses through are shown on Figure 6.3 and comprise the following:

- EA26 - Tanat Valley.
- EA29 - Vyrnwy and Banwy Valley and Hills.
- EA30 - Severn Farmlands North.
- EA32 - Severn Farmlands South.

### **Local Landscape Character Assessment**

6.5.27 This preliminary LVIA relies upon the existing published landscape character assessments described above.

6.5.28 Given, however, the variety in their: publication dates, scale of character areas, and depth of character area descriptions, there is a need for a consistent level of landscape character assessment to form the basis of the LVIA.

6.5.29 Subsequently, a LVIA Study Area-specific LLCA will be prepared to provide a consistent level of detail upon which the landscape character effects of the Project can be assessed.

- 6.5.30 It is expected that the LLCA will provide a similar level of character area scale found within LANDMAP, but will contain a greater level of detail about the key characteristics, qualities and values of each.
- 6.5.31 The following steps outline the process of the LLCA's preparation:
- Review the information set out in the national level landscape character assessments for Wales and for England, the regional assessments for Powys and for Shropshire, and LANDMAP, as well as landscape designations, to define a provisional set of LLCA character areas.
  - Desktop study of key natural and physical influences upon the landscape including geology, soils, land-use, settlement pattern and cultural associations.
  - Site work to ground-truth desk-top findings, gather information (such as the aesthetic/perceptual aspects, condition and consistency), and capture representative character photos (for inclusion in the LLCA report) from each initial LLCA Character Area.
  - Revision of the LLCA Character Areas (if necessary), and the writing-up of their descriptions, key characteristics, qualities and values.
  - Seek feedback from NRW, PCC and Shropshire Council upon draft LLCA Character Areas, via online meeting.
  - Amend the definition of the LLCA character areas and finalise LLCA report and mapping.
- 6.5.32 The LLCA will be undertaken in accordance with the current landscape character assessment preparation guidance prepared by the Landscape Institute (Ref. 6.21), NRW (particularly regarding LANDMAP) (Ref. 6.29), NE (Ref. 6.32) and NatureScot (Ref. 6.43).
- 6.5.33 The effect on landscape character upon each LLCA will be assessed within the LVIA within the ES.

### **Visual Baseline**

- 6.5.34 The visual receptors within the LVIA Study Area that may experience significant effects arising from the Project are:
- **Settlement communities:**
    - Views experienced from the public domain by the communities (i.e. residents and visitors) of (but not limited to) the settlements of: Cefn Coch, Llangyniew, Meifod, Llansantffraidd-ym-Mechain, Trefnanney, Four Crosses, Llanymynech, Pant, LLandysilio, Crickheath, Maesbrook, Maesbury Marsh, Osbaston, Woolston, Domgay, West Felton, Queen's

Head, Whittington, West Felton, Queens Head and Lower Frankton, and areas of scattered dwellings (please see section 6.4 Assessment methodology and significance criteria for details of the RVAA which will assess the effects upon occupants of individual residential properties (or groups of properties), that lie within 150m of the Project's towers or other infrastructure, within their homes and/or curtilage)

- **People engaged in outdoor recreation:**
  - Users of National Trails: Offa's Dyke Path and Glyndwr's Way;
  - Users of promoted long distance paths: Cross Britain Way, Watt's Dyke Way, Oswestry Round and Shropshire Way;
  - Users of PRoW; and
  - Users of land designated within the Countryside and Rights of Way Act, 2000 (CRoW) (Ref. 6.44) for 'open access' / Registered Common Land, comprising (but not limited to) Mynydd Bryngwyn, Mynydd Fron-goch, Mynydd y Gribin, Mynydd Tyn-y-Illan, Moel Bentyrch, Coed Ffridd-y-Drum, Ffridd Mathrafal, Gwern Ddu, Spout Wood, Cobham's Garden, Broniarth Hill, Cae Cwn, Allt y Main, and Moel y Main.
- **People at promoted tourist destinations and recreation areas** where views of the surrounding area are an important contributor to visitor experience, comprising (but not limited to):
  - Users of the Montgomery Canal and Shropshire Union Canal (Llangollen Branch) and their towpaths;
  - Visitors to Llanymynech Hill Camp / Heritage Area;
  - Visitors to the British Ironworks Centre / Shropshire Sculpture Park;
  - Visitors to Llanymynech Horse Trials facility;
  - Plas Cerrig Equestrian facility;
  - Radford Equestrian facility;
  - Visitors to Red Ridge Centre;
  - Users of Oswestry Golf Club; and
  - Cobra Rugby, Meifod;
- **People staying at campsites, caravan parks and other large holiday accommodation** (i.e. approx. >50no accommodation guest spaces) comprising (but not limited to):
  - Visitors to: Dolgead Hall Caravan Park, Bromwich Park Farm Weddings and Accommodation, Pen-Y-Pentre holiday accommodation, Valley View Holiday Park, Vyrnwy Caravans Ltd, WildconTENTment, Bryn Vyrnwy Holiday Park, Tanat Holiday Park, Trederwen Caravan Park, Woodside Holiday Park: and Fir View Yan Y Ffridd Holiday Park; and
- **People travelling along the road and rail network**, comprising (but not limited to): the A5, A458, A483, A490 and A495, as well as B roads, railways and other major and minor roads.

- 6.5.35 Seventeen indicative preliminary viewpoints representing these visual receptors were set out within the Scoping Report. With the subsequent benefit of the Project's draft Order Limits and the ZTV, as well as initial feedback provided by consultees, this original list has been reviewed and updated. In some instances, viewpoints have been relocated due to variations between the scoping corridor and the draft route alignment being considered in this preliminary assessment.
- 6.5.36 Table 6.17 and Figure 6.6 'Visual Receptors and Preliminary Viewpoint Locations' set out a list of proposed representative viewpoints (labelled A, B, C etc.) that have been used in the preparation of this preliminary LVIA.
- 6.5.37 The viewpoint list will be built upon and/or amended following further engagement with stakeholders (including PCC, Shropshire Council, NRW and CRT). The selection of final viewpoints will then be informed by this engagement, as well as further ZTV analysis and field work.

Table 6-17 – Preliminary LVIA Viewpoints (those which were viewpoints within the Scoping Report are marked SC1 etc.)

VP label	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
A	Bryngwyn	299961	302166	<i>View to proposed Collector Substation from Restricted Byway Powys 236/2/1.</i> Representative of views experienced by users of Public Rights of Way (PROWs) and CRoW Act Open Access Land / Registered Common Land upon Mynydd Bryngwyn, Mynydd Fron-goch, Mynydd y Gribin, and Mynydd Tyn-y-Illan .
B	Red Ridge Centre, Dwyriw	301408	303506	View to proposed Collector Substation from Public Footpath 236/13/1, near to the Red Ridge Centre.
C	Cors y Carreg	303181	305221	View to proposed Cable End Sealing Compound, overhead lines (OHL) and towers 001-015, from junction of unclassified road U2336 and public footpath 225/113/4.
D	Rhiwhiriaeth	307387	305901	View to proposed OHL and towers 005-023 from junction of unclassified road U2336, with restricted byway 225/185/5.
E (SC1)	Hen-efail	306823	308539	View to proposed temporary construction compound, OHL and towers 009-032, from junction of A458 with public footpath 225/215/1.
F (SC2)	Moel Bentyrch	305699	309635	<i>View to proposed OHL and towers 009-032, from public footpath 225/224/4.</i>

VP label	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
				Representative of views experienced by users of the open access land (such as Moel Bentyrch and Coed Ffridd-y-Drum), larger-scale tourist accommodation/recreation areas (such as Dolgead Hall Caravan Park), PROWs and local roads, and residents of scattered dwellings upon elevated higher ground overlooking the valleys of Afon Einion and Afon Banwy.
G	Penyffordd	310430	310555	<p><i>View to proposed OHL and towers 031-043 from junction of C2032 and restricted byway 232/28/1, and public footpath 232/26/1.</i></p> <p><i>Representative of views experienced by residents of scattered dwellings and users of PRoW and local roads between the valleys of Afon Banwy and River Vyrnwy/Afon Efyrnwy (between Moel Bentyrch, Ffridd Mathrafal and Llanfair Caereinion).</i></p>
H (SC6)	Mathrafal	312841	310452	<p><i>View to proposed temporary construction compound, OHL and towers 043-052, from public footpath 232/14/1.</i></p> <p><i>Representative of views experienced by users of the open access land (such as Ffridd Mathrafal, Gwern Ddu, and Spout Wood), larger-scale tourist accommodation/recreation areas (such as Fir View Yan Y Ffridd Holiday Park), PROWs and local roads, and residents of scattered dwellings upon elevated higher</i></p>

VP label	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
				<i>ground overlooking the valleys of and Afon Banwy and River Vyrnwy/Afon Efyrynwy.</i>
I (SC7)	Gwely Gyddfarch / Dyffryn Hill	314617	312943	<p><i>View to proposed OHL and towers 053-068, from public footpath 249/96/1.</i></p> <p><i>Representative of views experienced by users of the open access land (such as Cobham's Garden, Broniarth Hill, Cae Cwn, Allt y Main, Moel y Main), promoted trails (such as the Glyndwr's Way National Trail and the Cross Britain Way long distance path), PRowS and local roads, and residents of scattered dwellings upon elevated higher ground overlooking the River Vyrnwy/Afon Efyrynwy valley.</i></p>
J (SC8)	Broniarth Bridge, Meifod	315534	313003	<p><i>View to proposed OHL and towers 053-070, from public footpath 249/96/1.</i></p> <p><i>Representative of views experienced by users of the promoted trails (such as the Glyndwr's Way National Trail and the Cross Britain Way long distance path), PRowS and local roads, and residents of Meifod and scattered dwellings upon the base of the Dyffryn Meifod / Meifod valley.</i></p>
K	Ystym Colwyn	318806	316416	<i>View to proposed temporary construction compound, OHL and towers 066-085, from the junction of the A495 and restricted byway 249/57/2.</i>

VP label	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
				<i>Representative of views experienced by users of PRowWs, local roads and the A495, and residents of the scattered dwellings at the north-eastern end of the Dyffryn Meifod / Meifod valley.</i>
L	Trefnanney	320199	315452	<p><i>View to proposed OHL and towers 066-088, from the junction of Gaer Lane and unclassified road U2192 at the edge of the settlement of Trefnanney.</i></p> <p><i>Representative of views experienced by users of PRowWs, local roads, and residents of the scattered dwellings and small settlements upon the rolling landscape between the north-east end of Dyffryn Meifod / Meifod valley and Llansantffraid-ym-Mechain.</i></p>
M (SC11)	Llansantffraid-ym-Mechain	322039	320359	<p><i>View to proposed OHL and towers 085-104 from Church Lane in the settlement of Llansantffraid.</i></p> <p><i>Representative of views experienced by residents of Llansantffraid.</i></p>
N (near to SC12)	Carreghofa Locks	325395	320248	<p><i>View to proposed OHL and towers 095-191, from the bridge of unclassified road U2049 over the Montgomery Canal at Carreghofa Locks.</i></p> <p><i>Representative of views experienced by users of the Montgomery Canal, promoted trails (such as the Offa's Dyke Path National</i></p>



VP label	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
				<i>Trail), PRowS and local roads, and residents of scattered dwellings.</i>
O (SC13)	Llanymynech Hill	326678	321829	<p><i>View to proposed OHL and towers 100-130, from the junction of PRowS 207/29(A)/1 and 207/29/4.</i></p> <p><i>Representative of the views experienced by recreational users of Llanymynech Hill (including PRow and Offa's Dyke Path National Trail, Llanymynech Heritage Area and Nature Reserve), the community of Llanymynech and the residents of the scattered dwellings upon its south-facing slopes.</i></p>
P	Pant	327497	322228	<p><i>View to proposed OHL and towers 112-132, from the junction of A483 with Station Road, Pant.</i></p> <p><i>Representative of the views experienced by the community of Pant and users of The Shropshire Way and Wat's Dyke Way (long distance paths), the A483 and local roads.</i></p>
Q	Four Ashes, Maesbrook	329770	321220	<p><i>View to proposed OHL and towers 119-130, from the junction of B4398 with public footpath 0301/17/1.</i></p> <p><i>Representative of the views experienced by the community of Maesbrook, and the residents of the scattered dwellings and users of PRowS and local roads through the River Morda floodplain.</i></p>

VP label	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
R	Crickheath	329602	323101	<p><i>View to proposed temporary construction compound, OHL and towers 121-134, from the junction of the unclassified road with public footpath 0307/190/2.</i></p> <p><i>Representative of the views experienced by the community of Crickheath, and the residents of the scattered dwellings and users of Montgomery Canal (under restoration), The Shropshire Way and Wat's Dyke Way (long distance paths), PRowS and local roads through the River Morda floodplain to the west of the Project.</i></p>
S	Osbaston	331519	323097	<p><i>View to proposed OHL and towers 129-140, from the junction of B4396 and Whip Lane with public footpath 0311/41/1.</i></p> <p><i>Representative of the views experienced by the residents of the scattered dwellings, and users of the PRowS and local roads east of the Project between Maesbrook and Knockin.</i></p>
T	Woolston Bank	332083	324146	<p><i>View to proposed temporary construction compounds, OHL and towers 129-150, from the junction of Maesbrook Road and Main Road.</i></p> <p><i>Representative of the views experienced by the community of Maesbury Marsh and residents of the scattered dwellings, and users of the PRowS and local roads west of the Project between Crickheath and Oswestry.</i></p>

VP label	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
U (SC15)	Main Road, Maesbury Marsh	331367	325011	<p><i>View to proposed temporary construction compounds, OHL and towers 134-144, from the junction of Main Road with the Montgomery Canal.</i></p> <p><i>Representative of the views experienced by the community of Woolston and residents of the scattered dwellings, and users of the Montgomery Canal, promoted trails such as the Shropshire Way and Wat's Dyke Way (long distance paths), PRowS and local roads east of the Project between Knockin and West Felton.</i></p>
V	Near West Felton Parish Church	334051	325195	<p><i>View to proposed OHL and towers 140-151, from the junction of public footpaths 0311/72/1 and 0311/69/2 near to West Felton Parish Church.</i></p> <p><i>Representative of the views experienced by the community of West Felton and residents of the scattered dwellings, and users of the PRowS and local roads west of the Project between Woolston and Queen's Head.</i></p>
X (near to SC16)	Shropshire Sculpture Park	333030	327565	<p><i>View to proposed OHL and towers 150-163, at the junction of public footpaths 0307/78/1, 0307/80/1 and 0307/79/1 near to the entrance to the Shropshire Sculpture Park.</i></p> <p><i>Representative of the views experienced by the visitors to the Shropshire Sculpture Park and residents of the scattered</i></p>

VP label	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
				<i>dwelling, users of the A5, PRoWs, and local roads at the north-east end of the route of OHL and towers.</i>
Y	Heath Houses, Montgomery Canal	335102	327635	<p><i>View to proposed temporary construction compounds, OHL and towers 150-158, at the junction of public footpath 0311/56A/1 with the Montgomery Canal.</i></p> <p><i>Representative of the views experienced by visitors to the Montgomery Canal, users of the Shropshire Way long distance path, PRoWs, and local roads between West Felton and Lower Frankton.</i></p>
Z	Junction of Montgomery Canal and Shropshire Union Canal (Llangollen Branch), Lower Frankton	336985	331894	<p><i>View to the proposed Lower Frankton Switching Station, OHL and towers (165-to the Switching Station), at the junction of the Shropshire Union Canal (Llangollen Branch) and a local road at Lower Frankton.</i></p> <p><i>Representative of the views experienced by the community of Lower Frankton, residents of the scattered dwellings between here and Whittington, users of the Shropshire Union Canal (Llangollen Branch), users of the Shropshire Way long distance path, PRoWs, and local roads at the north-east end of the route of OHL and towers.</i></p>

VP label	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
AA	Near to St Andrew's Church, Welsh Frankton	336368	333126	<p><i>View to proposed Lower Frankton Switching Station, OHL and towers (165-to-172), at the junction of A495 and a local road at Welsh Frankton.</i></p> <p><i>Representative of the views experienced by the community of Welsh Frankton, residents of the scattered dwellings between here and Whittington, users of A495, PRowS and local roads.</i></p>

## Future Baseline

- 6.5.38 The future baseline relates to known or anticipated changes to the current baseline in the future that have been considered as part of this preliminary assessment, and which will be assessed as part of the Project in the ES.

### Ash Dieback

- 6.5.39 Ash (*Fraxinus excelsior*) trees within the LVIA Study Area may be affected by ash dieback. This is a disease of ash trees caused by a fungus of Asian origin called *Hymenoscyphus fraxineus* (*H. fraxineus*; formerly called *Chalara fraxinea*). The disease causes leaf loss and crown dieback in affected trees. Studies by NRW, PCC, Defra and the Forestry Commission confirm the presence of ash dieback in the LVIA Study Area. The future baseline therefore assumes that there will be loss of ash trees in the long term across the LVIA Study Area, but that other tree species will occupy gaps created by this in the short term, and overall levels of vegetation will remain like existing.

### Planned Developments

- 6.5.40 Planned developments that are not yet present in the landscape but are at various stages in the allocation and/or consenting process, could lead to changes in the current landscape and visual amenity baseline within the LVIA Study Area - see Chapter 20: Cumulative.

## 6.6 Preliminary Mitigation Measures

- 6.6.1 The mitigation (through avoidance and / or reduction) of possible adverse effects on landscape character and visual amenity, where reasonably practicable, have been a key part of the Project's design process up to this point.
- 6.6.2 Table 6.18 outlines the key embedded landscape and visual amenity-related mitigation measures that have been incorporated into the design to date and those that are planned as part of ongoing design development. Their detailed descriptions should be read the cross-environmental matters covered by Chapter 2: Project Description.
- 6.6.3 The mitigation described will be updated in the ES with any additional measures that may have been developed as part of the further stages of design.

- 6.6.4 Due to the nature of OHL and its associated infrastructure, the Project is likely to give rise to effects on landscape and visual amenity receptors that cannot be fully mitigated.

Table 6-18 – Embedded Mitigation Measures

Project Element	Mitigation	Delivery mechanisms
<p>Routeing of the OHL</p>	<p>As outlined in the Green GEN Vyrnwy Frankton Routeing and Consultation Document (Ref. 6.5), the routeing of the Project’s OHL (as shown on the Consultation Plans: 331201487-STN-22-XX-LAY-OH-003) has been planned, as far as practicable, to avoid sensitive landscape character and visual amenity receptors and to accord with the principals of the Holford Rules (Ref. 6.16).</p> <p>This included consideration of matters such as its relationship with existing topography, vegetation (i.e. for back-clothing of OHL and reducing its impact in views), and other OHL.</p> <p>The refinement to this route, that has been undertaken between publication of the Routeing and Consultation Document and the preparation of the PEIR, has also considered such matters.</p> <p>Any further refinement to the Project’s OHL alignment following statutory consultation will have equal regard for these matters too.</p>	<p>Including (but not limited to):</p> <ul style="list-style-type: none"> <li>• Ongoing design development;</li> <li>• Updates to Consultation Plans (331201487-STN-22-XX-LAY-OH-003) identified in the Work Plans to be included as part of the application for development consent; and</li> <li>• Descriptions within the ES and within the other relevant documents to be included as part of the application for development consent.</li> </ul>
<p>Routeing of the UGC</p>	<p>As outlined in the Green GEN Vyrnwy Frankton Routeing and Consultation Document (Ref. 6.5), the routeing of the Project’s UGC (as shown on the Consultation Plans: 331201487-STN-22-XX-LAY-OH-003) has been planned, as far as practicable, to avoid sensitive landscape character and visual amenity receptors – in particular to minimise loss of woodland, trees and hedgerows. Additionally, the route has been</p>	<p>Including (but not limited to):</p> <ul style="list-style-type: none"> <li>• Ongoing design development;</li> <li>• Updates to Consultation Plans (331201487-STN-22-XX-LAY-OH-003) identified in the Work Plans to be included as part of the application for development consent; and</li> </ul>



Project Element	Mitigation	Delivery mechanisms
	<p>designed to follow, where possible, the access tracks for the proposed Llyn Lort Energy Park thereby potentially reducing the need for vegetation clearance during the construction of this element.</p> <p>Refinement to this route (that has been undertaken between publication of the Routeing and Consultation Document and the preparation of the PEIR), in order to determine the Project's UGC route alignment has also considered such matters.</p> <p>Any further refinement to the Project's UGC alignment following statutory consultation will have equal regard for it too.</p>	<ul style="list-style-type: none"> <li>• Descriptions within the ES and within the other relevant documents to be included as part of the application for development consent.</li> </ul>
<p>Siting of the Grug y Mynydd Collector Substation, Cors y Carreg CSEC and Lower Frankton Switching Station</p>	<p>As outlined in the Green GEN Vyrnwy Frankton Routeing and Consultation Document (Ref. 6.5), the siting of the Project's Collector Substation, CSEC and Switching Station (as shown on the Consultation Plans: 331201487-STN-22-XX-LAY-OH-003) have been planned, as far as practicable, to avoid sensitive landscape character and visual amenity receptors and to accord with the principals of the Horlock Rules (Ref. 6.17).</p> <p>This included consideration of matters such as:</p> <ul style="list-style-type: none"> <li>• Avoiding siting near to settlements, areas of outdoor recreation (whose users have a particular focus on the surrounding landscape), related designations and PRoW;</li> </ul>	<p>Including (but not limited to):</p> <ul style="list-style-type: none"> <li>• Ongoing design development;</li> <li>• Updates to Consultation Plans (331201487-STN-22-XX-LAY-OH-003) identified in the Work Plans to be included as part of the application for development consent; and</li> <li>• Descriptions within the ES and within the other relevant documents to be included as part of the application for development consent.</li> </ul>

Project Element	Mitigation	Delivery mechanisms
	<ul style="list-style-type: none"> <li>• Existing topography and vegetation i.e. to maintain key element of landscape character, and provide potential screening to the facility; and</li> <li>• Ensuring sufficient space around the facility for planting and / or mounding – for screening.</li> </ul> <p>Refinement to their siting (that has been undertaken between publication of the Routeing and Consultation Document and the preparation of the PEIR), in order to determine the Project’s layout has also considered such matters.</p> <p>Any further refinement to the siting of this infrastructure following statutory consultation will have equal regard for it too.</p>	
<p>Further design of Grug y Mynydd Collector Substation, Cors y Carreg CSEC and Lower Frankton Switching Station</p>	<p>The development of the design of the Collector Substation, CSEC and Switching Station will include measures to help visually integrate the facilities into their settings, and reduce effects upon sensitive visual receptors:</p> <ul style="list-style-type: none"> <li>• Proposals for landscape planting, that are characteristic in their form (i.e. woodland, tree belts, scrub blocks, hedgerows, shelterbelts) and the native species selected to the surrounding landscape;</li> <li>• Earthworks; and</li> <li>• Consideration of the form, finish and colour of any buildings, enclosures, cabins, surfacing and fencing in order to suitably integrate them into their landscape setting.</li> </ul>	<p>Including (but not limited to):</p> <ul style="list-style-type: none"> <li>• Ongoing design development;</li> <li>• Updates to Consultation Plans (331201487-STN-22-XX-LAY-OH-003) identified in the Work Plans to be included as part of the application for development consent;</li> <li>• Landscape reinstatement / mitigation plans for submission as part of the application for development consent;</li> <li>• Descriptions within the ES and within the other relevant documents to be included as</li> </ul>

Project Element	Mitigation	Delivery mechanisms
	<p>Should consent be granted, the landscape proposals will be further developed by the Main Works Contractor as part of the detailed design and a final version will be submitted for approval as required by the development consent order.</p>	<p>part of the application for development consent; and.</p> <ul style="list-style-type: none"> <li>Detailed design plans for approval as required by the development consent order.</li> </ul>
<p>Location of temporary construction compounds, working areas, accesses and laydown areas.</p>	<p>The siting of the Project’s temporary construction compounds, working area, access and laydown areas (as shown on the Consultation Plans: 331201487-STN-22-XX-LAY-OH-003) have been planned, as far as practicable, to avoid sensitive landscape character and visual amenity receptors – in particular to minimise loss of woodland, trees and hedgerows.</p> <p>Any further refinement to the siting of these areas following statutory consultation will also have consideration for these matters.</p>	<p>Including (but not limited to):</p> <ul style="list-style-type: none"> <li>Ongoing design development; and</li> <li>Updates to Consultation Plans (331201487-STN-22-XX-LAY-OH-003) identified in the Work Plans to be included as part of the application for development consent.</li> </ul>
<p>Construction practices</p>	<p>An Outline Construction Environmental Management Plan (OCEMP) will be developed describing the good practice measures that would be undertaken during the construction of the Project. With regards to the mitigation effects on landscape and visual amenity this could include:</p> <ul style="list-style-type: none"> <li>The placement of particularly visually incongruous elements of the temporary construction compounds away from sensitive receptors;</li> <li>Limitations to the heights of temporary construction compound offices/ cabins and material storage;</li> </ul>	<p>Including (but not limited to):</p> <ul style="list-style-type: none"> <li>An OCEMP will be submitted as part of the application for development consent;</li> <li>Descriptions within the ES and within the other relevant documents to be included as part of the application for development consent; and</li> </ul>

Project Element	Mitigation	Delivery mechanisms
	<ul style="list-style-type: none"> <li>• Tree protection in accordance with ‘<i>British Standard (BS) 5837:2012: Trees in relation to design, demolition, and construction</i>’ (Ref. 6.45); and</li> <li>• The restrictions that limit the use of lighting to:               <ul style="list-style-type: none"> <li>– Practices that accord to the Institution of Lighting Professionals 2021 publication: ‘<i>Guidance Note 1 for the reduction of obtrusive light</i>’ (Ref. 6.46);</li> <li>– The minimum quantity and illumination necessary to ensure safety;</li> <li>– Those positioned and directed to only where it is required so as to minimise light spillage and to minimise glare to surrounding sensitive receptors;</li> <li>– Luminaries that direct light below the horizontal, in order to minimise sky glow; and</li> <li>– Areas where, if possible, suitably designed physical barriers e.g. fencing and existing vegetation could be used to obscure or reduce the effects of lighting on sensitive receptors.</li> </ul> </li> </ul> <p>Should consent be granted, the OCEMP would be further developed by the Main Works Contractor as part of the detailed design and a final version would be submitted for approval as required by the development consent order. An Environmental Manager / Environmental Clerk of Works would be employed to ensure such mitigation is adhered to.</p>	<ul style="list-style-type: none"> <li>• Updating of the OCEMP into the CEMP for approval as required by the development consent order.</li> </ul>

Project Element	Mitigation	Delivery mechanisms
Operational Lighting at the Grug y Mynydd Collector Substation, Cors y Carreg CSEC and Lower Frankton Switching Station	<p>Lighting proposals will be prepared that set out:</p> <ul style="list-style-type: none"> <li>• That the use of lighting at the Grug y Mynydd Collector Substation, Cors y Carreg CESC and the Lower Frankton Switching Station would only be during exceptional circumstances where operational maintenance access is required during night/low visibility periods;</li> <li>• The detail of LED luminaries which incorporate directable light output to minimise light pollution; and</li> <li>• The use of PIR motion sensors, instead of lighting, at all access gates in order to minimise visual intrusion outside the periphery of the sites;</li> <li>• Areas where, if possible, suitably designed physical barriers e.g. fencing and existing / new vegetation could be used where possible and appropriate to obscure or reduce the effects of installed artificial light sources on sensitive receptors.</li> </ul>	<p>Including (but not limited to):</p> <ul style="list-style-type: none"> <li>• Descriptions within the ES and within the other relevant documents to be included as part of the application for development consent; and.</li> <li>• Lighting design plans for approval as required by the development consent order</li> </ul>
Landscape Reinstatement	<p>The preparation and implementation of landscape reinstatement plans that set out the proposals for the:</p> <ul style="list-style-type: none"> <li>• Re-ground contouring of disturbed land, where appropriate; and</li> <li>• The re-planting / re-seeding of all vegetation removed during the construction phase (apart from where there is requirement for to maintain an overhead line safety clearance or underground cabling clearance)</li> </ul>	<p>Including (but not limited to):</p> <ul style="list-style-type: none"> <li>• Landscape reinstatement / mitigation plans for submission as part of the application for development consent;</li> <li>• Descriptions within the ES and within the other relevant documents to be included as part of the application for development consent; and.</li> </ul>

Project Element	Mitigation	Delivery mechanisms
	<p>The proposals will be:</p> <ul style="list-style-type: none"> <li>• Characteristic in their form (i.e. woodland, tree belts, scrub blocks, hedgerows, shelterbelts) to that removed;</li> <li>• Use native species which reflect the existing species present in and surrounding the vegetation which would be lost; and</li> <li>• Be undertaken at the earliest opportunity in the planting season following completion of the construction works.</li> </ul>	<ul style="list-style-type: none"> <li>• Detailed design plans for approval as required by the development consent order.</li> </ul>
Maintenance	<p>The on-going maintenance and management of implemented landscape works to ensure they fulfil their intended objectives.</p> <p>An Outline Landscape Management Plan, setting out the procedures and prescriptions for this (plus setting out the requirement for a period of the replacement of dead, dying, diseased and defective planting / seeding) of will be developed for submission with the application for development consent</p> <p>This would be further developed by the Main Works Contractor as part of the detailed design and a final version would be submitted for approval as required by the development consent order.</p>	<p>Including (but not limited to):</p> <ul style="list-style-type: none"> <li>• An Outline Landscape Management Plan submission as part of the application for development consent;</li> <li>• Descriptions within the ES and within the other relevant documents to be included as part of the application for development consent; and.</li> <li>• Detailed Landscape Management Plan for approval as required by the development consent order.</li> </ul>

## 6.7 Preliminary Likely Significant Effects

- 6.7.1 This section outlines the preliminary assessment of effects of the Project during construction and operation (and maintenance) phases upon landscape designations, landscape character receptors and visual amenity receptors.
- 6.7.2 The sources of effect during construction and operation (and maintenance) phases are first identified and then the range of effects that are likely to occur to the receptors, that have so far been identified, is discussed using, as a basis, the assessment methodology set out in section 6.4 Assessment methodology and significance criteria.
- 6.7.3 A full and detailed assessment will be carried out for the purposes of the ES. The LVIA, within this, will also be re-considered in light of the responses that are received to the statutory consultation, as well as the further survey work and consultation outlined in section 6.8 Next steps.
- 6.7.4 This preliminary assessment is based upon the current Project design information (including mitigation) prepared at this stage of the design process. This information is iterative and will be updated for the ES as the design evolves. The assessment will, therefore, be re-considered within the ES once more detailed information is available.
- 6.7.5 With regards to mitigation, the assessment reflects the IEMA guidance on delivering proportionate EIA (IEMA 2018) (Ref. 6.47), insofar that the assessment assumes that relevant embedded, standard and additional measures are in place.
- 6.7.6 The embedded, good practice and essential mitigation currently assumed to be in place is based on matters set out in Section 6.6 Preliminary Mitigation Measures, of this chapter (for example, that vegetation removed during construction would be reinstated, except where there are planting restrictions associated with requirements to maintain an overhead line safety clearance and over underground cables) as well as use of professional judgement to predict the likely planting-related mitigation that has not been developed yet.
- 6.7.7 This assessment, however, applies the precautionary approach, in that where limited information is available (in terms of the proposals for the Project and full baseline information), a realistic worst-case scenario is assessed.
- 6.7.8 The preliminary assessment is carried out upon the following scenarios:
- Construction phase - when construction activity is at its peak;

- Operation (and maintenance) phase (Year 1) – a winter’s day in the year that the Project becomes fully operational, once mitigation planting (where required) has been implemented; and,
- Where appropriate, operation (and maintenance) phase (Year 15) – when the mitigation planting has sufficiently established to a level that fulfils its function.

6.7.9 The effects upon landscape and visual receptor will be set out using the geographical sections of the development as defined in Chapter 2: Project Description.

- Grug y Mynydd Collector Substation.
- UGC Section: Grug y Mynydd to Cors y Carreg.
- CSEC near Cors y Carreg.
- OHL Section 1: Cefn Coch to Llangyniew.
- OHL Section 2: Llangyniew to Meifod.
- OHL Section 3: Meifod to Llansantffraid-ym-Mechain.
- OHL Section 4: Llansantffraid-ym-Mechain to Llanymynech.
- OHL Section 5: Llanymynech to Lower Frankton.
- Lower Frankton Switching Station

### **Sources of Effect During Construction**

6.7.10 The presence of partially constructed infrastructure and the undertaking of construction activities within the Project’s draft Order Limits would result in landscape and visual effects during the construction phase.

6.7.11 As set out in Chapter 2: Project Description, it is estimated that the construction phase would take approximately two years in total (from Q4 2027 to Q4 2029). This preliminary assessment assumes that much of the construction work would be undertaken concurrently, but would be completed in phases, and therefore that potential landscape and visual effects would be short to medium-term.

6.7.12 Effects occurring during the construction phase would be reversible unless otherwise stated, as construction works would cease on completion. Some effects may be longer lasting e.g., removal of woodland, trees or hedgerows.

6.7.13 The changes arising from the construction of the Project would be primarily associated with:

- Vegetation clearance:
  - OHL: removal of a 30m wide swathe (15m either side of the OHL). Vegetation would be removed to ground level or sufficient height to meet electrical clearances plus an allowance for growth;



- UGC: removal of a 60m wide swathe of vegetation (as shown on the Consultation Plans: 331201487-STN-22-XX-LAY-OH-003);
  - Construction Access: typically within a 10m wide swathe of vegetation removal along the length of each haul road, with wider sections (for the creation of bell-mouth openings) where they meet existing roads and public highways;
  - Grug y Mynydd Collector Substation and Lower Frankton Switching Station: vegetation clearance will be required for the footprints and their associated temporary construction compounds; and
  - Cors y Carreg CSEC: will only require vegetation clearance for its footprint.
- The installation of approximately 4.8km of UGC using open-cut techniques;
  - Construction of temporary construction compounds as shown on Consultation Plans: 331201487-STN-22-XX-LAY-OH-003) and detailed in Chapter 2: Project Description.
  - Movement of associated construction vehicles and personnel on existing roads and the temporary haul roads and other tracks.
  - Provision of watercourse crossings.
  - Protection of users of existing highways with scaffold and netted road crossing structures.
  - Excavation and construction of towers foundations.
  - Delivery, assembly, and erection of towers with mobile cranes.
  - Pylon conductor ‘stringing’ and commissioning of the overhead line.
  - Removal of temporary infrastructure and reinstatement, including landscape works (hedgerows would be replanted, however, trees would not be replanted above the UGC and vegetation would be managed to ensure it does not affect the buried cables.
  - Lighting during construction if work extends into hours of darkness i.e. the first 1.5 morning hours (07:00 to 08:30) and 5.5 evening hours (13:30 to 19:00).

## **Sources of Effects During Operation (including maintenance) Phase**

- The key changes arising from the operation (and maintenance) of the Project are set out fully in Chapter 2: Project Description. The purposes of this preliminary LVIA, they would include the long-term presence of. A new 132kV Collector Substation at Grug y Mynydd, with maximum footprint dimensions of 250m x 150m and a maximum height - above ground levels of 13m, plus maximum 13m high steel column fixed exterior lighting.
- A new CSEC at Cors y Carreg (located immediately adjacent to a terminal OHL tower) with maximum footprint dimensions of 80m x 50m and with electricity transmission components rising up to 7m above ground levels, 13m

high steel column fixed exterior lighting, and an access road from the local highway.

- A new 132kV OHL supported upon approximately 171no. 'L7' design steel lattice towers (which have three cross arms on each side) and which vary in height between 23m - 36m above ground levels and have an average height of approximately 28.5m), between the Cors y Carreg CSEC and the Lower Frankton Switching Station, in Shropshire.
- A new Switching Station at Lower Frankton with maximum footprint dimensions of 250m x 150m and a maximum height- above ground levels of 13m, plus maximum 13m high steel column fixed exterior lighting; and
- Open swathes / clearances through woodland and tree belts associated with the OHL and UGC.

## Effects upon Proposed Landscape Designations

### Proposed North-East Wales National Park

- 6.7.14 In line with national and local policy and guidance, this preliminary assessment considers the effects upon the 'natural beauty' and 'special qualities' of the proposed NEW-NP, and is cognisant of the highest status of protection (and therefore 'sensitivity) that will be conferred to the designation should it be designated by the Welsh Government.

#### Natural Beauty of the NEW-NP

- 6.7.15 The '*A proposed National Park for Wales- Evaluation Report*' (part of the suite of evidence base documents prepared by NRW to support the consideration of the proposed NEW-NP (Ref. 6.42)) identifies that the LVIA Study Area crosses through two '*Evaluation Areas*' (see Figure 6.3):
- EA29 - Vyrnwy and Banwy Valley and Hills.
  - EA32 - Severn Farmlands South.
- 6.7.16 Additionally, the Project's draft Order Limits pass within 5km of two further Evaluation Areas:
- EA26 - Tanat Valley.
  - EA30 - Severn Farmlands North.
- 6.7.17 The Evaluation Report places these areas (as well as EA23 and EA28) into a group intitled 'Rolling hills and settled valleys'.

- 6.7.18 Paragraph 9.25 describes the ‘*factors relating to natural beauty*’ of this group as
- *‘The interplay between intimate valleys and rolling hills, often enclosed by a backdrop of uplands to the west, provides a highly scenic and distinctive composition of contrasting landscapes with a strong sense of place;*
  - *Extensive and very strong patterns of irregular pastures enclosed by species rich hedgerows with mature trees and small Ancient Woodlands contributes to a highly distinctive and traditional very rural character;*
  - *From areas of higher open ground, there are highly scenic views over rolling farmland and valleys;*
  - *Rich and exceptionally intact historic landscape comprising field patterns, lanes, farms, houses and other features contribute to scenic quality and a strong sense of time-depth throughout these landscapes; and*
  - *High concentrations of Listed Buildings within distinctive Conservation Areas, and a large number of Prehistoric funerary monuments and Iron Age hillfort sites.’*
- 6.7.19 The new 132kV OHL would be the only part of the Project that crosses into the proposed designation. As shown on Figure 6.3, first from Pont Hen fail, within the floodplain of the Afon Banwy, adjacent to the A458, to Pencaedu, at the crossing of the A495 and B4382 – for a distance of approximately 4.3km, through the very southern section of EA 29 (a further 5.7km, approximately, of OHL would additionally be located less than 5km from, but outside of EA29, to its south west). Secondly from near Mathrafal to Maenewydd – for a distance of approximately 2.0km, through a small section of EA32. A further 6km, approximately, of the OHL would lie between 0-0.7km from EA32 along the Dyffryn Meifod / Meifod Valley. A further 5km, approximately, would lie between 0.2-0.7km from EA30 along the north-east end of the Dyffryn Meifod / Meifod Valley. A further 6km, approximately, would lie between 1-5km from, but outside of EA26 where the Dyffryn Meifod / Meifod Valley joins the open vale of the Afon Hafren / River Severn. As such there would be direct effects upon the natural beauty of EA29 and EA32 and indirect effects arising from the OHL on EA 26, EA29, EA30 and EA32).
- 6.7.20 The new Cors y Carreg CSEC would lie approximate 4.5km to the south east of the Candidate Area boundary. As the CSEC lies adjacent to a steel lattice tower it would have no more of an effect on the upon the proposed designation than the tower itself.
- Effects during the Construction Phase on the Proposed NEW-NP’s Natural Beauty***
- 6.7.21 Direct changes arising from the Project’s construction phase upon the proposed NEW-NP’s natural beauty would occur from the loss of vegetation, the presence

of partially constructed towers (and the cranes used to construct them), the road crossing scaffolds, the single temporary construction compound (near Mathrafal) within EA32 (and its use of lighting at the start and end of winter days), and creation of temporary access roads and the movement of construction traffic along them and elsewhere through and EA29 and EA32. The temporary construction compound and access routes, and some of the vegetation loss would, however, be short to medium-term in duration and largely reversible, and limited to the Project's draft Order Limits and the immediate surroundings from which construction activity may be perceptible.

- 6.7.22 In contrast, the direct changes and indirect changes (up to 3km from the proposed NEW-NP's boundary) brought about by the presence of partially constructed towers and some of the vegetation loss is considered more permanent as these elements eventually form part of the operational phase.
- 6.7.23 The changes would, however, occur to relatively very small proportion of the overall NEW-NP, and the majority of the underlying aspects of 'factors relating to natural beauty' would remain intact. As such there is likely to be a moderate magnitude of change to Natural Beauty. With the receptor having high sensitivity, this is likely to bring about effects that are, at their greatest, moderate / major on the proposed NEW-NP's Natural Beauty, which, therefore, would be significant.
- 6.7.24 Further and more detailed consideration of the likely effects of the Project's construction phase on the proposed NEW-NP's Natural Beauty, following the planned survey work and stakeholder engagement will be outlined in the ES.

***Effects during the Operational (and Maintenance) Phase on the Proposed NEW-NP's Natural Beauty***

- 6.7.25 Direct changes and indirect changes (up to 3km from the proposed NEW-NP's boundary) arising from the Project's operational (and maintenance) phase upon the proposed NEW-NP's natural beauty would occur from the continued loss of trees (to allow for necessary clearances below the OHL) and the presence of constructed towers within and near to the proposed NEW-NP.
- 6.7.26 The changes would, however, occur to relatively very small proportion of the overall NEW-NP, and the majority of the underlying aspects of 'factors relating to natural beauty' would remain intact. As such there is likely to be a moderate magnitude of change to Natural Beauty. With the receptor having high sensitivity, this is likely to bring about effects that are, at their greatest, moderate / major on the proposed NEW-NP's Natural Beauty, which, therefore, would be significant.
- 6.7.27 Further and more detailed consideration of the likely effects of the Project's operation (and maintenance) phase on the proposed NEW-NP's Natural Beauty,

following the planned survey work and stakeholder engagement will be outlined in the ES.

### **Emerging Special Qualities of the NEW-NP**

- 6.7.28 The emerging ‘Special Qualities’ of the NEW-NP are outline in section 6.5 Baseline conditions, of this chapter. The three (out of six) that are considered relevant to the likely changes brought about by the Project are:
- *‘1) An inspiring space that promotes mental, physical and spiritual health and wellbeing: this reflects the experience of the landscape and the access and recreation opportunities it provides.’;*
  - *‘3) A story of human interaction with the landscape over millennia: this reflects the historic features of the landscape, including physical features and associations.’; and*
  - *‘5) A distinctive, complementary and contrasting landscape: this reflects the key landscape features and experiential qualities of the area.’*

### **Effects during the Construction Phase on the Proposed NEW-NP’s Special Qualities**

- 6.7.29 Direct changes arising from the Project’s construction phase upon the proposed NEW-NP’s ‘Special Qualities’ would occur from the same list of Project elements outlined in the effects upon is ‘natural beauty’, above. The introduction of such elements (such as the temporary construction compound and traffic) are in contrast to the ‘Special Qualities’ of an ‘inspiring space that promotes mental, physical and spiritual health and wellbeing, and the existing ‘experiential qualities’ and ‘historic features’ of the area.
- 6.7.30 The temporary construction compound (with its use of lighting at the start and end of winter days), the access routes, and some of the vegetation loss would, however, be short to medium-term in duration and largely reversible, and limited to the Project’s draft Order Limits and the immediate surroundings from which construction activity may be perceptible.
- 6.7.31 In contrast, the direct changes and indirect changes (up to 3km from the proposed NEW-NP’s boundary) brought about by the presence of partially constructed towers and some of the vegetation loss is considered more permanent as these elements eventually form part of the operational phase.
- 6.7.32 The changes would, however, occur to relatively very small proportion of the overall proposed NEW-NP, and the remaining three ‘Special Qualities’ (listed in section 6.5 Baseline conditions, of this chapter) are considered to be unaffected by the Project’s construction. As such there is likely to be a moderate magnitude of change to the proposed NEW-NP’s ‘Special Qualities’. With the receptor

having high sensitivity, this is likely to bring about effects that are, at their greatest, moderate / major, which, therefore, would be significant.

- 6.7.33 Further and more detailed consideration of the likely effects of the Project's construction phase on the proposed NEW-NP's 'Special Qualities', following the planned survey work and stakeholder engagement will be outlined in the ES.

***Effects during the Operation (and Maintenance) Phase on the Proposed NEW-NP's Special Qualities***

- 6.7.34 Direct changes arising from the Project's operational (and maintenance) phase upon the proposed NEW-NP's 'Special Qualities' would occur from the continued loss of trees (to allow for necessary clearances below the OHL) and the presence of constructed towers within and near to the proposed NEW-NP.
- 6.7.35 Whilst the introduction of such elements are in contrast to the factors of existing '*experiential qualities*' and '*historic features*', they, at the same time, contribute to '*the story of human interaction with the landscape*' and in the creation of a '*distinctive*' and '*contrasting landscape*'. In addition, the changes would only occur to relatively very small proportion of the overall NEW-NP.
- 6.7.36 Consequently, there would only be a noticeable change to the 'Special Qualities' over a limited area, bringing about only with few adverse consequences to the baseline.
- 6.7.37 As such there is likely to be a moderate/small magnitude of change to the proposed NEW-NP's 'Special Qualities', that is, on balance adverse. With the receptor having high sensitivity, this is likely to bring about effects that are moderate but non-significant, as they do not substantially alter its 'Special Qualities'.
- 6.7.38 Further and more detailed consideration of the likely effects of the Project's operation (and maintenance) phase on the proposed NEW-NP's 'Special Qualities', following the planned survey work and stakeholder engagement will be outlined in the ES.

**Effects upon Landscape Receptors**

- 6.7.39 Whilst a full consideration on the effects upon landscape character will be set out in full within the ES following preparation of the LLCA, this preliminary assessment identifies some of the likely general effects of the Project upon the character of the LVIA Study Area. It provides consideration of the range of effects that are likely to occur, and awareness of the key characteristics that may be affected.

6.7.40 A preliminary assessment of potential impacts from the construction and operation (including maintenance) phases on landscape receptors is summarised in Table 6.9 and Table 6.20 below.



Table 6-19 – Construction Phase – Preliminary Assessment of Potential Landscape Effects

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significance of Effect
Grug y Mynydd Collector Substation and UGC Section: Grug y Mynydd to Cors y Carreg			
Landscape Character	<p>Medium-High</p> <p>The sensitivity of the landscape surrounding the site of the proposed collector substation primarily arises from the open rural character of the Esgair Cwmowen uplands. Its susceptibility to the introduction of a substantial area of construction activity and movement is apparent, but tempered, to a degree, by the presence of the Tirgwynt wind farm (and future allocation for further development here as part of the 'Pre-Assessed Areas for Wind Energy'). Its value is also medium to medium / high (reflected in its varying degrees of scenic quality, rarity, representativeness, conservation interest, recreation, perceptual aspects and cultural associations).</p>	<p>Medium-Small</p> <p>Many of the changes which would occur during the construction phase would be short to medium-term in duration and largely reversible. The construction activity (including plant a vehicle movement, lighting at the start and end of winter days) would be noticeable but only over a relatively small area (the substation site being partly located within a slight bowl in the landscape). with few consequences for the elements, character and quality of the baseline landscape. Consequently, the potential change to the receptor, at its greatest would be medium-small.</p>	<p>Moderate</p> <p>The Project here would be reasonably well accommodated within the landscape. It is considered that it would not substantially undermine the special qualities or valued characteristics of its surroundings and many of the effects are short-lived and/or reversible.</p> <p>The potential effect is, therefore, considered moderate in significance, and not significant.</p>
OHL Section 1: Cefn Coch to Llangyniew			



Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significance of Effect
Landscape Character	<p>Medium-High</p> <p>There is variety in landscape sensitivity of OHL section 1 (at its greatest being Medium-High), on account of being being topographically diverse and contrasting in agricultural scale. Whilst some parts of this landscape display degrees of openness (such as across the Afon Banwy), others are more enclosed by rolling hills and by layers of field boundary vegetation, which help lower the susceptibility of it to the kind of changes arising from the Project.</p>	<p>Medium-Large</p> <p>Changes to this section's landscape character would occur from the loss of vegetation along the OHL route, the presence of partially constructed towers (and the cranes used to construct them), the road crossing scaffolds, the single temporary construction compound, near Pentyrch, (and its use of lighting at the start and end of winter days), and creation of temporary access roads and the movement of construction traffic along them. The temporary construction compound and access routes, and some of the vegetation loss would be short to medium-term in duration and largely reversible, and limited to the Project's draft Order Limits and the immediate surroundings from which construction activity may be perceptible.</p> <p>The changes brought about by the presence of partially constructed towers and some of the vegetation loss is considered more permanent as these elements eventually form part of the operational phase. Consequently, the potential change to the receptor, at its greatest would be medium-large.</p>	<p>Moderate-Major</p> <p>With the receptors having at their greatest Medium-High sensitivity, this is likely to bring about potential effects that are at worst moderate-major. As such, these are considered significant, particularly where the Project contrasts with the character of the landscape, forming a clear feature which substantially alters its valued characteristics and/or special qualities.</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significance of Effect
OHL Section 2: Llangyniew to Meifod; OHL Section 3: Meifod to Llansantffraid-ym-Mechain; and OHL Section 4: Llansantffraid-ym-Mechain to Llanymynech.			
Landscape Character	<p>Medium-High</p> <p>The key landscape susceptibilities of the LVIA Study Area through which these sections are located include the views across and along the Dyffryn Meifod / Meifod valley, the contrast in scale between the valley sides and valley floor, and the more intimate areas of landscape formed by the patchwork of pastoral fields, and the sinuous form of the Afon Vyrnwy.</p> <p>The sensitivity of certain areas is reduced by the opportunities for backclothing afforded by existing woodland on valley sides and the Project aligning with the grain of the landscape.</p>	<p>Medium-Large</p> <p>Changes upon this section's landscape character would occur from the loss of vegetation along the OHL route, the presence of partially constructed towers (and the cranes used to construct them), the road crossing scaffolds, the two temporary construction compounds near Mathrafal and Trefnanney (and the use of lighting here at the start and end of winter days), and creation of temporary access roads and the movement of construction traffic along them. The temporary construction compounds and access routes, and some of the vegetation loss would be short to medium-term in duration and largely reversible, and limited to the Project's draft Order Limits and the immediate surroundings from which construction activity may be perceptible.</p> <p>The changes brought about by the presence of partially constructed towers and some of the vegetation loss is considered more permanent as these elements eventually form part of the</p>	<p>Moderate-Major</p> <p>With the receptor having, at its greatest, Medium-High sensitivity, this is likely to bring about potential effects that are, at worst, moderate-major. As such, these are considered significant, particularly where the Project contrasts with the character of the landscape, forming a clear feature which substantially alters its valued characteristics and/or special qualities.</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significance of Effect
		operational phase. Consequently, the potential change to the receptor, at its greatest would be medium-large.	
OHL Section 5: Llanymynech to Lower Frankton; and Lower Frankton Switching Station			
Landscape Character	<p>Medium</p> <p>The key landscape susceptibilities of the LVIA Study Area through which OHL Section 5, and the Lower Frankton Switching Station is located include its proximity to the elevated landform at Llanymynech Rocks, the routes crossing over the sinuous River Vyrnwy, the more intricate and small-scale landscape south-east of Crickheath and near Aston Hall, and the potential for wirescape occurring when it nears the 400kV National Grid OHL.</p> <p>The sensitivity of much of the section is, however, somewhat tempered by the relatively smooth landforms with medium and larger sized fields, the backclothing opportunities presented by</p>	<p>Medium</p> <p>Changes upon this section’s landscape character would occur from the loss of vegetation along the OHL route, the presence of partially constructed towers (and the cranes used construct them), the road crossing scaffolds, the four temporary construction compounds (i.e. near Morton, Woolston, Wooton and Lower Frankton) including the use of lighting here at the start and end of winter days, and creation of temporary access roads and the movement of construction traffic along them. The temporary construction compounds and access routes, and some of the vegetation loss would be short to medium-term in duration and largely reversible, and limited to the Project’s draft Order Limits and the immediate surroundings from which construction activity may be perceptible.</p>	<p>Moderate</p> <p>With the receptor having, at its greatest, Medium sensitivity, this is likely to bring about potential effects that are, at worst, moderate.</p> <p>As such, these are considered significant, particularly where the Lower Frankton Switching Station, and the fork in the OHL occurs and they combine with a landscape already containing the 400kV National Grid OHL.</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significance of Effect
	existing woodland and valley sides particularly near Aston Hall and Pant.	The changes brought about by the presence of partially constructed towers and the Lower Frankton substation, and some of the vegetation loss is considered more permanent as these elements eventually form part of the operational phase. Consequently, the potential change to the receptor, at its greatest would be medium.	

Table 6-20 – Operational Phase – Preliminary Assessment of Potential Landscape Effects

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significant Effects
Grug y Mynydd Collector Substation and UGC Section: Grug y Mynydd to Cors y Carreg			
Landscape Character	<p>Medium-High</p> <p>The sensitivity of the landscape surrounding the site of the proposed Grug y Mynydd collector substation primarily arises from the open rural character of the Esgair Cwmowen uplands. Its susceptibility to the introduction of an area of new built form and movement is apparent, but</p>	<p>Medium-Small</p> <p>Changes during the operational phase would occur from the presence of Grug y Mynydd Collector Substation. This would bring about changes to a limited area of the surrounding landscape (particularly with the substation site being partly located within a slight bowl in the landscape) with few consequences for the elements, character and quality of the baseline.</p>	<p>Moderate</p> <p>The Project here would be reasonably well accommodated within the landscape. It is considered that it would not substantially undermine the special qualities or valued</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significant Effects
	<p>tempered, to a degree, by the presence of the Tirgwynt wind farm (and future allocation for further development here as part of the 'Pre-Assessed Areas for Wind Energy'). Its value is also medium to medium / high (reflected in its varying degrees of scenic quality, rarity, representativeness, conservation interest, recreation, perceptual aspects and cultural associations).</p>	<p>As the proposed mitigation planting established, by year 15, the magnitude of change would reduce – but not substantially enough to render the substation indiscernible in the landscape. Following the reinstatement of the landscape along the route of the UGC this section of the Project would have negligible changes to the landscape receptor.</p>	<p>characteristics of its surroundings. The potential effects are, at worst, therefore, considered to be moderate and not significant.</p>
OHL Section 1: Cefn Coch to Llangyniew			
Landscape Character	<p>Medium-High There is a variety in landscape sensitivity of OHL section 1 (at its greatest being Medium-High), on account of being topographically diverse and contrasting in agricultural scale. Whilst some parts of this landscape display degrees of openness (such as across the Afon Banwy), others are more enclosed by rolling hills and layers of field</p>	<p>Medium-Large Changes upon this section's landscape character would occur from the continued loss of trees (to allow for necessary clearances below the OHL) and the presence of constructed towers within an area with a strongly defined rural character - and spreading over rolling ridges between layers of field boundary vegetation. The existing woodlands and tree belts would assist in reducing the scale and geographic</p>	<p>Moderate-Major With the receptor having, at its greatest, Medium-High sensitivity, effects, at the worst, are considered to be moderate-major. Consequently, these are considered potentially significant</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significant Effects
	<p>boundary vegetation, which help lower the susceptibility of it to the kind of changes arising from the Project.</p>	<p>extent of the changes by screening / backclothing.</p> <p>There is likely to be a range in the magnitude of landscape change (at its greatest being Medium-large) depending upon the particular sensitivities of the part of this section the OHL goes through.</p>	<p>particularly where the Project contrasts with the character of the landscape, forming a clear feature which substantially alters its valued characteristics and/or special qualities.</p>
<p>OHL Section 2: Llangyniew to Meifod; OHL Section 3: Meifod to Llansantffraid-ym-Mechain; and OHL Section 4: Llansantffraid-ym-Mechain to Llanymynech.</p>			
<p>Landscape Character</p>	<p>Medium-High</p> <p>The key landscape susceptibilities of the LVIA Study Area through which these sections are located include the views across and along the Dyffryn Meifod / Meifod valley, the contrast in scale between the valley sides and valley floor, and the more intimate areas of landscape formed by the patchwork landscape of pastoral fields, and the sinuous form of the Afon Vyrnwy.</p>	<p>Medium-Large</p> <p>Changes upon this section's landscape character would occur from the continued loss of trees (to allow for necessary clearances below the OHL) and the presence of constructed towers within an area displaying a strongly defined valley form. The OHL may in certain areas through these sections bring about a substantial change to the landscape receptors where it contrasts with a particularly intimate pattern of river sinuosity, settlement and agricultural character.</p>	<p>Moderate-Major</p> <p>With the receptor having, at its greatest, Medium-High sensitivity, potential effects, at their worst, are considered to be moderate-major. Consequently, these are considered significant, particularly where the Project contrasts with the</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significant Effects
	<p>The sensitivity of certain areas is reduced by the opportunities for backclothing afforded by existing woodland on valley sides and the Project aligning with the grain of the landscape.</p>	<p>In other areas, the change would be far less distinct – particularly where the wooded valley sides afford opportunities for backclothing, and consequently baseline landscape would appear largely unchanged.</p>	<p>character of the landscape, forming a clear feature which substantially alters its valued characteristics and/or special qualities.</p>
<p>OHL Section 5: Llanymynech to Lower Frankton; and Lower Frankton Switching Station</p>			
<p>Landscape Character</p>	<p>Medium</p> <p>The key landscape susceptibilities of the LVIA Study Area through which OHL Section 5, and the Lower Frankton Switching Station is located include its proximity to the elevated landform at Llanymynech Rocks, the routes crossing over the sinuous River Vyrnwy, the more intricate and small-scale landscape south-east of Crickheath and near Aston Hall, and the potential for wirescape occurring when it nears the 400kV National Grid OHL.</p>	<p>Medium</p> <p>Changes upon this section’s landscape character would occur from the continued loss of trees (to allow for necessary clearances below the OHL), the presence of constructed towers through an area displaying strong rural character, and the creation of an area of relatively intense OHL and associated infrastructure at Lower Frankton.</p> <p>The OHL may bring about a noticeable change to landscape character where it contrasts with the areas of relatively more intricate and small-scale landscape that occurs through this Section.</p>	<p>Moderate-Major</p> <p>With the receptor having, at its greatest, Medium sensitivity, this is likely to bring about potential effects that are, at worst, moderate. Consequently, these are considered significant, particularly where the Lower Frankton Switching Station, and the fork in the OHL occurs and they combine with a</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significant Effects
	<p>The sensitivity of much of the section is, however, somewhat tempered by the relatively smooth landforms with medium and larger sized fields, the backclothing opportunities presented by existing woodland and valley sides particularly near Aston Hall and Pant.</p>	<p>In other areas, the change would be far less distinct – particularly where its small woodlands along afford opportunities for backclothing, and consequently baseline landscape would appear largely unchanged.</p> <p>The changes where the OHL and Switching Station combine are likely to be more conspicuous, and so may have some consequences for the elements, character and quality of the baseline in this area.</p> <p>As the proposed mitigation planting established, by year 15, the magnitude of change would reduce – but not substantially enough to render the switching station indiscernible in the landscape.</p>	<p>landscape already containing the 400kV National Grid OHL.</p>

### Effects upon Visual Receptors

6.7.41 Whilst a full consideration on the effects upon visual amenity will be set out in full within the ES following the further planned site surveys and engagement with stakeholders, this preliminary assessment identifies some of the likely general effects of the Project upon the visual amenity of receptors through the LVIA Study Area. It provides consideration of the range of effects that are likely to occur, and awareness of the key characteristics that may be affected.



6.7.42 A preliminary assessment of potential impacts from the construction and operation (including maintenance) phases on visual amenity receptors is summarised in Table 6.21 and Table 6.22 below.

Table 6-21 – Construction Phase – Preliminary Assessment of Potential Visual Effects

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significant Effects
Grug y Mynydd Collector Substation and UGC Section: Grug y Mynydd to Cors y Carreg			
Visual Amenity	<p>Medium</p> <p>The sensitivity of visual amenity receptors surrounding this part of the Project is considered to be, at its greatest, medium on account of there being number of areas of Registered Common Land, CRoW Act Open Access Land and the Red Ridge Centre and a few dwellings / clustered settlements. There are, however, no areas, sites or trails of greater than local importance.</p>	<p>Medium-Small</p> <p>The construction activities of the project (i.e. temporary construction compounds, plant and vehicles, with use of lighting at either end of winter working days) are likely to be, at their most, small parts of receptors' visual experience, given the relatively expansive views available in the upland area.</p> <p>In addition, there is likely to be a relatively high degree of filtering / screening and backclothing by virtue of the contrasting land forms and numerous woodlands / shelter belts.</p> <p>The views available appear to be only experienced by a relatively small number of people.</p>	<p>Minor</p> <p>With receptors having, at their greatest, Medium sensitivity, this is likely to bring about potential effects that are, at their worst, Minor.</p> <p>The Project would affect relatively few receptors and is generally well accommodated in views. The effect would be small in scale, short-lived and/or easily reversible</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significant Effects
		<p>The construction activity would be short to medium-term in duration and largely reversible.</p> <p>As such the magnitude of change is considered to be, at its greatest, medium-small.</p>	<p>The potential effects are, therefore, considered to be not significant.</p>
OHL Section 1: Cefn Coch to Llangyniew			
Visual Amenity	<p>Medium</p> <p>The sensitivity of visual amenity receptors surrounding this part of the Project is considered to be, at its greatest, medium on account of there being a few areas of CRow Act Open Access Land and a few dwellings / clustered settlements. There are, however, no areas, sites or trails of greater than local importance and the relatively intimate nature of this landscape, created by the rolling hills and field boundary vegetation limits longer views to just those along the Afon Banwy valley.</p>	<p>Medium-Small</p> <p>The construction activities of the project (i.e. loss of vegetation along the OHL route, the presence of partially constructed towers (and the cranes used to do construct them), the road crossing scaffolds, the single temporary construction compound, near Pentyrch, (and its use of lighting at the start and end of winter days), and creation of temporary access roads and the movement of construction traffic along them are likely to be, at their most, small parts of receptors' visual experience, given the relatively visually contained nature of the landscape here and the relatively high degree of filtering / screening and backclothing this provides.</p> <p>More expansive views are likely to be available from local high spots such as Moel Bentyrch, but these do not appear to be particularly promoted</p>	<p>Minor</p> <p>With receptors having, at their greatest, Medium sensitivity, this is likely to bring about potential effects that are, at their worst, Minor.</p> <p>The Project would affect relatively few receptors and is generally well accommodated in views. The effects would be small in scale, short-lived and/or easily reversible.</p> <p>The potential effects are, therefore,</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significant Effects
		<p>or frequented. Views across the Afon Banwy would also be relatively expansive, but mainly only experienced by drivers on the A458, the relatively small population and users of unpromoted PRow.</p> <p>Consequently, many views available appear to be only experienced by a relatively small number of people.</p> <p>The visible construction activity would be short to medium-term in duration and largely reversible.</p>	<p>considered to be not significant.</p>
<p>OHL Section 2: Llangyniew to Meifod; OHL Section 3: Meifod to Llansantffraid-ym-Mechain; and OHL Section 4: Llansantffraid-ym-Mechain to Llanymynech.</p>			
<p>Visual Amenity</p>	<p>High</p> <p>The sensitivity of visual amenity receptors surrounding this part of the Project at its greatest is High, on account of there being two trails of national importance (Offa's Dyke Path and Glyndwr's Way) plus a number of promoted Long Distance Paths, the users of which are likely to experience some views towards the Project.</p>	<p>Medium</p> <p>The construction activities of the project i.e. loss of vegetation along the OHL route, the presence of partially constructed towers (and the cranes used to do construct them), the road crossing scaffolds, the two temporary construction compounds (near Mathrafal and Trefnanney) and its use of lighting at them at the start and end of winter days, and creation of temporary access roads and the movement of construction traffic along them are likely to be predominantly</p>	<p>Moderate-Major</p> <p>The Project would be seen at some locations where attention is focussed on surroundings and would affect a moderate number of receptors. The Project may be a contrasting or clear element in some views,</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significant Effects
	<p>Added to this there are a few publicly accessible high spots with views along the valley, and CRoW Act Open Access lands.</p> <p>Finally, there are a few settlements and numerous scattered dwellings along the Dyffryn Meifod, as well as numerous users of the A495 for a considerable length the OHL route.</p>	<p>moderate parts of receptors' visual experience, given the relatively visual containment afforded along the Dyffryn Meifod.</p> <p>Some expansive views over the construction works in the valley are also likely to be available from local high spots such as Llanmynech Hill and Gwely Gwddfarch. In other areas, the wooded valley sides would provide a degree of backclothing to Project in some views.</p> <p>Views would be experienced by people at the edge of the settlements facing toward the Project and by drivers on the A458.</p> <p>Consequently, views available appear to be experienced by a moderate number of people.</p> <p>The visible construction activity would be short to medium-term in duration and largely reversible.</p>	<p>but in others the backclothing effect of the wooded valley sides would prevent this. The potential effects would, however, be short to medium in duration and easily reversible, and therefore at their worst moderate-major.</p> <p>Consequently, potential effects are likely to be significant albeit in the short to medium-term.</p>
OHL Section 5: Llanmynech to Lower Frankton; and Lower Frankton Switching Station			
Visual Amenity	<p>Medium</p> <p>The sensitivity of visual amenity receptors surrounding this part of the Project is considered to be, at its greatest, Medium (on account of</p>	<p>Medium</p> <p>The construction activities of the project (i.e. loss of vegetation along the OHL route, the presence of partially constructed towers (and the cranes used to do construct them), the road crossing</p>	<p>Moderate-Major</p> <p>The Project would be seen at some locations where attention is focussed on</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change	Potential Significant Effects
	<p>there being a number of promoted Long Distance Paths and other regionally valued recreational resources, the users of are likely to observe the Project).</p> <p>Added to this, there are a number of settlements and numerous scattered dwellings across the Project section.</p>	<p>scaffolds, the four temporary construction compounds (i.e. near Morton, Woolston, Wooton and Lower Frankton) and its use of lighting at them at the start and end of winter days, and creation of temporary access roads and the movement of construction traffic along them are likely to be predominantly small parts of receptors' visual experience, given the relative visually containment (and potential backclothing) afforded along shelter belts, small woodlands and hedgerows across this relatively low-lying landscape.</p> <p>Views would be experienced by people at the edge of the settlements facing toward the Project and travellers on a few major transport routes across this area.</p> <p>Consequently, views available appear to be experienced by a moderate number of people.</p> <p>The visible construction activity would be short to medium-term in duration and largely reversible.</p>	<p>surroundings and would affect a moderate number of receptors. The Project has the potential to be a contrasting or clear element in some views, but in most the filtering and backclothing effect of woodland, shelterbelts and hedgerow, would prevent this. The effect would, however, be short to medium in duration and easily reversible.</p> <p>Consequently, potential effects are likely to be, at their greatest moderate-major, and therefore significant, albeit in the short to medium-term.</p>

Table 6-22 – Operational Phase – Preliminary Assessment of Potential Visual Effects

Resource / receptor	Sensitivity of resource/receptor	Description of potential impact/change	Potential significant effects
Grug y Mynydd Collector Substation and UGC Section: Grug y Mynydd to Cors y Carreg			
Visual Amenity	<p>Medium</p> <p>The sensitivity of visual amenity receptors surrounding this part of the Project is considered to be, at its greatest, medium on account of there being number of areas of Registered Common Land, CRoW Act Open Access Land and the Red Ridge Centre and a few dwellings / clustered settlements. There are, however, no areas, sites or trails of greater than local importance.</p>	<p>Medium-Small</p> <p>Changes during the operational phase would occur from the presence of Grug y Mynydd Collector Substation. This would, however, only affect a limited visual envelope as shown on the ZTV on Figure 6.12.</p> <p>As the proposed mitigation planting around the Substation establishes, by year 15, the magnitude of change would reduce – but not substantially enough to render the substation indiscernible in the landscape.</p> <p>Following the reinstatement of the landscape along the route of the UGC this section of the Project would have negligible changes to visual amenity receptors.</p>	<p>Minor</p> <p>With receptors having, at their greatest, Medium sensitivity, this is likely to bring about potential effects that are, at their greatest, minor.</p> <p>The Project would affect relatively few receptors and is generally well accommodated in views. The potential effects would be small in scale, short-lived and/or easily reversible and, therefore, not significant.</p>

Resource / receptor	Sensitivity of resource/receptor	Description of potential impact/change	Potential significant effects
OHL Section 1: Cefn Coch to Llangyniew			
<p>Visual Amenity</p>	<p>Medium</p> <p>The sensitivity of visual amenity receptors surrounding this part of the Project is considered to be, at its greatest, medium on account of there being a few areas of CRoW Act Open Access Land and a few dwellings / clustered settlements. There are, however, no areas, sites or trails of greater than local importance and the relatively intimate nature of this landscape, created by the rolling hills and field boundary vegetation limits longer views to just those along the Afon Banwy valley.</p>	<p>Medium</p> <p>Changes during the operational phase to this section's visual amenity would occur from the presence of constructed towers.</p> <p>The existing landform, woodlands and tree belts through this area would assist in reducing the scale and geographic extent of the changes by screening, filtering and backclothing.</p> <p>The magnitude of landscape change, depending upon the particular sensitivities of the part of this section the OHL goes through, would at its greatest be Medium.</p> <p>Views to the Project's OHL from local high spots such as Moel Bentyrch would remain, but as these do not appear to be particularly promoted or frequented the magnitude of change would be relatively low. Views across the Afon Banwy would also be relatively expansive, but mainly only experienced by drivers on the A458, the relatively small population and users of unpromoted PRow.</p>	<p>Moderate</p> <p>With receptors having, at their greatest, Medium sensitivity, this is likely to bring about potential effects that are, at their worst, moderate.</p> <p>The Project would affect relatively few receptors and is generally well accommodated in views.</p> <p>The effects are, therefore, likely to be not significant.</p>

Resource / receptor	Sensitivity of resource/receptor	Description of potential impact/change	Potential significant effects
		Consequently, many views available appear to be only experienced by a relatively small number of people.	
OHL Section 2: Llangyniew to Meifod; OHL Section 3: Meifod to Llansantffraid-ym-Mechain; and OHL Section 4: Llansantffraid-ym-Mechain to Llanymynech.			
Visual Amenity	<p>High</p> <p>The sensitivity of visual amenity receptors surrounding this part of the Project at its greatest is High, on account of there being two trails of national importance (Offa's Dyke Path and Glyndwr's Way) plus a number of promoted Long Distance Paths, the users of which are likely to experience some views towards the Project.</p> <p>Added to this there are a few publicly accessible high spots with views along the valley, and CRoW Act Open Access lands.</p> <p>Finally, there are a few settlements and numerous scattered dwellings along the Dyffryn Meifod, as well as</p>	<p>Medium</p> <p>Changes during the operational phase to this section's visual amenity would occur from the presence of constructed towers.</p> <p>These are expected to be predominantly moderate parts of receptors' visual experience, given the relative visually containment afforded along the Dyffryn Meifod.</p> <p>In some of the more expansive views over the valley from local high spots such as Llanmynech Hill and Gwely Gwddfarch the wooded valley sides would provide a degree of backclothing to Project in some views.</p> <p>Views would be experienced by people at the edge of the settlements facing toward the Project and by drivers on the A458.</p>	<p>Moderate-Major</p> <p>The Project would be seen at some locations where attention is focussed on surroundings and would affect a moderate number of receptors. The Project may be a contrasting or clear element in some views, but in others the backclothing effect of the wooded valley sides would prevent this. The potential effects are therefore, at their greatest, considered to</p>



Resource / receptor	Sensitivity of resource/receptor	Description of potential impact/change	Potential significant effects
	numerous users of the A495 for a considerable length the OHL route.	Consequently, views available appear to be experienced by a moderate number of people.	be moderate-major, and Significant.
OHL Section 5: Llanymynech to Lower Frankton; and Lower Frankton Switching Station			
Visual Amenity	<p>Medium</p> <p>The sensitivity of visual amenity receptors surrounding this part of the Project is considered to be, at its greatest, Medium (on account of there being a number of promoted Long Distance Paths and other regionally valued recreational resources, the users of are likely to observe the Project).</p> <p>Added to this, there are a number of settlements and numerous scattered dwellings across the Project section.</p>	<p>Medium</p> <p>Changes during the operational phase to this section's visual amenity would occur from the presence of constructed towers and the Lower Frankton Switching Station.</p> <p>These elements are likely to be predominantly small parts of receptors' visual experience, given the relatively high visually containment (and potential backclothing) afforded by shelter belts, small woodlands and hedgerows across this relatively low-lying landscape.</p> <p>Views would be experienced by people at the edge of the settlements facing toward the Project and travellers on a few major transport routes across this area.</p> <p>Consequently, views available appear to be experienced by a moderate number of people.</p> <p>As the proposed mitigation planting around the Substation establishes, by year 15, the</p>	<p>Moderate-Major</p> <p>The Project would be seen at some locations where attention is focussed on surroundings and would affect a moderate number of receptors. The Project may be a contrasting or clear element in some views, but in most the filtering and backclothing effect of woodland, shelterbelts and hedgerow, would prevent this. The potential effects are considered, at their</p>

Resource / receptor	Sensitivity of resource/receptor	Description of potential impact/change	Potential significant effects
		magnitude of change would reduce – but not substantially enough to render the substation indiscernible in the landscape.	worst, to be moderate-major, and Significant.

## 6.8 Next Steps

6.8.1 The preliminary LVIA set out in this chapter will be further developed leading up to the application for development consent. This 'Next Steps' section sets out the planned further stakeholder consultations, surveys and other matters that will contribute to this.

### Consultation

6.8.2 The preliminary assessments will be further developed and refined based on the outcomes of the statutory consultation and ongoing stakeholder engagement including discussions with PCC, Shropshire Council, NRW and CRT (predominantly through on-line meetings) to seek agreement upon the:

- LLCA Character Areas.
- Receptors for inclusion in the LVIA.
- Location of potential visual receptors between 3km and 5km from the Project's draft Order Limits where it is considered there is the potential for significant visual effects to arise due to particularly high receptor sensitivity - so satisfying Scoping Opinion comment 3.2.4, as identified in Table 6.7.
- Location of representative viewpoints.
- Nature and location of visualisations.
- Principals of landscape-related mitigation.
- Separate discussions with NRW regarding the proposed boundary of the NEW-NP.

6.8.3 The outcomes of these discussions with stakeholders will be captured within the LVIA, that will form part of the ES.

### Surveys

6.8.4 In preparation for the application for development consent, the preliminary assessments set out within this chapter will be further developed and refined based on the outcomes of the following surveys:

- Site work to ground-truth and supplement the provisional LLCA findings formed from initial desk-top data gathering and analysis. This would include visits to each initial LLCA Character Area and the capture representative character photos from each (for inclusion in the LLCA report).
- Capture of winter and summer photography from representative viewpoint locations within the LVIA Study Area for use in the development of the LVIA and the potential visualisations of the Project.

- Visits in winter and summer months to the location of potential visual receptors between the 3km and 5km from the Project's draft Order Limits (and the potential capture of representative viewpoint photography from them). The location of these receptors will be informed by future analysis of the ZTV mapping, supplemented by field work, and will be agreed with consultees
- Further visits during summer and winter months (in order to fully understand the Project's maximum level of visibility) to publicly accessible locations within identified landscape character receptor areas and publicly accessible visual receptor locations.

## Other

6.8.5 In addition to the planned further stakeholder consultation and further survey activities outlined above, the preparation of the LVIA leading up to the for application for development consent will involve:

- Review of the LVIA Study Area in the light of feedback received during statutory consultation and the updating of ZTVs as the Project develops, in order to assist in the capture of all potentially significant effects in the ES.
- Continual review of potential further changes to the Project's construction and operational proposals, relevant legislation and policy, the landscape character and visual amenity baseline, future baseline considerations and cumulative considerations (in respect of emerging related developments).
- Preparation of the LLCA, LVIA-visualisations and RVAA's where required;
- Being cognisant of the baseline data gathered for, and assessment findings from other chapters considered relevant i.e. Chapter 7: Ecology, Chapter 9: Historic Environment, Chapter 10: Traffic and Transport and Chapter 19: Socio-economics, Recreation and Tourism.
- Input into the preparation of mitigation proposals (and associated plans and documentation).

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## 7 Ecology

### 7.1 Introduction

7.1.1 This Chapter provides the results of the preliminary assessment of the potential impacts and effects of the Project on Ecology and describes:

- Legislation, Policy and Guidance.
- Consultation and Engagement.
- Assessment Methodology and Significance Criteria.
- Baseline Conditions.
- Preliminary Mitigation Measures.
- Preliminary Likely Significant Effects.
- Next Steps.

### 7.2 Legislation, Policy and Guidance

7.2.1 The following legislation, policy and guidance is considered relevant to the proposed works and has been adhered to in the preparation of this document.

#### Legislation

7.2.2 The preliminary assessment has been undertaken in accordance with, and with reference to, the following national legislation:

- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) (Ref 7.1).
- The Planning Act 2008 (Ref 7.2).
- The Conservation of Habitats and Species Regulations 2017 (i.e. the “Habitats Regulations”), (Ref 7.3).
- The Wildlife and Countryside Act 1981 , (Ref 7.4).
- The Countryside and Rights of Way Act 2000, Ref (7.5).
- The Environment Act 2021, Ref (7.6).
- The Environment (Wales) Act 2016, Ref (7.7).
- Protection of Badgers Act 1992, Ref (7.8).
- Wild Mammals (Protection) Act 1996, (Ref 7.9).
- Hedgerows Regulations 1997 Ref (7.10).
- The Natural Environment and Rural Communities (NERC) Act 2006, (Ref 7.11).
- The Invasive Alien Species (Enforcement and Permitting) Order (Invasive Species Order) 2019 (Ref 7.12).

- Eels (England and Wales) Regulations 2009, (Ref 7.13).
- Salmon and Freshwater Fisheries Act 1975, (Ref 7.14).
- Convention on Wetlands of International Importance 1972, (Ref 7.15).
- Animal Welfare Act 2006 (Ref 7.16).

### **The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations)**

- 7.2.3 The process of Environmental Impact Assessment in the context of town and country planning in England is governed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017). Schedule 1 contains a list of developments which require EIA and includes: construction of overhead electrical power lines with a voltage of 220kV or more and a length of more than 15km.

### **The Planning Act 2008**

- 7.2.4 The Planning Act 2008 is the primary legislation that first established the legal framework for applying for, examining and determining applications for NSIPs. Chapter 3 Policy and Legislative Content Page 18 of 44 National Policy Statements (NPSs) set the framework for decisions by the Secretary of State (SoS).
- 7.2.5 The Act sets out thresholds above which certain types of infrastructure development are nationally significant and therefore require a DCO. The Regulations impose procedural requirements, in particular, the carrying out of environmental impact assessment (EIA) in relation to applications for development consent and in relation to applications for subsequent consent, which are applications for the approval of requirements imposed by orders granting development consent

### **The Conservation of Habitats and Species Regulations 2017**

- 7.2.6 The Conservation of Habitats and Species Regulations 2017 transposed the requirements of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive') into domestic legislation. The Regulations identify European protected species (EPS) and various habitats of importance within Europe, with important sites for these habitats/species or both being designated as Special Areas of Conservation (SAC) and important sites for birds being designated as Special Protection Areas (SPAs). Any project that may have a significant effect on a SAC or SPA should be assessed in relation to the site's 'conservation objectives' (i.e., the reasons for which the site is designated). The Regulations also implement the species

protection regime set out within the Habitats Directive, providing a clear legal basis for surveillance and monitoring of European Protected Species.

### **Wildlife and Countryside Act 1981**

7.2.7 The Wildlife and Countryside Act 1981 (WCA) is the major domestic legal instrument for wildlife protection in the UK and is the primary means by which the following are implemented:

- The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention).
- The Council Directive 79/409/EEC on the Conservation of Wild Birds (Bird Directive).

7.2.8 The main relevant provisions of the Act are the allowance for the protection of the most important habitats and species by designating Sites of Special Scientific Interest (SSSIs), providing a level of protection to all nesting wild birds (with protection from disturbance to some bird species), and providing similar protection to some other species (such as hazel dormouse). It also lists some invasive non-native species that should not be allowed to spread.

### **The Countryside and Rights of Way Act 2000**

7.2.9 Part III of the Countryside and Rights of Way Act 2000 (CRoW Act) deals specifically with wildlife protection and nature conservation in England and Wales. The CroW Act strengthened the safeguards afforded to SSSIs and adds to the protection of wild animals designated under the WCA 1981 by making it an offence to recklessly disturb the sheltering places of wild animals designated under Schedule 5 of the WCA.

### **Environment Act 2021**

7.2.10 The Environment Act 2021, introduced a mandatory requirement for biodiversity net gain (BNG) within the planning system in England. These provisions will relate to Nationally Significant Infrastructure Projects (NSPIs) from November 2025. The biodiversity elements of the Act include:

- Strengthened biodiversity duty.
- Biodiversity net gain to ensure developments deliver at least 10% increase in biodiversity.
- Local Nature Recovery Strategies to support a Nature Recovery Network.
- duty upon Local Authorities to consult on street tree felling.
- Strengthen woodland protection enforcement measures.
- Conservation Covenants.

- Protected Site Strategies and Species Conservation Strategies to support the design and delivery of strategic approaches to deliver better outcomes for nature.
- Prohibit larger UK businesses from using commodities associated with wide-scale deforestation.
- Requires regulated businesses to establish a system of due diligence for each regulated commodity used in their supply chain.

### **The Environment (Wales) Act 2016**

- 7.2.11 The Environment (Wales) Act 2016 seeks to ensure that natural resources are managed sustainably such that they are able to social, economic and environmental benefits, including nature-based solutions to climate change adaptation and mitigation.
- 7.2.12 The Act introduced an enhanced biodiversity and resilience of ecosystems duty (Section 6 Duty). This duty applies to public authorities in the exercise of their functions in relation to Wales and will help maximise contributions to achieving the wellbeing goals. Section 7 of the Act requires Welsh Ministers to publish and maintain lists of species and types of habitats that are regarded as of 'principal importance' for the purpose of maintaining and enhancing that biodiversity. The Nature Recovery Action Plan supports this legislative requirement to reverse the decline in biodiversity, address the underlying causes of biodiversity loss by putting nature at the heart of decision making and increasing the resilience of ecosystems by taking specific action focused around the six objectives for habitats and species.

### **Protection of Badgers Act 1992**

- 7.2.13 This Act protects badgers and their setts. In England and Wales this makes it an offence to:
- Wilfully kill, injure or take a badger (or attempt to do so).
  - Cruelly ill-treat a badger.
  - Dig for a badger, intentionally or recklessly damage or destroy a badger sett, or obstruct access to it; cause a dog to enter a badger sett.
  - Disturb a badger while it is occupying a sett.

### **Wild Mammals (Protection) Act 1996**

- 7.2.14 This Act makes it an offence to intentionally cause all wild mammals unnecessary suffering by certain methods (e.g. crushing, suffocation).

### **The Hedgerows Regulations 1997**

- 7.2.15 These regulations prevent the removal of most countryside hedgerows without first submitting a hedgerow removal notice to the local planning authority. The regulations specify the criteria to be used to determine which hedgerows are important. The criteria relate to the value of the hedgerows from an archaeological, historical, landscape or ecological perspective. Hedgerows that are younger than 30 years old are excluded if supportive evidence of age can be provided, as are any hedgerows that mark the boundary of a house. In addition, the regulations only apply to hedgerows that are of a certain length. These are:
- Hedgerows that are 20 metres or more long; or
  - Hedgerows that are less than 20 metres long if they are connected at each end to another hedgerow – thereby forming a continuous network of hedgerows. The length of the adjoining hedgerows is immaterial, the significant factor being the connection; or
  - Any stretch within one of these hedgerows; or
  - Any hedgerows that are over 30 years old and qualify under any one of the criteria would be termed ‘important’.

### **The Natural Environment and Rural Communities Act 2006**

- 7.2.16 Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC Act) requires the listing of habitats and species that are of principal importance for the conservation of biodiversity, including those that have been identified as priorities within the UK Biodiversity Action Plan (UK BAP). The NERC Act requires that the Section 41 list be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act to have due regard to the conservation of biodiversity when carrying out their normal functions.

### **Invasive Alien Species (Enforcement and Permitting) Order 2019**

- 7.2.17 These regulations set out to address the problems concerned with invasive alien species (IASs) in order to protect native biodiversity and ecosystem services and minimize and mitigate the human health and/or economic impacts that IASs can have. It sets out rules to prevent and manage the introduction and spread of IASs through prevention, early detection and rapid eradication, and management.

### **Eels (England and Wales) Regulations 2009**

- 7.2.18 The Eels (England and Wales) Regulations 2009 implement Council Regulation (EC) No 1100/2007 of the Council of the European Union, establishing measures for the recovery of the stock of European eel.

### **Salmon and Freshwater Fisheries Act 1975**

- 7.2.19 The Salmon and Freshwater Fisheries Act 1975 aims to protect salmon and trout from commercial poaching, to protect migration routes, to prevent willful vandalism and neglect of fisheries, ensure correct licensing and water authority approval.

### **Convention on Wetlands of International Importance 1972**

- 7.2.20 An international treaty for the conservation and sustainable use of Ramsar sites, wetlands of international importance.

### **Animal Welfare Act 2006**

- 7.2.21 This Act sets out the ways in which animals should be treated, considered and cared for throughout the UK. It applies primarily to domestic animals but some broad provisions, such as the potential for the government to introduce codes of conduct, could apply to wild animals.

## **Policy**

- 7.2.22 The key policy for the works is regarded as EN-1 and EN-5 – see below. The following has and will continue to inform the approach to the design and assessment of the Project:
- Overarching National Policy Statement for Energy (EN-1) 2024 (Ref 7.17).
  - National Policy Statement for Electricity Networks Infrastructure (EN-5) 2024 (Ref 7.18).
  - National Planning Policy Framework, Dec 2024 including Planning Practice Guidance on the Natural Environment (Ministry of Housing, Communities and Local Government, 2024) (Ref 7.19).
  - The Nature Recovery Action Plan for Wales 2020 (Ref 7.20).
  - Planning Policy Wales: Technical Advice Note 5: Nature Conservation and Planning, (Ref 7.21) 2009.
  - Planning Policy Wales Edition 12 (Ref 7.22) 2024.
  - Keepers of Time: ancient and native woodland and trees policy in England, Defra, 2022 (Ref 7.23).
  - Adopted Powys Local Plan 2011-2026 (Ref 7.24).

- Draft Shropshire Local Plan 2016-2038 (Ref 7.25).

### **Overarching National Policy Statement for Energy (EN-1) 2024**

7.2.23 Section 4.6 (Environmental and Biodiversity Net Gain) of the Overarching National Policy Statement (NPS) for Energy (EN-1) outlines key guidance for biodiversity net gain within energy projects, in particular:

- *Para 4.6.2: 'projects in England should consider and seek to incorporate improvements in natural capital, ecosystem services and the benefits they deliver when planning how to deliver biodiversity net gain';*
- *Para 4.6.6 NSIP energy proposals should 'seek opportunities to contribute to and enhance the natural environment by providing net gains for biodiversity, and the wider environment where possible';*
- *Para 4.6.7 applicants 'are encouraged to use the latest version of the biodiversity metric to calculate their biodiversity baseline and present planned biodiversity net gain outcomes. This calculation data should be presented in full as part of their application';*
- *Para 4.6.8 where possible, BNG calculation data 'should be shared, alongside a completed biodiversity metric calculation, with the Local Authority and Natural England for discussion at the pre-application stage';*
- *Para 4.6.11 'we encourage details of any off-site delivery of biodiversity net gain to be set out within the application for development consent';*
- *Para 4.6.12 'when delivering biodiversity net gain off-site, developments should do this in a manner that best contributes to the achievement of relevant wider strategic outcomes, for example by increasing habitat connectivity, enhancing other ecosystem service outcomes, or considering use of green infrastructure strategies. Reference should be made to relevant national or local plans and strategies, to inform off-site biodiversity net gain delivery. If published, the relevant strategy is the Local Nature Recovery Strategy (LNRS). If an LNRS has not been published, the relevant consenting body of planning authority may specify alternative plans, policies or strategies to use';*
- *Para 4.6.13 'in addition to delivering biodiversity net gain, developments may also deliver wider environmental gains and benefits to communities relevant to the local area, and to national policy priorities such as...the enhancement, expansion or provision of trees and woodlands';*
- *Para 4.6.15 'applications for development consent should be accompanied by a statement demonstrating how opportunities for delivering wider environmental net gains have been considered, and where appropriate, incorporated into proposals';*



- *Paragraph 4.6.1 [sic] ‘although achieving biodiversity net gain is not currently an obligation on applicants, Schedule 15 of the Environment Act 2021 contains provisions which, when commenced, mean the Secretary of State may not grant an application for Development Consent Order unless satisfied that a biodiversity gain objective is met’; and*
- *Para 4.6.2 ‘the biodiversity gain objective will be set out in a biodiversity gain statement’.*

- 7.2.24 It should be noted that achieving at least 10% BNG for NSIPs is due to become mandatory in November 2025 and the Project has planned to deliver a minimum of 10% BNG based on the Defra Metric (Ref 7.26) A detailed BNG assessment will accompany the application for development consent.
- 7.2.25 A Habitat Regulations Assessment (HRA) will be produced in line with Section 5.4 of EN-1 relating to SPAs, SACs and Ramsar Sites.
- 7.2.26 Other relevant requirements from EN-1 as set out below will be met:
- *Para 5.4.8 states that ‘development on land within or outside a SSSI, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits (including need) of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national networks of SSSIs’;*
  - *Para 5.4.17 ‘where the development is subject to EIA [Environmental Impact Assessment] the applicant should ensure the ES [Environmental Statement] clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance, ...on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity, including irreplaceable habitats’;*
  - *Para 5.4.19 ‘the applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests’;*
  - *Para 5.4.20 ‘applicants should consider wider ecosystem services and benefits of natural capital when designing enhancement measures’;*
  - *Paragraph 5.4.35 refers to various measures to minimise impact or mitigate – these will be provided in an Outline CEMP accompanying the application for development consent;*



- *Para 5.4.36 ‘applicants should produce and implement a Biodiversity Management Strategy’;*
- *Para 5.4.42 ‘development should, in line with the mitigation hierarchy, aim to avoid significant harm to biodiversity and geological conservation interest, including through consideration of reasonable alternatives...Where significant harm cannot be avoided, impacts should be mitigated and as a last resort, appropriate compensation measures should be sought’;*
- *Para 5.4.44 ‘any habitat creation or enhancement delivered including linkages with existing habitats for compensation or biodiversity net gain should generally be maintained for a minimum period of 30 years, or for the lifetime of the project, if longer’. The lifetime of the project will be used as this is the longer period;*
- *Paragraph 5.4.53 ‘the Secretary of State should not grant development consent for any development that would result in the loss or deterioration of any irreplaceable habitats, including ancient woodland, and ancient and veteran trees unless there are wholly exceptional reasons and a suitable compensation strategy exists’. Footnote 192 of the NPS provides examples of wholly exceptional reasons ; and*
- *Para 5.4.55 ‘the Secretary of State should refuse consent where harm to a protected species and relevant habitat would result, unless there is an overriding public interest and the other relevant legal tests are met’.*

7.2.27 The Project will minimise its impact on biodiversity, including designated sites, priority habitats and protected species and ensure that it follows the mitigation hierarchy. Appropriate mitigation and compensation will be set out where required and take account of national and local priorities set out in action plans and Local Nature Recovery Strategies. If protected species licences are required, they will be sought from Natural England or Natural Resources Wales. The effects on all relevant ecology receptors will be assessed in the ES.

#### **National Policy Statement for Electricity Networks Infrastructure (EN-5) 2024**

- 7.2.28 This NPS is part of a suite of energy infrastructure NPSs. It should be read in conjunction with EN-1. This NPS, together with EN-1, is the primary decision-making document for the Secretary of State when considering applications for development consent for Nationally Significant Infrastructure Projects (NSIPs) for electricity networks infrastructure in England and Wales.
- 7.2.29 The policy and advice in EN-5 on biodiversity relates specifically to bird risk, e.g. paragraphs 2.9.3 to 2.9.6 and mitigation 2.10.2 to 2.10.4, relate to bird issues and

are addressed by Chapter 8, Ornithology. However, any similar issues in relation to bat risk will be addressed as part of the ecological assessment.

**Planning Policy Wales: Technical Advice Note 5: Nature Conservation and Planning, 2009**

- 7.2.30 This Technical Advice Note provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation.

**Planning Policy Wales Edition 12, 2024**

- 7.2.31 Planning Policy Wales Edition 12 (PPW12) sets out the current land use planning policy for Wales. It provides a policy framework that local planning authorities use in the preparation of their development plans and when making planning decisions. Table 7.1 below sets out the main requirements of PPW12 and how they will be considered in the ES.

Table 7-1 – Relevant Sections of Planning Policy Wales

Paragraph Ref	Policy Content	How it will be considered
6.4 Biodiversity and Ecological Networks	<p>6.4.3 Development proposals must consider the need to:</p> <ul style="list-style-type: none"> <li>• Support the maintenance and enhancement of biodiversity and the resilience of ecosystems;</li> <li>• Ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats, including the most recent targets set out in the 2022 UN Global Biodiversity Framework;</li> <li>• Ensure statutorily and non-statutorily designated sites and habitats are properly protected and managed and their role at the heart of resilient ecological networks is safeguarded;</li> <li>• Safeguard protected species and species of principal importance and existing biodiversity assets from direct, indirect or cumulative adverse impacts that affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water, air and soil, including peat; and</li> </ul>	<p>The potential ecological impact of the Project on statutory and non-statutory sites and habitats was considered as part of the identification and appraisal of route options and impact avoided to protected sites and impact to other features minimised.</p> <p>Habitat and protected species surveys are ongoing from 2024 into 2025 to avoid impact to such assets.</p> <p>Mitigation will be identified to enhance ecosystem resilience in terms of diversity, extent, condition and connectivity.</p>

Paragraph Ref	Policy Content	How it will be considered
	<p>Secure the maintenance and enhancement of ecosystem resilience and resilient ecological networks by improving diversity, extent, condition, and connectivity.</p>	
<p>6.4.5 and 6.4.10 Biodiversity and Resilience of Ecosystems Duty (Section 6 Duty). DECCA Framework</p>	<p>Development should not cause any significant loss of habitats or populations of species (not including non-native invasive species), locally or nationally and must work alongside nature and it must provide a net benefit for biodiversity and improve, or enable the improvement, of the resilience of ecosystems. A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site. The stepwise approach outlined below is the means of demonstrating the steps which have been taken towards securing a net benefit for biodiversity. In doing so, planning authorities must also take account of and promote the resilience of ecosystems, in particular the following attributes, known as the DECCA Framework:</p> <ul style="list-style-type: none"> <li>• Diversity between and within ecosystems</li> </ul>	<p>The Step Wise approach has been followed in project evolution.</p> <p>The potential ecological impact of the Project on habitats was considered as part of the identification and appraisal of route options and impact avoided or minimised.</p> <p>Habitat and protected species surveys are on-going from 2024 into 2025 to avoid impact to such assets.</p> <p>Mitigation will be identified which takes full account of the DECCA Framework.</p>

Paragraph Ref	Policy Content	How it will be considered
	<ul style="list-style-type: none"> <li>• The extent or scale of ecosystems;</li> <li>• The condition of ecosystems including their structure and functioning;</li> <li>• The connections between and within ecosystems; and</li> </ul> <p>Adaptability of ecosystems including their ability to adapt to, resist and recover from a range of pressures likely to be placed on them through climate change for example</p>	
6.4.9 Collaborative arrangements	It may not be possible for planning authorities to identify opportunities for a net benefit for biodiversity within their own administrative boundaries and co-operation may be needed to identify, capture and monitor net benefits for biodiversity across larger areas, making use of existing regional mechanisms or setting up new voluntary arrangements.	Such co-operation will be explored for delivery of net benefit for biodiversity.
6.4.11 Maintaining and enhancing biodiversity and the Step Wise approach (Figure 12)	Step 1. Avoid damage to biodiversity. Proposals in statutory designated sites are, as a matter of principle, unacceptable and therefore must be excluded from site searches undertaken by developers. This principle also extends to those sites containing protected species and habitats which are irreplaceable and must be safeguarded.	Step 1: Identification and appraisal of route options has ensured that impact statutorily designated sites has been avoided, and impact to priority habitats minimised. The design process has ensured that notable wildlife habitats and

Paragraph Ref	Policy Content	How it will be considered
	<p>Irreplaceable habitats include, ancient woodland and veteran trees, ancient hedgerows, wet woodlands, sand dunes, peatland, species rich grassland, long undisturbed soils, blanket bog, salt marsh and lowland fen.</p> <p>Step 2. When all locational, siting and design options for avoiding damage to biodiversity have been exhausted, applicants, in discussion with planning authorities, must seek to minimise the initial impact on biodiversity and ecosystems by:</p> <ul style="list-style-type: none"> <li>• Maintaining the largest possible area of existing habitat supporting biodiversity and functioning ecosystems, particularly Section 7 habitats and species where present, by minimising development size and appropriate orientation on site, paying due regard to the potential for continued long term maintenance and management of retained areas to benefit biodiversity;</li> <li>• Ensuring that retained habitats continue to be well connected to adjacent habitats to provide connectivity for key species and ensuring that the favourable conservation status of local species populations is maintained;</li> </ul>	<p>features have been avoided, and micro siting will further ensure minimal impacts.</p> <p>Step 2. The Outline Habitat Management Plan (OHMP) will follow Step 2 guidance and ensure habitat extents are maintained where possible, connectivity maintained, features are retained and managed and effects monitored.</p> <p>Step 3. Mitigation measures, if required, will be put in place to limit the negative effects of the development. This will follow PPW12 guidance to ensure that mitigation or restoration measures will be designed to address the specific negative effects by repairing damaged habitats and disturbed species. They will seek to restore in excess of like for like, accounting for disturbance and time lags for the recovery of habitat and species, and in every case, mitigation or restoration measures will seek to build ecosystem resilience within the site and where possible the wider area.</p> <p>Step 4 will be followed if required, i.e. off-site compensation.</p>

Paragraph Ref	Policy Content	How it will be considered
	<ul style="list-style-type: none"> <li>Retaining existing features, develop a management plan for their future care (e.g., trees, hedgerows, species rich grasslands, heath, wetlands, ponds and freshwater habitats) and use appropriate buffers to protect these from construction and operational impacts, and</li> <li>Using proven innovative/creative solutions (where required) to minimise damage and maintain existing biodiversity features and ecosystems in tandem with robust monitoring and rectification strategies.</li> </ul> <p>Step 3. Where, after measures to minimise impact, biodiversity and ecosystems could still be damaged, or lost through residual impacts, the proposed development should mitigate that damage. Mitigation measures must be put in place to limit the negative effects of a development.</p> <p>Step 4. When all the steps above have been exhausted, and where modifications, alternative sites, conditions or obligations are not sufficient to secure biodiversity outcomes further on-site/immediately proximate, as a last resort</p>	<p>Stages will be subject to the OHMP setting out agreed and appropriate avoidance, minimisation, mitigation/restoration and compensation measures alongside the agreed enhancement measures.</p>

Paragraph Ref	Policy Content	How it will be considered
	off-site compensation for unavoidable damage must be provided.	



## Guidance

- 7.2.32 The following guidance has and will continue to inform the approach to the design and assessment of the Project:
- Shropshire Biodiversity Action Plan 2002 (Ref 7.27).
  - The Powys County Council Local Biodiversity Action Plan (LBAP), 2002 (Ref 7.28).
  - Environmental Improvement Plan 2023 (Defra), 2023 (ref. 7.29);
  - The UK Post-2010 Biodiversity Framework (2011-2020) JNCC and Defra, 2012 (Ref 7.30).
  - Guidelines for Ecological Impact Assessment (EclA) in the UK and Ireland: terrestrial, freshwater, coastal and marine (Chartered Institute of Ecology and Environmental Management) 2024, 'CIEEM Guidelines' (Ref 7.31).
  - Biodiversity Net Gain: Good Practice Principles for Development (CIRIA) 2019 (Ref 7.32).
  - BS 42020:2013 Biodiversity: Code of Practice for Planning and Development (British Standards Institution) 2013 (Ref 7.33).

## 7.3 Consultation and Engagement

- 7.3.1 A summary of the EIA Scoping Opinion from the Planning Inspectorate (PINS) and subsequent responses to the EIA Scoping Opinion are outlined below. Furthermore, all engagement undertaken to date is outlined in this Section.

### Scoping Opinion

- 7.3.2 The Planning Inspectorate Scoping Opinion (dated 4 March 2024) on ecology and subsequent responses are set out in the Table 7.2 below.

Table7-2 – Scoping Opinion from the Planning Inspectorate

ID	Matter	Inspectorate’s Comments	Project Response
3.3.1	International and national sites designated for biodiversity – operation	The Applicant proposes to scope out impacts to international and nationally designated sites during operation, on the basis that there will be limited land take and minimal ongoing disturbance following construction. The Inspectorate notes that some of the national sites identified in Table 8.1 are located within the Scoping Corridor. Given the lack of perceivable impact pathways to the sites identified within Table 8.1 during operation, the Inspectorate agrees to scope this matter out of the ES. This does not preclude any assessment required under the Conservation of Habitats and Species Regulations 2017.	This position is noted.
3.3.2	Local (statutory) sites designated for biodiversity and ancient woodlands – operation	The Inspectorate notes the potential for three ancient woodland blocks to be crossed by the Proposed Development. The Inspectorate considers that impacts to local sites designated for biodiversity and ancient woodlands would primarily occur during the construction phase. However, it is unclear whether maintenance activities undertaken during operation would impact on these sites. The Scoping Report refers to the requirement to clear wayleaves of new growth and in the absence of a defined route for the proposed OHL, it is unclear whether these designations and habitats	We agree that there could be an operational impact due to continued vegetation clearance/ management of wayleaves. The preliminary impact is assessed in the PEIR and the full assessment will be reported in the ES.

ID	Matter	Inspectorate's Comments	Project Response
		<p>would be affected. This should be clarified within the ES. The Inspectorate is therefore not in a position to scope this matter out of the ES.</p>	
3.3.3	<p>Direct and indirect effects arising from permanent loss and/ or fragmentation on habitats of conservation concern – operation</p>	<p>The Applicant proposes to scope this matter out on the basis that there would be no additional (to construction effects) habitat loss or fragmentation as a result of operation. The Scoping Report states that potential impacts would be managed through implementation of a Habitat Protection Plan. Please refer to the Inspectorate's comments at ID 3.3.2 regarding maintenance activities, which apply equally to this matter. The Inspectorate is therefore not in a position to scope this matter out of the ES. The ES should provide an assessment where significant effects are likely to occur, or information demonstrating agreement with the relevant consultation bodies and the absence of a LSE.</p>	<p>We agree that there could be an operational impact due to continued vegetation clearance/ management of wayleaves. The preliminary impact is assessed in the PEIR and the full assessment will be reported in the ES.</p>
3.3.4	<p>Direct and indirect effects arising from temporary loss and/ or fragmentation on habitats (not of conservation</p>	<p>The Applicant proposes to scope this matter out on the basis that the scale of temporary habitat loss will be insubstantial relative to the surrounding landscape and that micro-siting of tower locations will be employed prior to construction if required. Please refer to the Inspectorate's comments at ID 3.3.2 regarding maintenance activities, which apply equally to this matter. The Inspectorate is therefore not in a position to</p>	<p>We agree that there could be an operational impact due to continued vegetation clearance/ management of wayleaves. The preliminary impact is assessed in the PEIR and the full assessment will be reported in the ES.</p>

ID	Matter	Inspectorate's Comments	Project Response
	concern) – operation	scope this matter out of the ES. The ES should provide an assessment where significant effects are likely to occur, or information demonstrating agreement with the relevant consultation bodies and the absence of a LSE.	
3.3.5	Direct and indirect effects on non-avian protected and notable species including bat activity, hazel dormouse, otter, great crested newt (GCN) and vascular and non-vascular plants – operation	The Applicant proposes to scope these matters out on the basis that potential impacts will be managed through implementation of Species Protection Plans (SPP) which would include pre-works checks and, if necessary, timing restrictions and buffer distances and protected species licencing to ensure legal compliance. In line with the Inspectorate's comments at ID 3.3.2 regarding maintenance activities, the SPPs should address the potential for maintenance activities to affect the habitat of the listed species. On this basis and given the limited potential for impacts to occur during operation, the Inspectorate agrees to scope these matters out of the ES.	This comment is noted.
3.3.6	Invasive and non-native species (INNS) – construction and operation	The Scoping Report does not clearly set out whether an assessment of INNS will be provided for the construction and operational phases. The Inspectorate does not consider that sufficient information has been provided regarding the presence and potential spread and introduction of INNS by the Proposed Development to justify the scoping out of this matter during	INNS plant and animal species will be identified during the initial habitat survey and will be addressed in the ES.

ID	Matter	Inspectorate's Comments	Project Response
		<p>construction and operation. The Environment Agency's (EA) scoping consultation response (Appendix 2 of this Opinion) highlights multiple records of INNS within and adjacent to the Scoping Corridor. The ES should describe any necessary mitigation and/ or biosecurity precautions required to prevent the spread of INNS and explain how these would be secured and implemented through the application for development consent. Effort should be made to discuss and agree the details of any necessary mitigation and/ or biosecurity precautions with relevant consultation bodies such as the EA, NRW and NE. The ES should provide an assessment of impacts from INNS where significant effects are likely to occur.</p>	
3.3.7	<p>Species specific surveys and assessment of invertebrates, fish, brown hare, harvest mouse, hedgehog, fungi – construction and operation</p>	<p>The Inspectorate does not consider that sufficient information on the presence and likely impacts to invertebrates, brown hare, harvest mouse, hedgehog and fungi has been provided to justify the scoping out of specific surveys and assessment for these species. The Inspectorate notes the potential for undergrounding of cables. Where there is potential for underground cables to cross watercourses, impacts on these watercourses and the fish populations they support should be assessed. The ES should provide surveys and assessments for these species where significant effects</p>	<p>The extended Habitat Survey will identify any potential for these species and make recommendations for any bespoke protected species surveys if required. Once these surveys are completed, should any of these species be found to be present, impact on these species will be addressed in the ES. If watercourses are impacted</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>are likely to occur, or information demonstrating agreement with the relevant consultation bodies and the absence of a LSE. The Applicants attention is drawn to NRW's response to consultation (Appendix 2 of this Opinion) regarding records of invertebrate fauna and the need for assessment.</p>	<p>during the undergrounding works or other works then impacts to fish will be considered and addressed in the ES. We note NRW's concern over specific invertebrate species but consider the species and its habitat will not be impacted (this will be justified in the ES).</p>
3.3.8	Roosting bat surveys – construction and operation	<p>The Scoping Report proposes to scope out roosting bat surveys on the basis that there would be multiple years between ecological field surveys and commencement of the construction phase, during which roost and potential roost features in trees could have appeared or disappeared. The Scoping Report proposes to undertake an assessment of potential for woodland blocks to support bats through static detector surveys. For the final route selection, trees that will be impacted will be assessed for bat roost potential and medium/ high category trees either climbed, surveyed or avoided by micro siting. The Scoping Report further states that pre-commencement bat surveys can be conditioned, and licensing may be used if required. The Inspectorate agrees that this is a proportionate approach to the survey of roosting bats and agrees that roosting bat</p>	<p>We note PINS agreement that roosting bats surveys can be scoped out of the PEIR and ES in relation to construction and that the proportionate approach to bat surveys will be set out in the ES. However, should the analysis of static bat surveys undertaken in 2025 show the presence of potential roosts of rare bat species (greater horseshoe, lesser horseshoe, Bechstein's and barbastelle), we would liaise with NRW/NE and consider further bat survey (tree climbing; emergence) to investigate nearby</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>surveys can be scoped out. Proposed pre-commencement bat surveys and mitigation should be clearly described in the ES and secured through the application for development consent. For the avoidance of doubt, and based on paragraph 8.32 of the Scoping Report, the Inspectorate understands that effects to roosting bats during construction are scoped into the assessment. The Applicant's attention is drawn to NRW's scoping consultation response (Appendix 2 of this Opinion) regarding effects on the Tanat and Vyrnwy Bat Sites Special Area of Conservation (SAC), its features and bat roosts within the SAC and within the Meifod Valley which is functionally linked land to the SAC. Effort should be made to agree the extent of surveys and any necessary mitigation with relevant consultation bodies such as NRW and NE.</p>	<p>roosts if it is considered that a significant impact could occur. Proposed pre-commencement bat surveys and approach to mitigation (if required) will be clearly described in the ES and secured in the draft DCO.</p> <p>Roosting bat impact during operation will be addressed in the ES and is considered in this PEIR.</p> <p>NRW's comments in relation to the Tanat and Vyrnwy Bat Sites Special Area of Conservation (SAC) are noted and will be discussed as part of ongoing engagement with NRW.</p>
3.3.9	Badger – construction and operation	<p>Table 8.2 of the Scoping Report proposes to scope out surveys and assessment of badger on the basis that where badger setts occur in the vicinity of the Proposed Development's infrastructure, modification to works will be proposed to retain badger setts. This information is contradicted by paragraph 8.24 of the Scoping Report, which proposes to scope in badger surveys based on</p>	<p>We note PINS concerns and the preliminary impacts on badgers during construction and operation is included in this PEIR, where relevant. The full assessment of impacts and any</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>the results of the extended Phase 1 Habitat Survey. In the absence of information such as evidence demonstrating clear agreement with relevant consultation bodies, the Inspectorate is not in a position to agree to scope these matters out of the assessment. Accordingly the ES should include an assessment of these matters or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of a LSE.</p>	<p>mitigation measures (if required) will be included in the ES,</p>
3.3.10	Water vole – construction and operation	<p>The Scoping Report proposes to scope out surveys and assessment of water voles on the basis that the Proposed Development would avoid habitat areas associated with water voles, and that should this assumption change, the need for water vole surveys would be revisited. In the absence of information such as evidence demonstrating clear agreement with relevant consultation bodies, the Inspectorate is not in a position to agree to scope these matters from the assessment. Accordingly the ES should include an assessment of these matters or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of a LSE.</p>	<p>The impact on water vole will be included in the ES, but water vole surveys are not being undertaken due to the lack of impact to water vole habitat given that works will be generally set back from watercourses at least 10m. However, during otter surveys any evidence of water vole will also be recorded. The ES will seek to demonstrate no likely significant effects on water vole. This approach will be discussed with NRW and NE.</p>



ID	Matter	Inspectorate's Comments	Project Response
3.3.11	Reptiles – construction and operation	The Scoping Report proposes to scope out surveys and assessment of reptiles on the basis that habitat manipulation under ecological supervision would be utilised. The Scoping Report states that should this technique not be appropriate, the need for reptile surveys will be revisited. In the absence of information such as evidence demonstrating clear agreement with relevant consultation bodies, the Inspectorate is not in a position to agree to scope these matters from the assessment. Accordingly the ES should include an assessment of these matters or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of a LSE.	The impact on reptiles will be included in the ES, but reptile surveys are not being undertaken due to the lack of impact to habitat and the ease of mitigation. The ES will seek to demonstrate no likely significant effects on reptiles. This approach will be discussed with NRW and NE.
3.3.12	Study areas	The ES should clearly define and justify the study areas, based on the Zone of Influence (Zol) from the Proposed Development. This should include consideration of potential impact pathways to identify where LSE might occur to a receptor, regardless of geographical distance from the application for development consent boundary. This should be supported by figures as appropriate.	This comment is noted.
3.3.13	Noise and vibration impacts	It is unclear whether an assessment of impacts on ecological receptors from noise and vibration is proposed. The ES should assess noise and vibration	Based on currently proposed construction and maintenance activities, no reasonable

ID	Matter	Inspectorate's Comments	Project Response
	on ecological receptors	impacts on ecological receptors where significant effects are likely to occur. Any such assessments should cross refer to findings of other relevant aspect chapters. The Applicant should also refer to the Inspectorate's comments in Table 3.7 (Noise and Vibration) of this Opinion in this regard.	likelihood of noise and vibration resulting in an LSE to any ecological receptors, whether in terms of tower construction and operation, or routes for construction traffic, has been identified. This is due to a lack of source/receptor pathway for: bats; badger; otter; water vole; reptiles; GCN; hazel dormouse; invertebrates or any other protected or notable animal with a reasonable likelihood of being present in or around the Project's draft Order Limits including in the vicinity of access routes. In the event that a source/receptor pathway for noise and vibration resulting in an LSE for ecological receptors is subsequently identified, this would be assessed in the ES and addressed in terms of ecological mitigation (e.g. impacts to bat roost), but it is not considered

ID	Matter	Inspectorate's Comments	Project Response
			that noise and vibration surveys are required for ecological purposes.
3.3.14	Montgomery Canal	There are records for grass-wrack pondweed, a nationally scarce aquatic plant, located at Montgomery Canal, Aston Lock - Keeper's Bridge Site of Special Scientific Interest (SSSI). Where there is potential for this SSSI to be affected by the Proposed Development, a construction phase assessment of impacts to grass-wrack pondweed should be provided. The Applicant's attention is drawn to the scoping consultation responses from the EA and the Canal and River Trust in this regard (Appendix 2 of this Opinion).	We note the comments made. Currently, no impact is expected given that the works will oversail the canal SSSI and be appropriately set back from the canal bankside.
3.3.15	Confidential annexes	Public bodies have a responsibility to avoid releasing environmental information that could bring about harm to sensitive or vulnerable ecological features. Specific survey and assessment data relating to the presence and locations of species such as badgers, rare birds and plants that could be subject to disturbance, damage, persecution, or commercial exploitation resulting from publication of the information, should be provided in the ES as a confidential annex. All other assessment information should be included in an ES	Noted

ID	Matter	Inspectorate's Comments	Project Response
		chapter, as normal, with a placeholder explaining that a confidential annex has been submitted to the Inspectorate and may be made available subject to request.	

### **Engagement to date**

- 7.3.3 Data on important sites, protected and notable species has been obtained from the Shropshire Environmental Data Service and the Biodiversity Information Service (BIS) for Powys and Brecon Beacons National Park.
- 7.3.4 A meeting was held with Natural England (NE) Sustainable Development and Planning Team on the 17<sup>th</sup> of September 2024 at which the proposed survey methodologies and approach were explained. NE expressed the view that 'significant impacts from the project were not expected'. See minutes attached as Appendix 7.1.
- 7.3.5 Meetings with Natural Resources Wales, Environment Agency, Powys County Council and Shropshire County Council are being arranged.

## **7.4 Assessment Methodology and Significance Criteria**

### **Project Description and Study Area**

#### **Project Description**

- 7.4.1 The Project comprises an approximately 50km double circuit 132kV connection from the new 132kV Grug y Mynydd Collector Substation (which is close to the existing Tirgwynt Wind Farm and to proposed wind farms being promoted by Bute Energy Ltd (Llyn Lort Energy Park) and Vattenfall (Mynydd Llest y Graig Wind Farm) in Powys, Wales) to the existing 400kV network in Shropshire, England. The current proposals for the Project, which are the subject of the 2025 statutory consultation, comprise:
- A new double circuit 132kV connection comprising an Overhead Line (OHL) with a small proportion of Underground Cable (UGC) from the new 132kV Grug y Mynydd Collector Substation (would be close to the existing Tirgwynt Wind Farm and proposed wind farms being promoted by Bute Energy Ltd (Llyn Lort Energy Park) and Vattenfall (Mynydd Llest y Graig Wind Farm) in Powys, Wales) which will accommodate incoming Overhead Lines (OHL) from additional proposed energy sites.
  - A new Underground Cable (UGC), which will be routed from the Grug y Mynydd Collector Substation, through the proposed Llyn Lort Energy Park to avoid conflicting with the proposed turbines and connect to a new Cable Sealing End Compound (CSEC) near Cors y Carreg which is required to transition from a UGC to an OHL.

- A new OHL which will be supported on a type of tower referred to as an L7 design, a steel lattice tower with six cross-arms (three on each side).
- A new Switching Station near Lower Frankton which allows the power to be isolated from the substation being developed by National Grid Electricity Transmission to connect to the existing 400kV National Electricity Transmission System (NETS) in Shropshire, England.
- There will also be temporary works associated with the construction of the Project.

### Study Area

- 7.4.2 The CIEEM EclA guidelines (Ref. 7.31) require assessments to be focused on 'Zones of Influence' (Zol) – defined as being the area over which changes arising from construction, operation (including maintenance) and decommissioning could lead to ecologically significant effects. The study area for ecology comprises the area that could be directly affected by the Project.
- 7.4.3 A new 400kV substation in Shropshire will be delivered by National Grid and therefore does not form part of the Project but will be included within the cumulative assessment. The Environmental Statement (ES) will address all other appropriate developments including wind farm developments and their associated grid connections in the study area via the cumulative assessment.
- 7.4.4 The Project is cross border within both Wales (Powys) and England (Shropshire).
- 7.4.5 The study area includes the following buffer zones (calculated from the Project's Draft Order Limits), in line with species specific best practice guidelines for data searches and field survey. Distances reflect approaches accepted in Habitat Regulation Assessment (HRA) terms as well as the circumstances of the Project.
- Data search
    - Internationally designated areas: 5km for SAC.
    - Nationally designated areas and non-statutory designated sites: 1km; these sites are numerous and 1km is a reasonable buffer to assess significance.
    - Records of extant protected species (from 2002 onwards): 1km;
    - Areas of potentially nationally important peatland up to 250m: based on NatureScot/SEPA guidance on Ground Water Dependent Terrestrial Ecosystems (adopted by WG), which correlate with avoidance distances and actual baseline survey methods.
    - Priority Habitats 500m.

- Field studies
  - Extended Phase 1 Habitat Surveys, with any habitats of Conservation Concern subject to National Vegetation Classification (NVC) surveys: up to 100m;
  - Ground Water Dependent Terrestrial Ecosystems (GWDTE): up to 250m;
  - Great crested newt *Triturus cristatus*: Habitat Suitability Index surveys will be undertaken of ponds within 500m; and
  - Protected species: up to 200m or wider in exceptional circumstances should survey data suggest that this is necessary.

7.4.6 The study area for ecology is shown on Figures 7.1 Statutory Sites and 7.2 Priority Habitats.

7.4.7 Baseline data collection has included a data search (April-May 2024) plus extended habitat surveys and some protected species surveys (May to October 2024). This information is presented in Appendix 7.2. Additional habitat and protected species surveys are planned for 2025.

7.4.8 The baseline has also been informed by the following information sources:

- Aerial Photography, (Ref 7.34) - Review of freely available aerial photography has allowed habitats within the study area to be assessed in a wider (landscape-scale) context; assessment and identification of potential ephemeral biodiversity receptors that may not be evident on the ground during the field survey (e.g. ephemeral ponds); identification of potential wildlife corridors or barriers to animal movements (e.g. road networks, built development and major watercourses); and a review of changes to habitats over time so that an assessment of reliability/longevity can be made.
- NBN Atlas Wales (Ref 7.35) (the country's largest collection of freely available biodiversity data) and NRW's Protected areas of land and sea online database (Ref 7.36).
- Multi-agency Geographic Information for the Countryside (MAGIC) (Ref 7.37)
  - The location of statutory designated sites for nature conservation;
- DataMapWales (Ref 7.38) - Habitats of Principal Importance, ancient woodland, Peat Land Map of Wales and Habitat Networks.
- Relevant OS mapping has been studied to identify ponds, issues and/ or drains (as some biodiversity receptors are not always apparent on aerial photographs).

7.4.9 In addition, ecology surveys undertaken for the proposed Llyn Lort Energy Park have been used to assist the assessment of the ecological baseline of the

southern part of the route, i.e. the underground section connecting the Grug y Mynydd Collector Substation and CSEC near Cors y Carreg.

## Desk Study

7.4.10 Baseline conditions of the Project were established during a desk study for records of Wildlife sites and protected and notable species using the following sources:

- Biodiversity Information Service for Powys (Ref 7.39).
- Shropshire Ecological data Network (Ref 7.40)

7.4.11 Records of protected and notable species and notable habitats were identified up to 1km (for most species) and 500m (for habitats and great crested newts) from the Project's draft Order Limits.

## Site Visits and Surveys

7.4.12 The following surveys have been undertaken or are proposed.

- Habitat Surveys (April 2024- October 2025)
  - Extended habitat survey using UK habitats Methodology, to record broad habitat types and extended to record suitability to support protected species;
  - If Habitats of Conservation Concern (including GWDTEs) are identified during the Phase 1 habitat survey, National Vegetation Classification (NVC) survey will be undertaken to categorise the plant communities present;
  - Invasive and Non-native species (INNS plant and animal species) will be identified during the initial habitat survey and will be addressed in the ES; and
  - Habitat surveys extended into October 2024 for habitats of expected low botanical importance, i.e. active farmland (improved grassland, arable).

## Protected Species Surveys

7.4.13 Based on the results of the extended Phase 1 habitat survey protected species surveys are likely to be required, and are expected to be undertaken for the following receptors (where a specific survey season is recommended, this is provided in brackets):

- Badger *Meles meles*.
- Otter *Lutra lutra*.
- Hazel dormouse *Muscardinus avellanarius* (April-November);
- Static detector bat activity surveys (April-October); Static bat recorders will be used to classify bat activity levels of each woodland block directly impacted,



for three periods during spring, summer, autumn (methods established in Bat Conservation Trust Guidelines, Ref 7.41). This data will be analysed and likely roost activity can be inferred: this is considered sufficient to assess the risk to bats for the ES submission. The ES will recognise that tree condition is dynamic and that the roost potential of trees may change significantly between assessment and construction, thus a pragmatic approach to survey and assessment is required. Commitments will be secured to ensure that pre-commencement bat surveys will be undertaken and protected species licencing, as necessary to accurately reflect the roosting resources affected prior to construction. This approach will be included in future discussions with NRW and NE.

- Habitat Suitability Index survey of ponds within 250-500m of the Project to assess their suitability for great crested newt *Triturus cristatus* and eDNA surveys for ponds assessed as above average (April-June).

7.4.14 Based on the findings of the desk-based surveys, nature of the Project and potential for significant effects, the following surveys are not proposed to be undertaken (subject to results of extended Phase 1 Habitat Survey):

- Emergence bat surveys of trees, buildings and other structures potentially impacted by the Project: no bat roost surveys are proposed for individual trees to be removed during the construction phase as this would be a disproportionately high level of survey work to carry out given the amount of forestry to be affected. This is consistent with PINS Scoping Response (Ref 7.42, Table 7.1 above) and the 2023 Bat Survey Guidelines (Ref 7.41) which state in paragraph 6.3.3 that for large infrastructure projects 'a full suite of all survey types at every stage would be onerous and inefficient. Initially, it is likely to be more important to understand landscape context, the species present and the risks involved for bats.
- Paragraph 6.3.4 (and box 6.1) of the same bat survey guidance document also highlights the fact that trees and woodland are a much more dynamic roosting environment for bats (than buildings) with roosts and potential roost features in trees appearing or disappearing over a period of several years. There is an expectation of multiple years between the completion of the ecology field surveys undertaken as part of the EIA and the commencement of the construction phase. However, static bat detectors will be deployed in suitable habitat within the study area. These will be supplemented by detailed forestry and woodland surveys of woodland blocks which will also provide an indication of bat suitability. Therefore, an understanding of the bat species, roost suitability and bat activity levels will be gained for the Project. This is considered sufficient baseline data to inform the ecological appraisal, subject

to approval from NRW and NE and all appropriate further surveys would be undertaken post consent and pre-construction.

- **Water vole surveys:** Water vole *Arvicola amphibius* activity is mostly restricted to areas immediately adjacent to river/canal banks and stream banks – the intention is for these to be spanned and works set back at least 10m and thus remain unaffected by the construction and operation of the Project. Should this assumption change, the need for water vole surveys will be revisited.
- **Great crested newt surveys:** Towers and associated works have been positioned to avoid waterbodies (ponds, ditches etc) and terrestrial habitat that would require great crested newt (GCN) survey. Presence/absence surveys for GCN would be triggered based on pond Habitat Suitability Index (HSI data), data search results and presence of suitable (connected) terrestrial habitat. However, small amounts (judged by Ecologist and/or GCN licence habitat impact calculator) of terrestrial habitats impacted can be subject to habitat manipulation under ecological supervision (see reptiles). Works would be timed to avoid disturbance to hibernating GCN where surveys identify their presence.
- **Reptile surveys:** Surveys/impact can be avoided by use of 'habitat manipulation under ecological supervision'. This technique includes hand searching for reptiles in areas of suitable grassland/scrub habitat impacted by the Project (e.g. for tower bases, access, compounds etc), followed by a cutting of the vegetation down to 10cm, leaving for 24 hours (for reptiles to move into contiguous adjacent suitable habitat), then vegetation clearance/topsoil removal. Should this technique not be appropriate, the need for reptile surveys will be revisited.
- **Invertebrate surveys:** Invertebrate populations unlikely to be impacted by cabling, towers, associated works;
- **Fish and aquatic surveys:** Watercourses spanned and remain unaffected. Standard good practice measures will be in place for construction, to include pollution prevention; and the setting back of works from watercourses by at least 10m.
- **Other mammals:** (brown hare *Lepus europaeus*, hedgehog *Erinaceus europaeus*, harvest mouse *Micromys minutus*). Impact to these species is not expected to be considered significant in EIA terms.

7.4.15 The Scoping Opinion in relation to invertebrates, fish, brown hare, harvest mouse, hedgehog and fungi is noted. The extended Habitat Survey would identify any potential for these species and make recommendations for any bespoke protected species surveys if required. If present, impact on these species will be

addressed in the ES. If watercourses are impacted during the undergrounding works or other works then impacts to fish will be considered and addressed in the ES. We note NRW's concern over specific invertebrate species but consider the species and its habitat will not be impacted (this will be justified in the ES). This issue will be discussed further with NRW and NE as part of ongoing technical engagement with stakeholders.

- 7.4.16 The following surveys have been undertaken to date (January 2025):
- Extended Habitat Surveys, using UK Habitat Classification, for land impacted plus 100m either side.
  - Ground Water Dependent Terrestrial Ecosystems (GWDTE): up to 250m.
  - Great crested newt: Habitat Suitability Index and eDNA surveys of ponds within 250m (ponds and waterbodies within 500m also assessed for connectivity with the Project).

### **Environmental Impact Assessment Methodology**

- 7.4.17 The assessment follows the process set out in the EIA Regulations. The methodology is in line with impact assessment procedures detailed by CIEEM (Ref. 7.31) and takes account of relevant guidance on the implementation of the Habitats Regulations (Ref. 7.3). The evaluation of effects aims to ensure that the consenting authority has sufficient information to determine whether the Project may result in significant effects on ecology or to designated sites that qualify for their ecological interest.
- 7.4.18 Effects are assessed with reference to the baseline habitats and ecological features and populations at and surrounding the Project.
- 7.4.19 The assessment considers whether the construction and operation of the Project may lead to any effects on sensitive ecological receptors arising from:
- Direct loss of habitat arising from temporary land take during construction and permanent habitat losses to accommodate the infrastructure of the Project;
  - Indirect habitat loss arising from disturbance if species are displaced from breeding, foraging or roosting habitats during the construction phase of the Project.
  - Mortality from collision with the wires of the Overhead Line (OHL) during operation.
  - Cumulative effects arising from any of the above combined with effects from other proposed or existing developments in the same geographic area which act on the same regional ecological receptors.

7.4.20 An effect is defined as a change in status of an ecological receptor arising from the Project and the assessment considers the direction of change (beneficial or adverse), its magnitude in terms of spatial and temporal influences, and the likelihood of the effect occurring. The significance of identified effects is assessed by considering three factors:

- The Nature Conservation Importance (sensitivity) of the affected receptor.
- The magnitude of the likely effect.
- The likely outcome of the effect on the conservation status of the ecological receptor.

### **Ecological Receptors**

7.4.21 The ecological receptors that will be considered for assessment comprise:

- Statutory and non-statutory designated sites for nature conservation purpose (excluding ornithological designations, which are considered separately in Chapter 8: Ornithology).
- Habitats of conservation concern i.e. Ground Water Dependent Terrestrial Ecosystems (GWDTE), Habitats of Principal Importance in England (NERC Section 41 habitats) (Ref 7.11); Welsh Section 7 Priority Habitats, Local Biodiversity Partnership Priority Habitats (Ref 7.43).
- Protected species and notable species defined by: Conservation of Habitats and Species Regulations 2017 (Ref 7.3), Wildlife and Countryside Act 1981 (Ref 7.4), Badgers Act 1992 (Ref 7.8), Species of Principal Importance in England (NERC Section 41 species) (Ref 7.11) and priority species included within the Welsh Priority Species, Local Biodiversity Partnership Priority Species (Ref 7.43).

### **Criteria for Assessing Sensitivity of Receptors**

7.4.22 This assessment identifies 'sensitive ecological receptors' (species and habitats that are both valued and could be affected by the Proposed Development) and separately, to consider legally protected species. The factors influencing the categorisation of how a receptor is valued is explained in more detail below, with examples provided in Tables 7.3 to 7.5 below.

7.4.23 The assessment focusses on valued ecological receptors. CIEEM guidelines (Ref 7.31) state that detailed assessment is not required for ecological features that are 'sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable'.

- 7.4.24 Therefore, the sensitivity of species populations and habitats is assessed with reference to:
- Their importance in terms of 'biodiversity conservation' value (which relates to the need to conserve representative areas of different habitats and the genetic diversity of species populations).
  - Any social benefits that species and habitats deliver (e.g. relating to enjoyment of flora and fauna by the public).
  - Any economic benefits that they provide.
- 7.4.25 The identification and characterisation of effects on ecological receptors will be undertaken in accordance with the CIEEM guidelines (Ref 7.31) with reference to magnitude of impact (e.g. proportion of a population affected), extent, duration and reversibility as appropriate. Effect magnitude will be considered alongside the likelihood of its occurrence to help make a judgement on the significance of effects.
- 7.4.26 The evaluation of effects will consider how the conservation status of each habitat or species may be affected by the predicted magnitude and direction of effects arising from the Project. The maintenance of existing favourable conservation status for affected habitats and species, at the appropriate geographic scale, will be a key judgement for evaluating effect significance.
- 7.4.27 Impacts will be considered during the construction and operational phases and will be assessed on the basis that a clearly defined range of avoidance and standard good practice measures are implemented (see embedded and standard good practice section below).
- 7.4.28 The assessment will only assess in detail impacts upon important terrestrial ecological features i.e. those that are considered important and likely significantly affected by the Project.
- 7.4.29 The effects of the Project will be assessed in isolation and in combination with other relevant large-scale developments within 5km of the Project as well as intra-project cumulative effects.
- 7.4.30 When considering potentially significant effects on biodiversity receptors, whether these are negative or positive, the following characteristics of environmental change are considered:
- Extent - the special or geographical area over which the environmental change.

- Magnitude - the size, amount, intensity, or volume of the environmental change.
- Duration - the length of time over which the environmental change may occur.
- Frequency - the number of times an environmental change may occur.
- Timing - the periods of times an environmental change may occur.
- Reversibility - whether the environmental change can be reversed through restoration actions or regeneration.

- 7.4.31 Both species' populations and habitats have been valued using the following scale: Very High, High, Medium, Low, Very Low and Negligible. The approach taken in this assessment is that a species population that is considered to be of Medium or greater importance in biodiversity conservation terms is considered to be a sensitive receptor. If a species population is considered to be of Low or Very Low value, the Proposed Development will not have a significant effect on the receptor in question. Exceptions are if the species population has been identified as having high social or economic value or if the species is legally protected. A similar approach is adopted for habitats. In addition, the role that these ecological features play in the wider ecosystem is also considered when attributing value. Ecological features have been valued using the scale set out in Table 1 below, with examples provided of criteria used when defining the level of value.
- 7.4.32 The importance of an ecological feature should be considered within a defined geographical context. The following frame of reference has been used in this case:
- International and European.
  - National (UK).
  - Regional (Wales).
  - County (Powys/Shropshire).
  - Local (e.g. Vyrnwy Valley Communities).
  - Site.
- 7.4.33 Receptors valued below the Site level are described as being of Negligible importance. The CIEEM Guidelines state that features of less than Local importance are generally considered unlikely to trigger a mitigation or policy response in ES terms.
- 7.4.34 Sensitivity has been determined using professional judgement on the basis of the following matrix in Table 7.3 below.

Table 7-3 – Sensitivity criteria

Sensitivity	Definition
Very High	Nationally and internationally important ecological feature with high vulnerability and no ability to recover.
High	Regionally important ecological feature with high vulnerability and no ability to recover. Nationally and internationally important ecological feature with high vulnerability and low recoverability
Medium	Nationally and internationally important ecological feature with medium vulnerability and medium recoverability. Regionally important ecological feature with medium to high vulnerability and low recoverability. Locally important ecological feature with high vulnerability and no ability to recover.
Low	Nationally and internationally important ecological feature with low vulnerability and high recoverability. Regionally important ecological feature with low vulnerability and medium to high recoverability Locally important ecological feature with medium to high vulnerability and low to medium recoverability
Negligible	Locally important ecological feature with low vulnerability and very high recoverability. Ecological feature is not vulnerable to impacts regardless of value/importance.

### Criteria for Assessing Magnitude of Impact

7.4.35 The CIEEM Guidelines state that impacts should be quantified, if possible, and expressed in absolute or relative terms (e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population). We have followed that approach in this PEIR: predicted impacts on ecological receptors are categorised as high, medium, low, negligible or no impact based on the definitions in Table 7.4 below. The magnitude of change has been assessed using professional judgement and the guidance criteria presented in Table 7.4.

Table 7-4 – Magnitude Criteria

Magnitude	Definition
High	Irreversible impact on the status of the nature conservation designation, habitat or species and likely to threaten the long-



Magnitude	Definition
	term integrity of the feature. Not reversible or replaceable. Will remain detectable in the medium and long term (see below).
Medium	Detectable impact on the status of the nature conservation designation, habitat or species population in the medium term but is reversible/replaceable given time, and not a threat to the long-term integrity of the feature
Low	Detectable impacts, and may be irreversible, but either of sufficiently smallscale or of short-term duration to have no material impact on the conservation status of the nature conservation designation, habitat or species population
Negligible	Detectable impact but reversible within 12 months. Not expected to affect the conservation status of the nature conservation designation, habitat or species under consideration.
No impact	No detectable impacts on the ecological resource, even in the immediate term.

The following definitions have been applied in respect to timescales:

- Negligible – up to 12 months.
- Short term: Within approximately up to 5 years.
- Medium term: Within approximately 5-15 years.
- Long term: Approximately 15-30 years
- Permanent: Effects continuing indefinitely, extending beyond the average span of a human generation (approximately 25-30 years). If there is a high certainty of substantial improvement after this period, for example following project decommissioning or the establishment of high-value habitat, effects could be classified as long-term

The following definitions have been applied in respect to reversibility:

- High reversibility: Reversible within 12 months (e.g. removal and reinstatement of grassland habitat).
- Medium reversibility: Reversible in the medium term (5-15 years), not a threat to the long term integrity of the feature (e.g. removal and reinstatement of scrub or hedgerow habitat).
- Low reversibility: Reversible but will take an extended period of time (e.g. 15-50 years) and will require mitigation (e.g. removal and reinstatement of immature or semi-mature woodland).
- Irreversible: The impact is one from which recovery is not possible within a reasonable timescale and there is no reasonable chance of action being taken to reverse (e.g. removal of veteran trees or compaction of soil within ancient woodland which will irreversibly damage ground flora).



7.4.36 The evaluation of effects will consider how the conservation status of each ecological receptor may be affected by the predicted magnitude and direction of effects arising from the Project. The maintenance of existing favourable conservation status for affected receptors, at the appropriate geographic scale, will be a key judgement for evaluating effect significance.

7.4.37 A 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for a biodiversity receptor(s) or for biodiversity in general (Ref 7.31). For example, providing a long-term connection between two isolated populations of a protected species such as dormouse would be considered a significant positive effect, supporting population growth and expansion whereas activities that result in the loss of irreplaceable habitat (e.g. ancient woodland) would be considered significant negative effects.

### Significance Criteria

7.4.38 The predicted significance of the effect was determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change as detailed in Table 7.5 below. Major and moderate effects are considered significant in the context of the EIA Regulations.

Table 7-5 – Significance Criteria

Significance of effect	Description
Major	Irreversible impact on the status of the nature conservation designation, habitat or species and likely to threaten the long-term integrity of the feature. Not reversible or replaceable. Will remain detectable in the medium and long term.
Moderate	Detectable impact on the status of the nature conservation designation, habitat or species population in the medium term but is reversible/replaceable given time, and not a threat to the long-term integrity of the feature.
Negligible	Detectable impact but reversible within 12 months. Not expected to affect the conservation status of the nature conservation designation, habitat or species under consideration
No impact	No detectable impacts on the ecological resource, even in the immediate term.
<ul style="list-style-type: none"> <li>• Negligible – up to 12 months.</li> <li>• Short term: Within approximately up to 5 years.</li> </ul>	

Significance of effect	Description
	<ul style="list-style-type: none"> <li>• Medium term: Within approximately 5-15 years.</li> <li>• Long term: Approximately 15-30 yeqrs</li> </ul> <p>Permanent: Effects continuing indefinitely, extending beyond the average span of a human generation (approximately 25-30 years). If there is a high certainty of substantial improvement after this period, for example following project decommissioning or the establishment of high-value habitat, effects could be classified as long-term</p>

## Assumptions and Limitations

- 7.4.39 The following limitations and assumptions have been identified:
- 7.4.40 It has not been possible to access and undertake an extended habitat survey of the entire preferred route alignment and area of potential impact for the Project. Currently (as of January 2025) around 48% of the Project has been subject to habitat survey. However, the habitat survey information collected to date, coupled with the use of aerial photography and record centre data allow a sufficient knowledge of the habitats impacted for stakeholder consultation purposes;
- 7.4.41 Only limited protected species surveys have been undertaken to date. However, the extended habitat survey provides an assessment of the potential for protected species along the route and the records from the local record centres show the likely distribution of protected species along the route. It is considered that taken together this provides adequate information on the potential impact to protected species for the purposes of stakeholder consultation;
- 7.4.42 This PEIR has been produced based on the latest alignment of the route and associated works (such as the Grug y Mynydd Collector Substation, UGC, Lower Frankton Switching Station and associated temporary construction works) as presented at Statutory Consultation. The nature of an OHL route allows for micro siting of towers which can be used to avoid or minimise impact on ecological features and species.
- 7.4.43 A lack of access for the southern and northern ends of the route has restricted ecology habitat survey in these areas to date; and
- 7.4.44 Assume, where possible, tower locations and associated works will be set back 10m from watercourses.

## **Biodiversity Net Gain and Net Benefit for Biodiversity**

- 7.4.45 As the Project is being assessed as an NSIP, a full BNG assessment will be provided as an appendix to the ES, and will follow forthcoming government guidance in relation to BNG and NSIPs and industry good practice methodologies comprising:
- Biodiversity Net Gain: Good Practice Principles for Development (Ref 7.32).
  - Statutory Biodiversity metric 4.1 (Defra, 2023) (or the most recent version at the time of assessment) (Ref 7.26).
- 7.4.46 The application of the standardised methods as a BNG assessment results in the calculation of a baseline biodiversity value, a post-development biodiversity (or post intervention) value and a net change in biodiversity value due to the Project.
- 7.4.47 Baseline data has been and will continue to be collected in UK habitat classification typology to enter this data into the metric (this survey which includes a condition assessment is being undertaken in parallel with the Phase 1 habitat ground-truthing survey).
- 7.4.48 Calculations for both on and off-site biodiversity units pre- and post-development will be included within a BNG technical report to be appended to the ES ('BNG Calculations and OHMP').
- 7.4.49 The quantitative outcome of the assessment will be dependent on the biodiversity units and linear units for the Project to achieve an overall net gain. The Project has committed to delivering a minimum of 10% BNG.
- 7.4.50 Quantitative outcomes of the calculations are a singular element of a BNG assessment. The outcome of a BNG assessment also requires consideration of adherence to the Good Practice Principles (Ref 7.32). Both on and off-site measures for the creation and enhancement of habitats will be considered to achieve appropriate BNG.
- 7.4.51 In terms of the Welsh Net Benefit for Biodiversity (NBB); by satisfying 10% BNG as referenced above, this will contribute to delivering the Welsh NBB objectives. However, the ES would also set out how NBB is being delivered using guidance in PPW12 (Ref 7.22) and the DECCA approach.

## **7.5 Baseline Conditions**

### **Existing Baseline**

#### **Desk Study**

- 7.5.1 A preliminary desk study has been undertaken to provide information to inform this PEIR.
  
- 7.5.2 The following international and national sites designated for nature conservation purposes potentially relevant to non-avian ecology, have been identified within the relevant study area in relation to the Project's draft Order Limits. These are outlined in Table 7.6 below.

Table 7-6 – Internationally and Nationally Designated Sites Potentially Impacted

Name of the Internationally and Nationally Designated Site	Notes
Special Areas of Conservation (SAC) within 5km	
Montgomery Canal SAC	<p>Designated for floating water-plantain <i>Luronium natans</i></p> <p>This is the largest and the most extensive population of floating water-plantain in Britain and is a highly significant lowland population. In favourable management conditions the species can be dominant over kilometre lengths of canal, carpeting the shallow bed and flowering and setting seed in abundance. This is a semi-natural population, having colonised from drift material or seed but needing periodic human disturbance for continued growth; in this respect the canal is a substitute for the species' former slow-moving, mesotrophic river niche, which has been largely destroyed in lowland Britain.</p> <p>The Project's draft Order Limits crosses the canal SAC once southwest of Llanymynech in Wales– this will be spanned. The SAC runs from Llanymynech southwards to Newtown. A small stretch of the Montgomery Canal in England is SSSI (not SAC).</p>
Safleoedd Ystlumod Tanat ac Efyrynwy (Tanat and Vyrnwy Bat Sites) Special Area of Conservation SAC	<p>This SAC is designated for its lesser horseshoe bat <i>Rhinolophus hipposideros</i>, population. Allt y Main Mine component part of SAC lies 700m to the north of the Project's draft Order Limits across the A495 road (although it lies 60m to west of the A495 which comprises part of the Project's draft Order Limits). Other parts of the SAC lie 2.3km to north (Bryngwyn Hall Stables &amp; Coach House, 1.96km from A495 access road area), and 4.5km to the northwest (Hendre Llangedwyn) of the Project's draft Order Limits.</p>
Granllyn SAC	<p>This site is centred around a glacial hollow or kettle-hole pool and a historic moat. The surrounding farmland is mostly pasture and rough grassland with good hedges and an area</p>

Name of the Internationally and Nationally Designated Site	Notes
	<p>of planted broad-leaved woodland and natural willow scrub to provide suitable foraging habitat. The site is located in eastern Montgomeryshire at the centre of the Welsh distribution of great crested newt. This is the largest known population of the species in central Wales. The SAC lies around 5km to the southeast of the Project (5.2km from the Project's draft Order Limits, 4.92km from nearest access road).</p>
Ramsar Sites	
Midland Meres and Mosses Ramsar	<p>This Ramsar comprises a series of 18 sites made up of nutrient-rich open water bodies (meres) with fringing habitats of reed swamp, fen, carr and damp pasture, and peatlands. Morton Pool and Pastures lies 240m to the west of the Project's draft Order Limits. The SSSI citation for Morton Pool identifies that this site is of interest for the mere, Morton Pool, the surrounding fen and carr vegetation, and the damp peaty pasture to the west of Morton Pool; which is identified as being one of the best examples of damp grassland in Shropshire. Morton Pool is not identified as supporting the populations of waterfowl of national importance, for which other units of the Midland Meres and Mosses Ramsar site are designated.</p>
Sites of Special Scientific Interest (SSSIs) within 1km (Biological only)	
<p>Cors Cefn Llwyd SSSI            Cors Ty-gwyn SSSI            Gwaun Efail Wig SSSI            Gweunydd Ger Fronhaul SSSI</p>	<p>Cors Cefn Llwyd SSSI (410m southeast of the Project's draft Order Limits) is designated for its wet woodland. Habitat connectivity between the draft Order Limits and the SSSI is limited due to the distance and presence of barriers such as roads.</p>

Name of the Internationally and Nationally Designated Site	Notes
<p>Glascoed, Meifod SSSI  Coed Tŷ-Mawr SSSI  Allt y Main Mine SSSI  Morton Pool and Pasture Site of Special Scientific Interest (SSSI)  Crofts Mill Pasture SSSI  Montgomery Canal, Aston Locks - Keeper's Bridge SSSI</p>	<p>Cors Ty-gwyn SSSI (660m north of the Project's draft Order Limits) is designated for its wet woodland and acid mire communities. Habitat connectivity between the Project's draft Order Limits and the SSSI is limited due to the distance and presence of barriers such as roads.</p> <p>Gwaun Efail Wig SSSI (840m north of the Project's draft Order Limits ) is designated for its mosaic of wet and dry grassland and swamp plant communities. Habitat connectivity between the Project's draft Order Limits and the SSSI is limited due to the distance and presence of barriers such as roads.</p> <p>Gweunydd Ger Fronhaul SSSI (980m south of the Project's draft Order Limits) is designated for its unimproved lowland dry grassland and associated stands of rush pasture and woodland/scrub. Habitat connectivity between the Project's draft Order Limits and the SSSI is limited due to the distance and presence of barriers such as roads.</p> <p>Glascoed, Meifod SSSI (130m northwest of the Project's draft Order Limits) is designated for its lesser horseshoe bat, maternity roost, and this bat community could occasionally visit the Project's draft Order Limits.</p> <p>Coed Tŷ-Mawr SSSI (420m southeast of the Project's draft Order Limits) is designated for its mixed deciduous woodland. Habitat connectivity between the Project's draft Order Limits and this SSSI is limited due to the distance and barriers such as roads.</p> <p>Allt y Main Mine SSSI (700m northwest of the Project's draft Order Limits, 60m west of A495 road access) is designated for its lesser horseshoe bat population, which could occasionally visit the Project's draft Order Limits(also designated as the Safleoedd Ystlumod Tanat ac Efyrynwy SAC).</p>

Name of the Internationally and Nationally Designated Site	Notes
	<p>Morton Pool and Pasture SSSI (240m west of the Project's draft Order Limits) is designated for its waterbody, wet woodland and adjacent pasture (and comprises part of the Midland Meres and Mosses - Phase 2 Ramsar Site).</p> <p>Crofts Mill Pasture SSSI (370m northwest of the Project's draft Order Limits) is designated for its damp peaty pasture. There is some habitat connectivity between the Project's draft Order Limits and this habitat, due to the presence of pasture and rivers.</p> <p>The Project's draft Order Limits crosses the Montgomery Canal near Llanymynech, which would be avoided through spanning. The Project's draft Order Limits does not cross the English SSSI section of the canal.</p>

Table 7-7 – Other Receptors

Receptor	Notes distances are from Project's draft Order Limits
<p>Non statutory sites</p> <p>Seven non-statutory wildlife sites (Sites of Importance for Nature Conservation (SINC); and Roadside Verge Nature Reserves (RVNR) and a Local Nature Reserve (LNR) occur within 1km of the Project's draft Order Limits.</p>	<p>Llanymynech Heritage Centre LNR (860m west)</p> <p>Llyn Hir SINC Indicative (530m north);</p> <p>Melin-y-grug Road Verge Nature Reserve (RVNR), (430m west);</p> <p>Clawdd Llesg RVNR (850m southeast);</p> <p>Main Oxbow SINC Indicative (on site);</p> <p>Pant Llanymynech RVNR (on site);</p>



Receptor	Notes distances are from Project's draft Order Limits
	<p>Halston Hall Heronry LWS (350m north west) The closest works are access roads, the heronry is 1km from the tower route;</p> <p>Shropshire Union Canal Field (LWS, 340m northwest).</p>
Ancient woodland	<p>A total of 22 areas of ancient woodland (comprising ancient semi-natural woodland, restored ancient woodlands and unknown categories) also occur within 200m of the Project's draft Order Limits.</p> <p>However, only two thin linear stretches of ancient woodland blocks occur within the Project's draft Order limits.</p>
Peat	<p>No land shown on the peat land map of Wales is directly crossed by the Project's draft Order Limits with the exception of the extreme southern end of the UGC where there are areas of peat. The underground section in the south runs just to the south of an area of peat shown on the peat land map of Wales just north of Pen-y Waen woodland. The draft Order Limits passes close to (but avoids) an area of peatland (west of Morton crossing B4396) and passes close to (but avoids) other peatland areas west of Rednal at its northern end, as shown on the Extent of Peatlands in England map (Ref 7.44).</p>
Priority Habitats	<p>A review of aerial photography indicates that the study area is dominated by intensively managed agricultural land and hedgerow/ scattered tree field boundaries. Localised stands of coniferous and broad-leaved woodland are also present. The southern UGC section passes through areas of Welsh S7 Priority Habitat 'Upland Fens, Rushes and Swamps' according to the Llyn Lort NVC Survey . Large areas of coastal floodplain grazing marsh Priority Habitat in the River Vrynwy floodplain also occur in the Project's draft Order Limits. Whilst the majority of the areas are likely to be of limited</p>

Receptor	Notes distances are from Project's draft Order Limits
	ecological value in themselves; they may support a varied assemblage of protected species or species of conservation interest.

## Future Baseline

- 7.5.3 The future baseline of the route is likely to remain broadly the same ecological habitats as the current baseline, with minor changes as a result of agricultural practices. The cumulative assessment will assess future baseline changes in relation to other relevant schemes (as described in Chapter 20),

## 7.6 Preliminary Mitigation Measures

### Embedded Mitigation

- 7.6.1 Preliminary embedded mitigation include:
- Sensitive routing and siting of infrastructure and temporary works.
  - Compliance with wildlife legislation to safeguard protected species during construction temporary and permanent impacts arising from the Project, response and operation as well as habitat reinstatement and/or new habitat creation to address them respectively.

### Control and Management Measures

- 7.6.2 The following will be provided as part of the DCO application
- Preparation of an Outline Construction Environment Management Plan (OCEMP) to include standard best practice measures to reduce ecological impact, including:
    - Pre-construction nesting bird checks and protected species checks
  - Pollution control measures on access tracks and construction compounds.

### Mitigation

- 7.6.3 Where required, mitigation will be undertaken with regard to the principles of the mitigation hierarchy and in accordance with the Welsh Stepwise Approach.
- 7.6.4 This section outlines the preliminary avoidance, mitigation and compensation measures which are likely to be required to address the potential impacts assessed in Section 7.7.
- 7.6.5 Avoidance: the draft Project Order Limits avoid statutory and non-statutory designations and irreplaceable habitats, apart from two thin linear sections of ancient woodland adjacent to the River Banwy. The preferred alignment has been routed to avoid biodiversity features wherever possible. Once the habitat and

protected species surveys are complete, micro siting will be employed, where possible, to further minimise biodiversity impacts.

- 7.6.6 Mitigation: where works impact biodiversity features (including some areas of Priority Habitat, and a small area of ancient woodland), mitigation will be proposed which will recreate or reinstate the habitat impact ensuring a greater extent of habitat and connectivity, plus appropriate management going forward. In the case of potential impact to ancient woodland, woodland management would ensure that any wayleaves required through areas of woodland would be managed appropriately for wildlife: woodland communities would be retained with the wayleaves acting as woodland edge corridors passing through the woodland blocks and during construction minimising disturbance to ancient woodland soils.
- 7.6.7 Compensation: where impact cannot be mitigated at point of impact, then compensation will be considered in the form of habitat provision/enhancement off site.
- 7.6.8 A BNG scheme will be set out in an Outline Habitat Management Plan (OHMP) and technical report to be appended to the ES to ensure the Project will deliver at least 10% net gain, in line with the anticipated NSIP BNG requirements, which are due to be made into law in late November 2025. The ES will also demonstrate how this approach will satisfy Welsh Net Benefit for Biodiversity biodiversity benefit objectives. The OHMP will be secured by the draft DCO.

## 7.7 Preliminary Likely Significant Effects

- 7.7.1 This section outlines the preliminary assessment of impacts of the Project during construction and operation phases.

### Construction

- 7.7.2 Baseline data collection is not complete and therefore we are unable to provide a full impact assessment using the above methodology at this stage: this will be detailed in the ES. The impacts outlined below are therefore preliminary.

### European and Nationally Designated Sites

- 7.7.3 There is currently no predicted significant impact on European and nationally designated sites comprising SACs, Ramsar sites and SSSIs. The Project OHL component oversails the Montgomery Canal SAC with no predicted impact.

- 7.7.4 Morton Pool and Pastures SSSI lies 240m to the west of the Project and forms part of the Midland Meres and Mosses Ramsar site - a series of 18 sites made up of nutrient-rich open water bodies (meres) with fringing habitats of reed swamp, fen, carr and damp pasture, and peatlands. The SSSI citation for Morton Pool identifies that this site is of interest for the mere, Morton Pool, the surrounding fen and carr vegetation, and the damp peaty pasture to the west of Morton Pool; which is identified as being one of the best examples of damp grassland in Shropshire. Morton Pool is not identified as supporting the populations of waterfowl of national importance, for which other units of the Midland Meres and Mosses Ramsar site are designated. Morton Pool is separated from the Project by arable fields, and a ditch from the Pool feeds a tributary of the River Morda which passes under the route. No impact is predicted.
- 7.7.5 Other component parts of the Ramsar are over 6km away from the current route termination at Lower Frankton.
- 7.7.6 The route passes within 760m of Tanat and Vyrnwy Bat Sites SAC and 155m of Glascoed, Meifod SSSI (both designated for lesser horseshoe bats *Rhinolophus hipposideros*).
- 7.7.7 Parts of Safleoedd Ystlumod Tanat ac Efyrrwy (Tanat and Vyrnwy Bat Sites) SAC lie within 1km of the Project's draft Order Limits. The Allt y Main Mine component part of SAC lies 700m to the north of the OHL tower route and is separated from the OHL tower route by the A495 road. However, this component of the SAC is only 60m from the A495 temporary access road that forms part of the Project's draft Order Limits. Other parts of the SAC lie 2.3km to the north (Bryngwyn Hall Stables & Coach House, 1.96km from A495 access road area), and 4.5km to the northwest (Hendre Llangedwyn) of the Project. Allt y Main Mine is a winter roost for lesser horseshoe bats, but they also frequent the mine in summer and autumn. Lesser horseshoe bats feed in woodland and lowland valleys and fly close to the ground, rarely flying above 5m and generally avoiding open areas although they are known to be able to cross short gaps in hedgerows. Static bat surveys will assess lesser horseshoe flight routes to assess if any impacts are likely to occur.
- 7.7.8 Glascoed, Meifod SSSI (130m northwest of the Project's draft Order Limits) is designated for its lesser horseshoe bat maternity roost, and this bat community could occasionally use habitats within the Project's draft Order Limits for foraging and commuting. Static bat surveys will assess lesser horseshoe flight routes to assess if any impacts are likely to occur.

- 7.7.9 There will be no direct impact to the bat SAC and SSSIs referred to above and no disturbance to these bat roosts given the distances involved and the nature of the construction works and operation. There may be some indirect impact in relation to bat foraging and commuting habitat and corridors: for example from loss of hedgerows where temporary gaps are created for construction access. Should this occur (bat flightlines will be confirmed by surveys in 2025), the features affected have low sensitivity (foraging habitat) temporary impact (low vulnerability and high recoverability), low magnitude effect (the impact would be reversible within 5 years with hedgerow recreation), resulting in a short term minor effect. .
- 7.7.10 Montgomery canal SSSI lies over 615m to the east of the Project. The Project crosses the canal just west of Maesbury Marsh around grid ref SJ 31832 25065: the canal is not an SSSI at this point. The Project will oversail the canal and no impact is predicted to the canal SSSI further north.
- 7.7.11 Crofts Mill Pasture SSSI lies 370m north of the Project. The route oversails a stream which flows south from the SSSI under the route and so no impact is predicted upstream.

#### **Locally Designated Sites**

- 7.7.12 No significant impact on locally designated sites is expected. In Wales, the Project OHL component crosses the Oxbow SINC in Powys but oversails, so no predicted impact, and the Pant Llanymynech RVNR where again the Project's OHL component oversails the site, so no impact is predicted. In England, no locally designated sites or Local Nature Reserves would be impacted by the Project: Llanymynech Heritage Centre LNR lies over 860m from the Project's draft Order Limits and will not be impacted.

#### **Priority Habitats, Irreplaceable Habitats**

- 7.7.13 Of the 657ha of the Project's draft Order Limits surveyed to end of October 2024, 87% consisted of arable cropland or modified grassland, i.e. ecologically poor farmland habitat, around 5% is woodland (including coniferous and recently felled) and around 5% lowland or other neutral grassland. Habitats surveyed comprising less than 1% of the Project's draft Order Limits comprise: bracken; coastal floodplain grazing marsh; watercourses; wetland/blanket bog; heathland/scrub; orchards; and sparsely vegetated land.
- 7.7.14 Around 0.6ha of permanent habitat loss is predicted with around 50% of this loss falling on cropland and modified grassland (a further 32% is land currently yet to be surveyed). The cropland/modified grassland habitat element is of negligible

sensitivity and the impact is likely to be of negligible magnitude, high reversibility and therefore no significant effect is predicted.

- 7.7.15 Some of this cropland and modified grassland is also identified on DataMap Wales (Ref 7.38) as Coastal Floodplain Grazing Marsh (CFGM) S7 Priority Habitat (around 0.15ha). The on-going habitat surveys will confirm whether habitats are CFGM. If confirmed, impacts to S7 Priority Habitat CFGM are likely to be of minor in nature (low sensitivity habitat, low magnitude impact, highly reversible impact) and therefore no significant effect is predicted.
- 7.7.16 Around 120ha of temporary habitat loss is expected, with 53% comprising cropland or modified grassland (additional 31% is land currently yet to be surveyed). The cropland/modified grassland habitat element is of negligible sensitivity and the impact is likely to be of negligible magnitude, high reversibility, resulting in a negligible effect and therefore is not significant.
- 7.7.17 In addition to CFGM, the Project's draft Order Limits passes through the following habitats, impacts would be small scale with the following predicted impacts (to be confirmed once habitat surveys completed):
- Upland Heathland (at southern end). Minor impact (low sensitivity, low magnitude, short term, medium reversibility).
  - Upland Fens Rushes and Swamps (Southern end UGC), Minor impact (medium sensitivity, low magnitude, medium term, medium reversibility).
  - Wood Pasture and Parkland (near Pen-y-Lan Hall), Minor impact (medium sensitivity, low magnitude, long term, low reversibility).
  - Deciduous Woodland (Aston Hall), Minor impact (medium sensitivity, low magnitude, long term, low reversibility).
- 7.7.18 Once the habitat surveys are complete, any significant impacts to Priority Habitats will be addressed in the ES.
- 7.7.19 The route crosses two thin linear stretches of ancient woodland at SJ 07941 09378 and SJ 08041 09443 (north of Llanfair Caereinion). If affected, these woodland areas have high sensitivity and the impact would be high magnitude, permanent, and irreversible. It would therefore result in a significant adverse effect. No ancient woodland areas in England are impacted. Big Wood, ancient replanted woodland, lies 75m west of the Project's draft Order Limits at the northern end of the Project.
- 7.7.20 No other irreplaceable habitats are impacted.

7.7.21 No land shown on the Peatlands of Wales Maps (Ref 7.45) lies within 200m of the Project's draft Order Limits in Wales. However, the UGC passes close to, but avoids, areas of peat (as shown on Peatlands of Wales Maps) to the north of Pen-y-Waen woodland and further south to the south of the proposed Grug y Mynydd Collector Substation. Any impact on peat in the underground section will be assessed in light of paras 6.4.15 1(b) and 6.4.34 of PPW12. In England, the Project's draft Order Limits pass close to (but avoid) an area of peatland (west of Morton crossing B4396) and passes close to (but avoid) other peatland areas west of Rednal at its northern end, as shown on the Extend of Peatlands in England map (Ref 7.44).

### **Protected Species**

7.7.22 Protected species surveys have yet to be undertaken, these are scheduled for 2025 (there has been some limited GCN eDNA testing in 2024). Given the nature of the works, the results of the data search and the ability to potentially micro-site towers to avoid direct effects, the impact on any protected species is expected to be negligible for most groups and not significant for all groups.

7.7.23 Where impacts occur, these will be managed through implementation of Species Protection Plans (SPP) which would include pre-works checks and, if necessary, timing restrictions and buffer distances and protected species licencing to ensure legal compliance.

### **Operation**

7.7.24 No significant impact is expected from the operation of the Project. Potential predicted impacts that have been considered relate to:

- Operational management of the Project area: this will include maintenance of wayleave vegetation under and the conductor lines where they pass through or above woody vegetation.
- Displacement of species.
- Collision risk.

7.7.25 Predicted impacts from all these potential pathways are expected to be low-negligible.

### **Operational management**

7.7.26 Where the OHL element of the Project passes through woodland or woody vegetation, the associated wayleave will require regular management in order to maintain vegetation at a height that does not impact the installed works. In addition, vegetation removal may be required for 'windthrow' areas. Such



operational management may have an impact on protected species: however, protected species surveys have not been undertaken (due in 2025).

- 7.7.27 The route selection process has already minimised impact to woodland and trees. The ES will take this into account and where the OHL element of the Project passes through such woody habitat, an assessment of impact to protected species will be made and recommendations made for future monitoring and habitat management (via the OHMP).

### **Displacement**

The operational phase of the Project is not likely to result in the displacement of any protected species, as disturbance effects arising from occasional maintenance visits will be low.

- 7.7.28 The OHL element of the project would involve minimal land take and so would have minimal impacts on habitats, and therefore likely to have a negligible impact on fragmentation of habitat used by bats (such as hedges which are generally oversailed).
- 7.7.29 In some circumstances, the OHL element can cause a 'barrier effect' to bats in flight, displacing individuals in flight as they avoid the OHL during commuting or foraging flights; this may result in higher energetic requirements with knock-on effects on survival and productivity, which could impinge on a species conservation status. However, this is not considered relevant for the Project as there is no evidence of large-scale commuting/foraging by bats that could be sensitive to such an effect. Lesser horseshoe bats usually forage up to 2km from summer roost and 1.2km from winter roosts and typically fly close to the ground, rarely going above 5 metres. They mostly feed in and around woodland, including woodland interiors, but also feed in pasture and hedgerows. The Allt y Main Mine component part of SAC is set within woodland and whilst the main OHL route is around 760m to the south, however it is highly unlikely to have any impact on bat foraging or commuting given the height of the OHL towers (average of 28.5m) and converters (minimum ground clearance of 6.7m). Therefore, no significant effect is predicted.

### **Collision Risk**

- 7.7.30 Recent research (Ref 7.46) on bats and high-voltage power lines found that under humid conditions light-tolerant (e.g. pipistrelle) and light-sensitive (e.g. barbastelle) bats were actually attracted to power lines for feeding on insect prey attracted to 'corona light'. However, it also found that for high-flying and open-space foragers like noctule (*Nyctalus noctula*) and Leisler's bats (*Nyctalus*

*leisleri*), power lines may act as an obstacle to foraging and feeding and therefore these species may avoid power lines owing to the physical structure of the towers and conductors .

- 7.7.31 An Irish study (Ref 7.47) looking at hedgerow connections and bat feeding found that there was no significant association between likelihood of bat occurrence and distance from power lines of any voltage, concluding that ‘power lines do not have a deterrent effect on the more common resident Irish bats while in flight’.
- 7.7.32 Based on the research above, bats either avoid (high-flying and open space foragers) or appear unaffected by the presence of energy transmission infrastructure (common resident Irish bat species, which closely aligns with the common bat species present in Wales and England, therefore providing a comparative study). On this basis, a significant effect arising from collision with OHL towers and conductors is considered to be unlikely, pending the outcome of bat activity surveys.

## 7.8 Next Steps

- 7.8.1 This assessment will be further refined between PEIR and ES as habitat and protected species surveys continue in 2024 and 2025, and through further engagement with statutory consultees (NE and NRW) and key stakeholders. Feedback from statutory consultation will also be taken into account.

### Consultation

- 7.8.2 Feedback from statutory consultation will help identify local and regional priorities for biodiversity and assist in additional data gathering. Stakeholder engagement will continue following statutory consultation up to the application for development consent and through examination.
- 7.8.3 Due to the iterative design process, stakeholder engagement will continue after the statutory consultation period. Further engagement will be undertaken with NRW, NE, EA, Powys CC and Shropshire Council regarding a range of topics, including protected species survey methodology, scoping out certain species, approach to Ground Water Dependent Terrestrial Ecosystems (GWDTEs), habitat enhancement priorities and biodiversity net gain.

### Surveys

- 7.8.4 The following surveys are proposed to be undertaken between now and the submission of the ES:

- Completion of habitat survey, including potential for protected species.
- Detailed National Vegetation Classification (NVC) surveys (if required).
- Additional eDNA surveys of waterbodies for great crested newt, where required.
- Badger surveys (if required).
- Otter survey (and signs of water vole).
- Fish (if required).
- Static bat activity survey.
- Hazel dormouse survey (where required).
- Red squirrel and pine marten surveys (if required).

## 7.9 References

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- Ref 7.13 His Majesty's Stationery Office (2009). Eels (England and Wales) Regulations 2009. Available at: <https://www.legislation.gov.uk/uksi/2009/3344/contents>
- Ref 7.14 His Majesty's Stationery Office (1975). Salmon and Freshwater Fisheries Act 1975. Available at: <https://www.legislation.gov.uk/ukpga/1975/51>
- Ref 7.15 Convention on Wetlands of International Importance (1972). Available at: <https://www.ramsar.org/official-documents>
- Ref 7.16 His Majesty's Stationery Office (2006). Animal Welfare Act 2006. Available at: <https://www.legislation.gov.uk/ukpga/2006/45/contents>
- Ref 7.17 Department for Energy Security and Net Zero (2023). Overarching National Policy Statement for energy (EN-1). Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> (accessed October 2024)
- Ref 7.18 Department for Energy Security and Net Zero (2023). National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5> (accessed October 2024)
- Ref 7.19 Ministry of Housing, Communities and Local Government (2024). National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> (accessed October 2024)
- Ref 7.20 Welsh Government (2020). The Nature Recovery Action Plan for Wales 2020. Available at: <https://www.gov.wales/sites/default/files/publications/2020-10/nature-recovery-action-plan-wales-2020-2021.pdf>
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## 8 Ornithology

### 8.1 Introduction

8.1.1 This Chapter provides the results of the preliminary assessment of potential impacts and effects of the Project on Ornithology and describes:

- Legislation, Policy and Guidance.
- Consultation and Engagement.
- Assessment Methodology and Significance Criteria.
- Baseline Conditions.
- Preliminary Mitigation Measures.
- Preliminary Likely Significant Effects.
- Next Steps.

### 8.2 Legislation, Policy and Guidance

#### Legislation

8.2.1 The preliminary assessment has been undertaken in accordance with, and with reference to, the principles contained in the following national legislation where they have regard to ornithological interests:

- The Planning Act 2008 (Ref. 8.1), which facilitates applications for development consent for nationally significant infrastructure projects.
- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref. 8.2), which provides the regulatory framework for undertaking environmental assessment of infrastructure projects.
- The Wildlife and Countryside Act 1981 (Ref. 8.3), which affords protection to wild birds and their nests and designated sites.
- The Environment Act 2021 (Ref. 8.4), which legislates for biodiversity net gain requirements and strategic species and site conservation outcomes;
- The Environment (Wales) Act 2016 (Ref. 8.5), which ensures sustainable management of Welsh natural resources.
- The Conservation of Habitats and Species Regulations 2017 (i.e. the “Habitats Regulations”) (Ref. 8.6), which ensures the protection of designated sites.
- The Natural Environment and Rural Communities (NERC) Act (2006) (Ref. 8.7) which enacts a broad framework for biodiversity protection.



- 8.2.2 The Convention on Wetlands of International Importance Especially as Waterfowl Habitat 1971 (i.e. the ‘Ramsar Convention’) (Ref. 8.8), which provides for the conservation and wise use of wetland habitat.

### **Policy**

- 8.2.3 The following will inform the approach to the design and assessment of the Project:

- Overarching National Policy Statement for Energy (EN-1) (2024) (Ref. 8.9), which sets out national policy for the development of energy infrastructure, and describes the regulatory framework for assessment of energy infrastructure projects, including requirements to deliver biodiversity net gain. In relation to biodiversity, including ornithology, the policy details the impacts that should be considered during the assessment process, in the context of underpinning legislation that seeks to safeguard designated sites, habitats and species. The policy also sets out mitigation requirements and promotes opportunities for biodiversity enhancement beyond biodiversity net gain.
- National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024) (Ref. 8.10), which provides guidance, alongside policy EN-1, on the assessment of electricity network developments above 132 kV and associated infrastructure, including sub-stations. In relation to biodiversity, the policy highlights potential impacts on birdlife via the risk of collision with overhead lines (OHLs) and electrocution. The policy set’s out how siting and design of a development can mitigate potential effects associated with collision and electrocution.
- National Planning Policy Framework, (Dec 2023) (Ref. 8.11) including Planning Practice Guidance (PPG) on the Natural Environment (Department for Levelling Up, Housing and Communities, 2019) (Ref. 8.12).
- The Nature Recovery Action Plan for Wales (2020) (Ref 8.13).
- Planning Policy Wales: Technical Advice Note 5: Nature Conservation and Planning (2009) (Ref. 8.14).
- Planning Policy Wales - Edition 12 (2024) (Ref.8.15).
- Powys Local Development Plan (2011-2026) (Ref. 8.16).
- Draft Shropshire Local Plan (2016-2038) (Ref. 8.17).

### **Guidance**

- 8.2.4 The appraisal is carried out in accordance with the principles contained within the following documents, which will inform the approach to the design and assessment of the Project:
- Shropshire Biodiversity Action Plan (2002) (Ref. 8.18).

- The Powys Nature Recovery Action Plan 2022-2032 (ref. 8.19).
- Environmental Improvement Plan 2023 (Defra, 2023 (Ref. 8.20).
- The UK Post-2010 Biodiversity Framework (2011-2019) (JNCC and Defra, 2012) (Ref. 8.21).
- Guidelines for Ecological Impact Assessment (EclA) in the UK and Ireland: terrestrial, freshwater, coastal and marine (Chartered Institute of Ecology and Environmental Management (CIEEM) 2018) (Ref. 8.22).
- Biodiversity Net Gain: Good Practice Principles for Development (CIRIA, 2019) (Ref. 8.23).
- BS 42020:2013 Biodiversity: Code of Practice for Planning and Development (British Standards Institution, 2013) (Ref. 8.24).
- NatureScot Guidance: Recommended bird survey methods to inform impact assessment of onshore wind farms. SNH, Battleby. SNH. (2017) (Ref. 8.25).
- NatureScot Guidance: Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. SNH, Battleby. SNH. (2016) (ref. 8.26).

## 8.3 Consultation and Engagement

8.3.1 A summary of the Environmental Impact Assessment (EIA) Scoping Opinion from the Planning Inspectorate (PINS) and subsequent responses to this EIA Scoping Opinion are outlined below. Furthermore, all engagement undertaken to date in respect of ornithology is outlined in this section.

### Scoping opinion

8.3.2 The Planning Inspectorate Scoping Opinion on ornithology (dated 4th March 2024) and subsequent responses are set out in the Table 8.1 below.

Table 8-1 – Scoping Opinion from the Planning Inspectorate

ID	Matter	Inspectorate’s comments	Project Response
3.4.1	Electrocution – construction and operation	<p>The Scoping Report proposes to scope out the electrocution of birds on the OHL on the basis that the design and configuration of the wires and towers of the OHL would not allow electrocution to be possible.</p> <p>The Inspectorate agrees that electrocution of birds can be scoped out of the ES on the basis that the design of the OHL would not allow electrocution to be possible. The ES should evidence that the gaps between the conductors and the perch points exceed the largest potential wingspan of perching bird species.</p>	<p>The agreement to scope out effects of electrocution is noted.</p> <p>All design information, including OHL and tower specification, is set out in Chapter 2 – Project Description. The L7 towers carry the OHL wires on three crossarms, with the earth wire carried at the top of the tower. Live wires are suspended from crossarms on insulators. On L7 towers, the minimum distance between energised (live) elements and between energised elements and any conductible elements is more than 2.5m, other than for a single side of the upper crossarm on ten D60 angled towers; where the separation at the tower reduces to 2.08 m. The maximum wingspan of the largest bird occurring locally that may perch on the wires (red kite) is 1.95m. However, electrocution usually requires contact with the ‘fleshy’ parts of a bird (feet, wrist etc.) as feathers are generally insulating unless excessively wet. This considerably reduces the hazardous distance to well below 2.08m. Hence, although the risk of electrocution cannot be ruled out entirely, the configuration of physical infrastructure means that electrocution events will rare and will not result in substantial mortality to</p>

ID	Matter	Inspectorate's comments	Project Response
			populations of any bird species and a significant effect on ornithology can be ruled out.
3.4.2	Disturbance – operation	<p>The Scoping Report proposes to scope out operational disturbance on the basis that the Proposed Development's infrastructure would require limited site activities for maintenance activities. The Scoping Report further states that noise and visual effects associated with the [Grug y Mynydd Collector] Substation, wires and towers, are considered too low in magnitude to cause significant effects on bird populations.</p> <p>Whilst maintenance activities are expected to be limited and unlikely to result in significant effects on bird populations, in the absence of a defined location for the Proposed Development's operational infrastructure, and until there is certainty on the extent and presence of certain species, the Inspectorate does not consider that sufficient information has been given to scope out operational disturbance (noise and visual) impacts. Accordingly, the ES should provide an assessment of these matters where significant effects are likely to occur, or</p>	<p>Proceeding on the basis that these effects are scoped in, but anticipate scoping out from detailed assessment within the ES chapter, with supporting data and justification provided.</p>

ID	Matter	Inspectorate's comments	Project Response
		<p>information demonstrating agreement with the relevant consultation bodies and the absence of an LSE.</p>	
3.4.3	<p>Effects on non-sensitive populations – construction and operation</p>	<p>The Scoping Report proposes to scope out a detailed assessment of bird populations that are present but sufficiently widespread, unthreatened and resilient to the potential effects arising from the Proposed Development.</p> <p>The ES should explain how bird populations have been determined to be “sufficiently widespread, unthreatened and resilient to the potential effects”, with reference to baseline data, relevant guidance and professional judgement. The Applicant should make effort to agree the list of bird populations for assessment with relevant consultation bodies. Subject to this, the Inspectorate agrees to scope this matter out from further assessment.</p>	<p>Full details and justification will be presented in the ES chapter. Bird populations classed as low Nature Conservation Importance (NCI) (see <b>Impact Assessment Methodology</b> and <b>Table 8-3</b> below) are typically widespread and unthreatened and, hence, their populations are not classed as sensitive to potential effects arising from the Proposed Development.</p> <p>In addition, information on the sensitivity of bird species to effects specifically associated with the construction and operation of OHL developments, combined with knowledge of broad bird species distribution in the vicinity of the Proposed Development, and relevant survey and assessment guidance, has been used to focus the list of sensitive bird species receptors. Hence, the following bird species or species groups will be taken forward to detailed assessment if baseline information shows that populations of these species are present in the relevant Study Area and a significant effect is possible:</p> <ul style="list-style-type: none"> <li>• Wildfowl (all species);</li> </ul>

ID	Matter	Inspectorate's comments	Project Response
			<ul style="list-style-type: none"> <li>• Waders (all species);</li> <li>• Raptors and owls (Annex 1, Schedule 1 and Red-listed species);</li> <li>• Gulls and terns (all species); and</li> <li>• Cormorant; and</li> <li>• Grey heron.</li> </ul>
3.4.4	International and national sites designated for birds - construction	<p>Paragraph 9.39/ Table 9.2 of the Scoping Report proposes to scope out ornithology surveys and construction effects on international and national sites designated for birds. It is unclear what is meant by this as Table 9.2 does not refer to specific surveys. The justification provided states that the only relevant site is the Midland Meres and Mosses Ramsar site where designated ornithological features would not be disturbed by construction.</p> <p>The Inspectorate does not consider that sufficient information has been provided regarding construction impacts on international and national sites designated for birds.</p> <p>Accordingly, the ES should include an assessment of these matters where</p>	<p>Full details and justification will be presented in the ES chapter, including an appraisal of FLL for qualifying features of relevant designated sites.</p> <p>Note that Paragraph 9.39 of the Scoping Report contained a typographical error and should have read '...ornithology <b>matters</b>...' rather than '....ornithology <i>surveys</i>.....'. No ornithology surveys are proposed on designated sites.</p> <p>The nearest component part of the Midland Meres and Mosses Ramsar Site lies approximately 5.5km to the east of the Project's draft Order Limits. The Ramsar Site supports nationally important populations of four bird species, namely cormorant, gadwall, pochard and shoveler. The Ramsar Site is sufficiently distant from construction activities for disturbance impacts to be implausible for populations all these species on the Site. All these species rely on aquatic habitats and, other than cormorant, do not range widely. For</p>

ID	Matter	Inspectorate's comments	Project Response
		<p>significant effects are likely to occur, supported by robust baseline data, or information demonstrating agreement with the relevant consultation bodies and the absence of an LSE.</p> <p>The ES should address whether any areas within the Scoping Corridor provide functionally linked land (FLL) to the Midland Meres and Mosses Ramsar site, which could be affected by the Proposed Development. Any FLL likely to be affected should also form part of the assessment.</p>	<p>cormorant, movements of up to 5.5 km are plausible, but suitable aquatic habitat near to potential sources of construction disturbance arising from the Project is unlikely to provide an exceptional resource for the Ramsar Site's cormorant population and a functional linkage is implausible. Hence, no LSE is predicted and construction effects on all designated sites and their qualifying avian features are proposed to be scoped out.</p>
3.4.5	Study area	<p>The ES should clearly define and justify the study area, based on the Zone of Influence (Zoi) from the Proposed Development and the potential effect pathways to designated sites.</p>	<p>The study areas are presented here and will be fully defined in the ES chapter.</p> <p>The ornithology study area comprises habitats and airspace within a series of buffers around the infrastructure of the Proposed Development. The Proposed Development's infrastructure includes towers, the OHL, sub-stations, sealing-end compounds, tracks (existing and proposed) and other ancillary infrastructure associated with construction and operation. Flight activity within a 500m buffer of the of the OHL will be considered. For breeding birds, the study area is defined as a 250m buffer from the OHL and other infrastructure. For raptors and owls, a</p>

ID	Matter	Inspectorate's comments	Project Response
			<p>buffer of up to 2 km from the OHL and other infrastructure will be used.</p> <p>In relation to ornithological designated sites , the study area extends 10km from the Proposed Development's infrastructure, to ensure a comprehensive ZoI is considered in respect of qualifying and notified features.</p>
3.4.6	Surveys for bird species	<p>The Scoping Report states that one full year of ornithological surveys will be undertaken. The spatial extent, number of visits and duration for the suite of bird surveys proposed should be fully justified within the ES and supported by clear figures. The survey approach should be sufficient to address any areas of FLL likely to be affected by the Proposed Development. Effort should be made to agree the survey extent and scope with relevant consultation bodies including NE and NRW.</p>	<p>Survey areas, timings and methodology, referencing relevant guidance will be fully defined in the ES Chapter. A technical note has been prepared and shared with consultation bodies, which details the ornithology survey approach (see Further Consultation and Engagement). This references the guidance used to design the package of surveys being undertaken, including survey duration, number of visits and spatial extent.</p>
3.4.7	Noise and vibration impacts on ornithological receptors	<p>It is unclear whether an assessment of impacts on ornithological receptors from noise and vibration is proposed. The ES should assess noise and vibration impacts on ornithological receptors where significant</p>	<p>Impacts arising from all disturbance sources will be assessed.</p>



ID	Matter	Inspectorate's comments	Project Response
		effects are likely to occur. Any such assessments should cross refer to findings of other relevant aspect chapters. The Applicant should also refer to the Inspectorate's comments in Table 3.7 (Noise and Vibration) of this Opinion in this regard	
3.4.8	Confidential annexes	Refer to the Inspectorate's comments in Table 3.3 above.	Data on the locations of sensitive bird sites, including for Schedule 1 species, will be provided in a confidential annex to the ES.

## Further Consultation and Engagement

- 8.3.3 A technical note has been prepared that outlines the proposed approach to ornithological survey and assessment for review by statutory stakeholders. This has been shared with Powys County Council and Shropshire Council, Natural Resources Wales (NRW) and Natural England. Meetings with relevant stakeholders, including NRW, NE and the local authority's technical specialists will be undertaken, as the Project progresses, to discuss and agree matters raised in response to the technical notes that have been shared and to agree mitigation strategies and principles. Communications received after the preliminary environmental information report (PEIR) has been published will be included within the ES.

## 8.4 Assessment Methodology and Significance Criteria

### Study Area

- 8.4.1 The study area for ornithology is defined with reference to the Project's draft Order Limits and includes a series of buffers extending to encompass Important Ornithological Features that could potentially be affected by the Project, in line with relevant guidance (Ref. 8.25 and Ref. 8.26).

### Desk Study Area

- 8.4.2 The desk-based study area extends to 10km from the Project's draft Order Limits for internationally designated sites, namely Special Protection Areas (SPAs) and Ramsar Sites, and 1km for nationally designated sites where birds are a notified feature (Site of Special Scientific Interest (SSSI) and National Nature Reserves (NNR)). Records of extant Schedule 1 bird species within 1km will also be collated and presented within the ES.

### Field Survey Area

- 8.4.3 To date, survey coverage to collect data on bird flight activity has encompassed airspace within 500m of the Project's draft Order Limits. Further field surveys of suitable habitat up to 2km from the Project's draft Order Limits will be undertaken in 2025, comprising breeding bird surveys within 250m of Project's draft Order Limits on enclosed agricultural land and up to 500m from Project's draft Order Limits on moorland and unenclosed land. Targeted raptor surveys will be undertaken up to 2km from the Project's draft Order Limits.

## Baseline data collection

### Desk Study

8.4.4 Ongoing desk studies will form part of the baseline information presented in the ES. Data requests will be made to organisations likely to hold important bird records including the Royal Society for the Protection of Birds (RSPB) and the British Trust for Ornithology.

8.4.5 The following key information sources have been consulted to date:

- Multi-agency Geographic Information for the Countryside (MAGIC) (Ref. 8.27) online application; and
- NRW webpages for information on designated sites.
- Published information on national bird conservation status (Ref. 8.29 & Ref. 8.30) and distribution (Ref. 8.33).

### Site visits and surveys

8.4.6 Ornithology field surveys are ongoing and currently comprise flight activity surveys, also known as Vantage Point (VP) watches, from several VP locations along the route of the Project. VP watches commenced on 9 April 2024 and over 330 hours of survey time has been accumulated up to 24 October 2024 (Table 8.2).

Table 8-2 – Flight Activity Survey Effort

VP number	Survey hours	
	Breeding season (April to August)	Non-breeding season (September to October)
1	30.50	6.00
2	27.00	6.00
3	30.25	3.00
4	31.5	6.00
5	30.50	6.00
6	27.00	6.00
7	6.00	6.00

	Survey hours	
VP number	Breeding season (April to August)	Non-breeding season (September to October)
8	9.00	6.00
9	30.50	5.00
10	30.25	3.00
11	18.00	0.00
12	0.00	8.0

## Environmental Impact Assessment methodology

- 8.4.7 The assessment follows the process set out in the EIA Regulations. The methodology is in line with impact assessment procedures detailed by CIEEM (2018) (Ref. 8.23) and takes account of relevant guidance on the implementation of the Habitats Regulations (Ref. 8.28). The evaluation of effects aims to ensure that the consenting authority has sufficient information to determine whether the Project may result in significant effects on bird populations or to designated sites that qualify for their ornithological interest.
- 8.4.8 Effects are assessed with reference to the baseline ornithological community at and surrounding the Project, assuming that key populations making up the bird community are not significantly adversely affected by any existing influences on distribution, abundance and flight behaviour.
- 8.4.9 The assessment considers whether the construction and operation of the Project may lead to any effects on sensitive bird populations arising from:
- Direct loss of habitat arising from temporary land take during construction and permanent habitat losses to accommodate the infrastructure of the Project.
  - Indirect habitat loss arising from disturbance if birds are displaced from nesting, foraging or roosting habitats during the construction phase of the Project.
  - Mortality from collision with the wires of the Overhead Line (OHL); and
  - Cumulative effects arising from any of the above combined with effects from other proposed or existing developments in the same geographic area which act on the same regional bird populations.

- 8.4.10 An effect is defined as a change in a bird population arising from the Project and the assessment considers the direction of change (beneficial or adverse), its magnitude in terms of spatial and temporal influences, and the likelihood of the effect occurring. The significance of identified effects is assessed by considering three factors:
- The Nature Conservation Importance (sensitivity) of the affected species.
  - The magnitude of the likely effect.
  - The likely outcome of the effect on the conservation status of the species' population.

### Criteria for Assessing Sensitivity of Receptors

- 8.4.11 The Nature Conservation Importance (NCI) of bird species (ornithological receptors) considers the sensitivity of bird populations with reference to their legal status and known recent trends in number, distribution and threat status. NCI is defined according to the definitions set out in Table 8.3.

Table 8-3 – Nature Conservation Importance (Sensitivity) of Bird Receptors

NCI (sensitivity)	Definition
High	Species listed in Annex 1 of the EU Birds Directive. Breeding species listed on Schedule 1 of the Wildlife and Countryside Act, 1981.
Moderate	Species on the Birds of Conservation Concern (BOCC) 'Red' list (Stanbury <i>et al.</i> , 2021) (Ref. 8.29) or Birds of Conservation Concern Wales (BoCC Wales) 'Red' list (Johnstone <i>et al.</i> , 2022) (Ref. 8.30). Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas in relation to the Project. Species present in regionally important numbers (>1 % regional population).
Low	All other species not covered above.

## Criteria for Assessing Magnitude of Change

- 8.4.12 The magnitude of each potential effect is determined following consideration of the spatial and temporal elements of the resulting changes. There are five levels of spatial magnitude (Table 8.4) and four levels of temporal magnitude (Table 8.5).
- 8.4.13 Magnitude will consider the likely susceptibility of populations to an effect, taking account of how a species' ecology may influence the response of the population, including their ranging behaviour, seasonality in occurrence or behaviour, reliance on specific habitats, behavioural sensitivity to disturbance effects at different times of the year, and their ability to recover from adverse effects, e.g. by birds being recruited from elsewhere.
- 8.4.14 Where such information exists from monitoring studies or other research, data on the responses of individual birds and bird populations to OHLs and similar developments are taken into account.
- 8.4.15 The predicted magnitude of an effect can be influenced by when it occurs. For example, operations undertaken in daylight hours may have little temporal overlap with the occupancy of birds' night-time roosts; and seasonality in a bird population's sensitivity or occupancy of a site may mean that effects are unlikely during certain periods of the year.

*Table 8-4 – Spatial Magnitude of Effect*

Magnitude	Definition
Very high	Total/near total loss of a bird population due to mortality or displacement. Total/near total loss of productivity in a bird population due to disturbance. Guide: >80 % of regional population affected.
High	Major reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 21-80 % of regional population affected.
Medium	Partial reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 6-20 % of regional population affected.
Low	Small but discernible reduction in the status or productivity of a bird population due to mortality or displacement or disturbance.

Magnitude	Definition
	Guide: 1-5 % of the regional population affected.
Negligible	Very slight reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Reduction barely discernible, approximating to the “no change” situation. Guide: <1 % of regional population affected.

Table 8-5 – Temporal Magnitude of Effect

Magnitude	Definition
Permanent	Effects continuing indefinitely, extending beyond the average span of a human generation (approximately 25-30 years). If there is a high certainty of substantial improvement after this period, for example following project decommissioning or the establishment of high-value habitat, effects could be classified as long-term.
Long-term	Approximately 15-30 years.
Medium-term	Approximately 5-15 years.
Short-term	Up to approximately 5 years.
Negligible	Less than 1 year.

## Conservation status

8.4.16 Where the available data allows, the conservation status of each potentially affected species population is considered at the appropriate spatial scale. Effects on a species’ national conservation status are relevant, determined by formulating a judgement on how predicted effects on regional populations may influence a species’ conservation status at the national level. For this assessment, conservation status is taken to mean the sum of the influences acting on a population which may affect its long-term distribution and abundance. Conservation status is considered to be favourable where:

- A species appears to be maintaining itself on a long-term basis as a viable component of its habitats.
- The natural range of the species is not being reduced, nor is likely to be reduced for the foreseeable future.

- There is (and will probably continue to be) sufficient habitat to maintain the species population on a long-term basis.

- 8.4.17 Effects that will adversely affect the favourable conservation status of a species, or prevent its recovery to favourable conservation status, will be judged as of concern.
- 8.4.18 The approach to assessment will take account of existing guidance and published scientific literature in relation to avian ecology and bird-powerline interactions, alongside professional judgement and experience of EIA for OHLs and other relevant developments.
- 8.4.19 Effects will be considered during the construction and operational phases and will be assessed on the basis that a clearly defined range of appropriate avoidance buffers and standard good practice measures are implemented (see below). Effects on birds could arise because of habitat loss, disturbance, displacement, collision mortality and electrocution.

### **Identification and Characterisation of Effects**

- 8.4.20 The identification and characterisation of effects on important ornithological features will be undertaken in accordance with the CIEEM guidelines (Ref. 8.23) with reference to effect magnitude (e.g. proportion of a population affected), extent, duration and reversibility as appropriate. Consideration will also be given to species' behaviour and their capacity for habituation to the presence of Project infrastructure. Effect magnitude (see above) will be considered alongside the likelihood of its occurrence to help make a judgement on the significance of effects. Where appropriate and where supporting information is available, this approach may be supported by population models which will explore a range of scenarios to help understand the likely response of populations to potential effects arising from the Project.
- 8.4.21 Professional judgement will be used to consider effect significance on each ornithological feature, with effects on species' populations evaluated with reference to appropriate regional or national spatial units.

### **Significant Effects**

- 8.4.22 The evaluation of effects will consider how the conservation status of each species may be affected by the predicted magnitude and direction of effects arising from the Project. The maintenance of existing favourable conservation status for affected species, at the appropriate geographic scale, will be a key judgement for evaluating effect significance.



## Significance Criteria

- 8.4.23 Where potential effects relate to bird populations that constitute all or part of the qualifying interest of an existing (or proposed) internationally or nationally designated site (i.e. a SPA, Ramsar site or SSSI), then effects are judged against whether the Project could significantly affect the site population or its distribution. Where bird populations do not form part of the qualifying interest of a designated site, effects are evaluated in relation to 'wider countryside' populations at a regional or national scale, assuming that robust information exists or can be derived on population size, range and distribution at this scale (Ref 8.23).
- 8.4.24 For this assessment, regional populations of potentially affected breeding bird species will be spatially defined by the NRW Mid Wales area and the Shropshire Local Authority Area. For wintering and migratory populations (non-breeding), national populations form the appropriate spatial unit.
- 8.4.25 Following the classification of each species' NCI and consideration of the magnitude of each effect, professional judgement is used to make a reasoned assessment of the likely effect on the conservation status of each potentially affected species within the region.
- 8.4.26 In accordance with the EIA Regulations, each likely effect is evaluated and classified as either significant or not significant in EIA terms. The significance levels of effect on bird populations are described in Table 8.6. Detectable changes, i.e. those of 'Major' or 'Moderate' significance, in the conservation status of regional populations of NCI are considered to be significant effects under the EIA Regulations. Non-significant effects are those which are likely to result in barely detectable (Minor) or non-detectable (Negligible) changes in the conservation status of regional (and therefore national) bird populations.
- 8.4.27 Cumulative effects are assessed when detectable changes are predicted to arise due to the Project 'in-isolation', and due to an additive accumulation of predicted effects from other developments affecting the same population (in this case, within 20km of the Project) these may result in significant effects. Where in-isolation effects on a species population are classed as Minor or above, the species will be taken forward for cumulative assessment.

Table 8-6 – Significance Criteria

Significance of effect	Description
Major	A detectable change to regional populations of High or Moderate NCI, resulting in total population loss or severe impacts to their conservation status.
Moderate	A detectable change to regional populations of High or Moderate NCI, resulting in population losses that are likely to impact their conservation status.
Minor	Small or barely detectable changes to regional populations of High or Moderate NCI, that are unlikely to impact their conservation status.
Negligible	No or barely discernible changes to regional populations of High or Moderate NCI, with no impact on their conservation status.

## Assumptions and Limitations

8.4.28 The following assumptions have informed the assessment of effects:

- Construction will last up to 24 months and will overlap with two bird breeding seasons and two non-breeding seasons.
- An Outline Bird Protection Plan (BPP) will be in place detailing safeguards to avoid or minimise disturbance to breeding and roosting birds, in accordance with legislative requirements and industry standards.

8.4.29 The following limitations have been identified:

- This assessment is based on an incomplete ornithological baseline. No breeding bird surveys or raptor surveys have been undertaken and insufficient information on flight activity has been collected. The EIA in support of the application for development consent will be undertaken with reference to comprehensive desk and field studies.

## 8.5 Baseline Conditions

### Desk Study

- 8.5.1 The Project's draft Order Limits do not include any statutory sites designated for their ornithological interest and none are present within 10km of the Project's draft Order Limits.
- 8.5.2 Data requests will be made to local biological records centres, and organisations likely to hold important bird records including the RSPB and the British Trust for Ornithology.

### Field Study

- 8.5.3 Appendix 8.1 details the results of the ornithology surveys undertaken to date.
- 8.5.4 Flight activity surveys have recorded flights by 18 target species within 500m of the Project's draft Order Limits. For all but two species, the number of recorded flights was low. Red kite was recorded relatively frequently and some flights by lesser black-backed gull included flocks of up to 52 birds (Table 8.7).
- 8.5.5 Analysis of flight activity data following the completion of a comprehensive field survey programme will include refinements to show the number of flights likely to cross the OHL and flights that were at OHL height. This information will be used to inform assessment and mitigation requirements.

*Table 8-7 – Flight Activity by target Species in April to August 2024 and September to October 2024 within 500m of the Project's draft Order Limits*

Species	Breeding season		Non-breeding season	
	Number of flights	Number of birds	Number of flights	Number of birds
Cormorant	1	2	-	-
Little egret	7	9	-	-
Heron	1	1	-	-
Goosander	1	2	-	-
Shelduck	3	6	-	-
Osprey	-	-	1	1

Species	Breeding season		Non-breeding season	
	Number of flights	Number of birds	Number of flights	Number of birds
Honey buzzard	1	1	-	-
Goshawk	5	7	1	1
Red kite	303	374	81	87
Kestrel	2	2	-	-
Hobby	16	17	3	3
Merlin	-	-	1	1
Peregrine	15	20	-	-
Golden plover	-	-	2	10
Lapwing	3	6	-	-
Herring gull	11	81	-	-
Great black-backed gull	4	4	2	2
Lesser black-backed gull	38	458	17	322

- 8.5.6 Of the species recorded during flight activity surveys, evidence from field surveys suggested that red kite and peregrine are likely to breed within 2km of the Project's draft Order Limits.

## 8.6 Preliminary Mitigation Measures

### Construction Phase – Good Practice Measures

- 8.6.1 The assessment is made on the basis that a BPP is drafted in consultation with NRW and NE, and implemented prior to construction commencing. The draft BPP will form part of the application for a Development Consent Order. The BPP will detail protocols for maintaining compliance with relevant species protection legislation and best practice during the construction phase, to ensure that bird

species and important sites for birds (nests, roosts, key feeding sites) are safeguarded from disturbance during critical periods.

- 8.6.2 The BPP will be cognisant of relevant legislation, especially the Wildlife and Countryside Act 1981 (Ref. 8.3), taking account of the enhanced protections afforded to nest sites and to nesting and roosting birds listed in the Schedules of the Act. Further requirements which will be included in the BPP are:
- Timing of work: Where possible, tree-felling and ground clearance should be scheduled outside of the breeding bird season but should also take account of winter roosts.
  - Pre-construction surveys: If work is scheduled to take place during the breeding bird season or at other sensitive times, pre-construction bird surveys should be undertaken within a series of distance buffers from construction works, with specific buffer distances and methods dependent on target species, affected habitat and the likely stage of the breeding cycle.
  - Nest protection: Protocols should be developed to ensure nests and other sensitive bird sites are protected from destruction, or to ensure that disturbance is prevented or minimised during construction activities.
  - Toolbox talk: The BPP should be overseen by a suitably experienced Ecological Clerk of Works (ECoW) who will oversee the delivery of 'toolbox talks' to contractors to make them aware of bird sensitivities, legislative requirements and relevant working protocols.
- 8.6.3 The BPP will be developed to ensure compliance with legislation during the construction phase. This will describe pre-construction surveys to locate nesting birds and will detail measures to protect any nests that may be at risk of destruction or susceptible to disturbance during construction activities. This will include species-specific stand-off distances and work protocols to ensure nesting birds are safeguarded.
- 8.6.4 All species of high and moderate NCI that are identified as potentially breeding or roosting within or in the vicinity of the Project, and that may be susceptible to disturbance during construction will be subject to targeted surveys to identify the nesting locations, and disturbance risk assessments will be prepared to ensure breeding activity is unaffected by construction works.
- 8.6.5 The BPP will be overseen by an ECoW and implemented as part of an Outline Construction Environment Management Plan (OCEMP).

## Operational Phase Mitigation

- 8.6.6 Potential adverse effects on birds arising from the operation of the Project are anticipated to be restricted to collision impacts, as birds in flight may be susceptible to colliding with the wires of the OHL. Mitigation to reduce the likelihood of collision comprises marking the wires with 'bird diverters' which render the OHL more visible and reduce the likelihood of collisions.
- 8.6.7 Data from flight activity surveys (VP watches) undertaken over the length of the OHL will be used to estimate rates of flight activity by sensitive species and any sections that are deemed to pose a relatively high risk of collision will be marked to make them more visible. These could include sections that cross habitual flight routes used by birds moving between feeding and roosting areas, or sections that are near to good feeding areas, roost sites or breeding sites.

## 8.7 Preliminary Likely Significant Effects

- 8.7.1 Preliminary baseline bird surveys were undertaken for a single partial breeding season and single partial non-breeding season, with survey coverage extending up to 500m from the Project's draft Order Limits. These surveys alongside limited desk studies provide initial information on the status, distribution and activity of species of high and moderate NCI in the vicinity of the Project.
- 8.7.2 The preliminary assessment of likely significant effects considers whether species of high or moderate NCI may be adversely affected due to the Project, as described above. The assessment considers effects arising as a result of:
- Construction of the Project.
  - Operation of the Project.
  - Cumulative effects of the Project.
- 8.7.3 Guidance seeks to focus detailed assessment on important features, in this case bird populations of High and Moderate NCI, where these populations are considered to be vulnerable to any of the potential effects identified above. Following consideration of initial baseline data showing the activity patterns of High and Moderate NCI populations, and an evaluation of their potential to be affected by construction and operation of the Project, red kite, peregrine and lesser black-backed gull are considered likely to be subject to detailed assessment to explore the likelihood of significant effects arising from the Project.

## Construction Effects

- 8.7.4 The construction phase of the Project will lead to increased levels of noise and visual disturbance due to the presence of vehicles, site machinery and site personnel. Activities associated with construction may include track construction, the creation of hardstandings, cabling works, the construction of a collector substation, switching station and cable sealing end compound, the erection of towers and stringing of conductors. Disturbance can lead to indirect habitat loss, as it has the potential to displace birds from key foraging habitats or important sites like nesting or roosting areas.
- 8.7.5 Although difficult to quantify, effects will be greatest in close proximity to construction activities and the consequences of displacement are likely to be more severe in the breeding season. Disturbance could result in behavioural responses by individuals, resulting in increased mortality or a reduction in breeding success. This could arise due to reduced feeding efficiency, disturbance at nest sites leading to breeding failure or increased susceptibility to predators.
- 8.7.6 The construction phase is scheduled to last for up to 24 months, and it is assumed that two breeding seasons and two nonbreeding seasons will be affected.
- 8.7.7 The BPP will guarantee that nest sites of Schedule 1 species are safeguarded, with measures put in place to ensure that sites are buffered to avoid or minimise any effects associated with construction activities, or that activities close to potential nest sites are timed to avoid the breeding season.
- 8.7.8 Red kites are classified as having moderate sensitivity to disturbance at nest sites, and the recommended disturbance buffer is 150 – 300m during the breeding season (NatureScot 2022) (Ref. 8.31). However, red kites are unlikely to be substantially displaced from foraging areas by construction activities as the species is relatively tolerant of human activities and has a relatively large foraging range.
- 8.7.9 Peregrine are classed as having medium sensitivity to disturbance during the breeding season, with a suggested buffer zone to safeguard nesting sites of 500 – 750m (NatureScot, 2022) (Ref. 8.31). Foraging peregrines are not likely to be adversely affected by construction disturbance as their core foraging range is relatively large with prey caught mainly on the wing. Peregrine can also be relatively tolerant of human activities, and and foraging birds that routinely

overlap with the Project will already be habituated to farming activities, quarrying, the presence of human settlements and road traffic

- 8.7.10 Most of the lesser black-backed gull records were of non-breeding individuals. Foraging lesser black-backed gulls are tolerant of human activities and no displacement due to construction is not anticipated to be substantial.
- 8.7.11 Significant effects on the regional red kite, peregrine and lesser black-backed gull populations are considered unlikely.

## **Operational Effects**

### **Displacement**

- 8.7.12 The operational phase of the Project is not likely to result in the displacement of nesting and foraging birds, as disturbance effects arising from occasional maintenance visits will be low.
- 8.7.13 In some circumstances, OHLs can cause a 'barrier effect' to birds in flight, displacing individuals in flight as they avoid the OHL during commuting flights; this may result in higher energetic requirements with knock-on effects on survival and productivity, which could impinge on a species' conservation status. However, this is not considered relevant for the Project as there is no evidence of large-scale commuting by birds that could be sensitive to such an effect.

### **Collision Risk**

- 8.7.14 Flight activity by birds in the vicinity of OHLs entails a theoretical risk of collision with conductors and earth wires. Collisions will often lead to the death of individuals, and if sufficient direct mortality occurred, the conservation status of regional populations could be negatively affected.
- 8.7.15 Collision risk is assumed to depend on the level of 'at risk' flight activity across the OHL and the extent to which birds are able to detect and avoid the wires. There is variation in both these aspects for different species, and susceptibility can also vary between seasons and in different weather conditions. Certain species tend to spend a relatively high proportion of flight time at a height that overlaps with the height of OHLs, whereas others routinely fly above or below. Some species appear to be more at risk due to higher flight speeds, greater body mass or less manoeuvrability. The location of the OHL can also influence the likelihood of collision effects, with lines located within regular flight paths, for example between feeding and roosting areas, migration corridors or areas of high prey density potentially influencing the levels of flight activity.



- 8.7.16 Collision risk is difficult to quantify and there is no accepted method to model the level of risk. Instead, qualitative assessments are used, based on field studies of flight activity and information on the species-specific risk, and these inform mitigation to reduce the likelihood of collision. In the UK, there is very little evidence of substantial mortality arising from collision with OHLs.
- 8.7.17 To date, the only species of high or moderate NCI with substantial levels of flight activity are red kite and lesser black-backed gull. Red kite populations across Wales and eastern England are in favourable conservation status. Recent research in Wales has shown that populations are robust to a range of mortality scenarios associated with potential collision risk at wind farm developments (Hannah et al. 2024) (Ref. 8.32). In addition, given that red kite populations are not considered to be especially vulnerable to collisions with OHLs, significant effects on the red kite population are considered unlikely. If at risk flight behaviour is sufficiently high over sections of the Project's OHL, line marking with bird diverters will be installed to reduce the likelihood of collision.
- 8.7.18 Lesser black-backed gulls were mainly non-breeding birds, and flights were likely to have been by foraging birds moving between feeding areas on farmland. Significant effects on lesser black-backed gulls are not anticipated, as despite recent declines in breeding populations, many thousands of birds continue to breed in coastal and urban areas. Baseline data will explore whether flight activity is concentrated over particular sections of the Project's OHL, which will inform the requirement for line marking to reduce the likelihood of collision.

## 8.8 Next Steps

- 8.8.1 The next steps will be to engage with key stakeholders and use consultation responses alongside emerging Project design and further baseline data to further refine ornithological receptors and finalise the assessment process.

### Consultation

- 8.8.2 Stakeholder engagement will continue after the statutory consultation period. Consultation with NE and NRW is anticipated to include consideration of baseline findings, assessment methods and mitigation options. These discussions may inform field survey planning, desk study approaches and help to identify enhancement opportunities that target key bird populations.

## Surveys

- 8.8.3 Further field surveys will be undertaken prior to the submission of the ES. These will include a continuation of VP watches to collect flight activity information on the breeding and non-breeding bird community, walkover breeding bird surveys and targeted breeding raptor surveys.

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## 9 Historic Environment

### 9.1 Introduction

9.1.1 This Chapter provides the results of the preliminary assessment of the potential effects of the Project on the Historic Environment and describes:

- Legislation, Policy and Guidance.
- Consultation and Engagement.
- Assessment Methodology and Significance Criteria.
- Baseline Conditions.
- Preliminary Mitigation Measures.
- Preliminary Likely Significant Effects.
- Preliminary Mitigation and Enhancement Measures.
- Next Steps.

9.1.2 This chapter should be considered in conjunction with:

- Chapter 2: Project Description.
- Chapter 5: Methodology.
- Chapter 6: Landscape and Visual.

### 9.2 Legislation, Policy and Guidance

#### Legislation: UK

9.2.1 The Project will be tested in line with the relevant UK, Welsh and English national policies stated below, the preliminary assessment has been undertaken in accordance with, and with reference to, the following legislation and policy:

- Ancient Monuments and Archaeological Areas Act 1979 (Ref 9.1);
- Planning (Listed Buildings and Conservation Areas) Act 1990 (Ref 9.2);
- Well-being of Future Generations (Wales) Act 2015 (Ref 9.3); and
- The Historic Environment (Wales) Act 2016 (Ref 9.4).

#### **Ancient Monuments and Archaeological Areas Act (1979)**

9.2.2 The Ancient Monuments and Archaeological Areas Act 1979 (Ref 9.1) gives statutory protection to any structure, building or work which is considered to be of particular historic or archaeological interest and regulates any activities which may affect such areas. Under the Act any work that is carried out on a Scheduled Ancient Monument must first obtain Scheduled Monument consent.

### **Planning (Listed Buildings and Conservation Areas) Act 1990**

- 9.2.3 Legislation relating to built heritage is principally set out within the Planning (Listed Buildings and Conservation Areas) Act 1990 (Ref 9.2) which provides statutory protection for Listed Buildings and Conservation Areas. Section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 states that:

*'In considering whether to grant planning permission [or permission in principle] for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State, shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.'*

- 9.2.4 Similarly, in regard to conservation areas and planning, Section 72 (1) states that:

*'In the exercise, with respect to any buildings or other land in a conservation area...special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area.'*

### **Well-Being of Future Generations Act (2015)**

- 9.2.5 Under the Well-being of Future Generations Act 2015 (Ref 9.3), public bodies now have a duty to use sustainable development to shape everything they do, how it is done, and how it is communicated (via reporting), to show how they are contributing to the achievement of the well-being goals. This means that each public body must work to improve the four aspects of well-being in Wales which are: economic; social; environmental; and cultural.

### **The Historic Environment Wales Act (2016)**

- 9.2.6 The Historic Environment Wales Act (2016) (Ref 9.4) is intended to make improvements to existing legal provisions for the Welsh historic environment. The Bill *'gives more effective protection to listed buildings and scheduled monuments, enhances existing mechanisms for the sustainable management of the historic environment, and introduces greater transparency and accountability into decisions taken on the historic environment.'*
- 9.2.7 As the Project will be a Nationally Significant Infrastructure Project under Section 14(1)(b) of the Planning Act 2008 (Ref 9.5) the following legislation will also be relevant:

## **The Infrastructure Planning (Decisions) Regulation (2010)**

- 9.2.8 The Infrastructure Planning (Decisions) Regulation (2010) (Ref 9.6) Regulation 3 (listed buildings, conservation areas and scheduled monuments) requires that:
- ‘(1) When deciding an application which affects a listed building or its setting, the decision-maker must have regard to the desirability of preserving the listed building or its setting or any features of special architectural or historic interest which it possesses*
- ‘(2) When deciding an application relating to a conservation area, the decision-maker must have regard to the desirability of preserving or enhancing the character or appearance of that area*
- ‘(3) When deciding an application for development consent which affects or is likely to affect a scheduled monument or its setting, the decision-maker must have regard to the desirability of preserving the scheduled monument or its setting.’*
- 9.2.9 This regulation provides a single consenting regime that does away with the separate consents in relation to listed buildings, conservation areas and scheduled monuments, but provides an equivalent legislation.

## **Town and Country Planning Act 1990 and Levelling Up and Regeneration Act 2023**

- 9.2.10 The Levelling-Up and Regeneration Act of 2023 (LURA) (Ref 9.7) introduced changes to heritage legislation in England, significantly expanding protections for heritage assets. Previously, the Planning (Listed Buildings and Conservation Areas) Act 1990 (Ref 9.2) and the Ancient Monuments and Archaeological Areas Act 1979 (Ref 9.1) addressed Listed Buildings, Conservation Areas, and Scheduled Monuments. The LURA inserted text into the TCPA (Town and Country Planning Act) 1990 (Ref 9.8) to establish a statutory duty to preserve or enhance Registered Parks and Gardens, Protected Wrecks, and World Heritage Sites, broadening the scope of statutorily protected designated heritage assets.
- 9.2.11 Although not yet in effect, the provisions outlined in LURA 2023, outline that the same regard should be afforded to all designated assets, as those currently covered by legislation.



## National Policy

### National Policy Statements (NPS)

- 9.2.12 The overarching policy relevant to the Project is the NPS EN-1 (DESNZ, 2024) (Ref 9.10). This is supported by NPS EN-5 (DESNZ, 2024) (Ref 9.11).
- 9.2.13 The NPS EN-1 contains the following paragraphs relating to the historic environment which have been considered within this chapter:
- 9.2.14 Paragraph 5.9.11 states ‘Where a site on which development is proposed includes, or the available evidence suggests it has the potential to include, heritage assets with an archaeological interest, the applicant should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation. Where proposed development will affect the setting of a heritage asset, representative visualisations may be necessary to explain the impact.’
- 9.2.15 Paragraph 5.9.24 states ‘In considering the impact of a proposed development on any heritage assets, the Secretary of State should consider the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between their conservation and any aspects of the proposal.’
- 9.2.16 Paragraph 5.9.30 states ‘Substantial harm to or loss of designated assets of the highest significance, including Scheduled Monuments; registered battlefields; grade I and II\* listed buildings; grade I and II\* registered parks and gardens; and World Heritage Sites, should be wholly exceptional.’
- 9.2.17 NPS EN-5 provides limited guidance in relation to heritage. In terms of site selection and design Paragraph 2.2.10 notes that Schedule 9 of the Electricity Act 1989 requires applicants to ‘*have regard to the desirability of...protecting sites, buildings and objects of architectural, historic or archaeological interest;*’ and that they should ‘*do what [they] reasonably can to mitigate any effect which the proposals would have...*’
- 9.2.18 The policy goes on to reference cultural heritage or the historic environment in Paragraph 2.9.19 in summary of the Horlock Rules, which states ‘... *applicants should: ... seek to avoid altogether internationally and nationally designated areas of the highest amenity, cultural or scientific value by the overall planning of the system connections.*’ This is defined in footnote 21 as ‘*Internationally and nationally designated areas of highest amenity, cultural or scientific value are:*



*National Parks; Areas of Outstanding Natural Beauty; Heritage Coasts; World Heritage Sites; Ramsar Sites; Sites of Special Scientific Interest; National Nature Reserves; Special Protection Areas; Special Areas of Conservation. Care should be taken in relation to all historic sites with statutory protection e.g. Ancient Monuments, Battlefields and Listed Buildings.'*

- 9.2.19 Followed, at Paragraph 2.9.25 the same rules in relation to underground options which states 'the Secretary of State should only grant development consent for underground or subsea sections of a proposed line over an overhead alternative if they are satisfied that the benefits accruing from the former proposal clearly outweigh any extra economic, social, or environments impacts that it presents, and that any technical obstacles associated with it are surmountable. In this context is should consider: ...designated heritage assets and Heritage Coasts (including, where relevant, impacts on the setting of designated features and areas)... the potentially very disruptive effects of undergrounding on local communities, habitats, archaeological and heritage sites...'

### **National Policy – Wales**

- 9.2.20 National planning policy in Wales is set out in **Planning Policy Wales (PPW) Edition 12** (Welsh Government, February 2024) (Ref 9.9). Together with the legislation set out above, this forms the legislative and policy framework for the management of the historic environment in Wales, supported further by guidance set out below.
- 9.2.21 Chapter 6, paragraph 6.1.2, of the PPW identifies that: 'The historic environment is made up of individual historic features which are collectively known as historic assets. Examples of what can constitute an historic asset include:
- *Listed Buildings;*
  - *Conservation Areas;*
  - *Historic assets of special local interest;*
  - *Historic Parks and Gardens;*
  - *Townscapes;*
  - *Historic Landscapes;*
  - *World Heritage Sites; and*
  - *Archaeological remains (including scheduled monuments).'*
- 9.2.22 The specific objectives of the PPW are set out at paragraph 6.1.6:
- *“Protect the Outstanding Universal Value of World Heritage Sites:*
  - *Conserve archaeological remains, both for their own sake and for their role in education, leisure and the economy;*

- *Safeguard the character or appearance of conservation areas whilst [sic] the same time helping them remain vibrant and prosperous;*
- *Preserve the special interest of sites on the register of historic parks and gardens;*
- *Protect areas on the register of historic landscapes in Wales”;* and

- 9.2.23 Paragraph 6.1.7 states that: ‘It is important that the planning system looks to protect, conserve and enhance the significance of historic assets. This will include consideration of the setting of an historic asset which might extend beyond its curtilage. Any change that impacts on an historic asset or its setting should be managed in a sensitive and sustainable way.’
- 9.2.24 Regarding Listed Buildings, paragraph 6.1.10 states: ‘*There should be a general presumption in favour of the preservation or enhancement of a listed building and its setting, which might extend beyond its curtilage. For any development proposal affecting a listed building or its setting, the primary material consideration is the statutory requirement to have special regard to the desirability of preserving the building, its setting or any features of special architectural or historic interest which it possesses.*’
- 9.2.25 Regarding Conservation Areas, paragraph 6.1.14 states ‘There should be a general presumption in favour of the preservation or enhancement of the character or appearance of conservation areas or their settings. Positive management of conservation areas is necessary if their character or appearance are to be preserved or enhanced and their heritage value is to be fully realised...’.
- 9.2.26 Regarding Historic Parks and Gardens, paragraph 6.1.18 states that ‘Planning authorities should value, protect, conserve and enhance the special interest of parks and gardens and their setting included on the register of historic parks and gardens in Wales. The register should be taken in to account in planning authority decision making.’
- 9.2.27 Regarding Historic Landscapes, paragraph 6.1.21 states ‘Planning authorities should protect those assets included on the register of historic landscapes in Wales. ...the sharing and use of evidence and assessments undertaken for wider reasons, such as Green Infrastructure Assessments, should be used to identify and better understand historic landscapes and ensure their qualities are protected and enhanced. The register should be taken into account in decision making when considering the implications of developments which meet the criteria for Environmental Impact Assessment or, if on call in, in the opinion of the Welsh Ministers, the development is of a sufficient scale to have more than a

local impact on the historic landscape. An assessment of development on a historic landscape may be required if it is proposed within a registered historic landscape or its setting and there is potential for conflict with development plan policy.'

- 9.2.28 Regarding World Heritage Sites, paragraph 6.1.22 states 'World Heritage Sites are international designations recognised for their Outstanding Universal Value, as inscribed by UNESCO. The planning system recognises the need to protect the Outstanding Universal Value of World Heritage Sites in Wales. The impacts of proposed developments on a World Heritage Site and its setting and, where it exists, the World Heritage Site buffer zone and its essential setting, is a material consideration in the determination of any planning application.'
- 9.2.29 Regarding archaeological remains, paragraph 6.1.23 states: 'The planning system recognises the need to conserve archaeological remains. The conservation of archaeological remains and their settings is a material consideration in determining planning applications, whether those remains are a scheduled monument or not.'
- 9.2.30 Paragraph 6.1.24 goes on to state 'Where nationally important archaeological remains and their settings are likely to be affected by proposed development, there should be a presumption in favour of their physical protection in situ. It will only be in exceptional circumstances that planning permission will be granted if development would result in an adverse impact on a scheduled monument (or an archaeological site shown to be of national importance) or has a demonstrably and unacceptably damaging effect upon its setting.'
- 9.2.31 Paragraph 6.1.25 states 'In cases involving less significant archaeological remains, planning authorities will need to weigh the relative importance of the archaeological remains and their settings against other factors, including the need for the proposed development.'

## **Local Policy – Wales**

### **The Powys Local Development Plan (2011 – 2026)**

- 9.2.32 Historic environment matters in Powys are largely addressed via national planning policy. However, the Powys Local Development Plan (2011 – 2026) (LDP) (Ref 9.12) also sets out some policies for development management within the area of Powys County Council. Relevant policies are summarised below.

*Policy DM2 – The Natural Environment states: 'Development proposals shall demonstrate how they protect, positively manage and enhance biodiversity*

*and geodiversity interests including improving the resilience of biodiversity through the enhanced connectivity of habitats within, and beyond the site.*

*Development proposals which would impact on the following natural environment assets will only be permitted where they do not unacceptably adversely affect: ....*

*5. Trees, woodlands and hedgerows of significant public amenity, natural or cultural heritage.'*

*Policy DM13 – Design and Resources, states: 'Development proposals must be able to demonstrate a good quality design and shall have regard to the qualities and amenity of the surrounding area, local infrastructure and resources.*

*Proposals will only be permitted where all of the following criteria, where relevant, are satisfied:*

*3. Any development within or affecting the setting and/or significant views into and out of a Conservation Area has been designed in accordance with any relevant adopted Conservation Area Character Appraisals and Conservation Area Management Plans, or any other relevant detailed assessment or guidance adopted by the Council."*

- 9.2.33 Paragraph 4.2.77 of the LDP goes on to state: "Historic Environment. The Council's objectives in respect of the historic environment are to safeguard the cultural integrity of the historic settlements and buildings within the Plan area and to encourage the enhancement of the historic environment. The County's historic sites, features, townscapes and landscapes should be treated as assets and should be positively conserved and enhanced for the benefit of residents and visitors alike.'
- 9.2.34 Paragraph 4.2.77 of the LDP states: 'The Historic Environment (Wales) Act 2016, Chapter 6 of PPW and TAN 24, along with Welsh Government/CADW best practice guidance, set out the legislation, policies and guidance to be applied in managing development and change of the historic environment in Wales. Many elements of the County's historic environment are protected through national legislation and guidance, including Listed Buildings, Conservation Areas, and Scheduled Ancient Monuments, and as such do not require specific policies in the LDP. Developments affecting listed buildings and their settings will be judged for their effect on listed buildings and their settings, in line with national policy. Developments within Conservation Areas are to be judged on their effect on the character and appearance of the area, in accordance with national policy. However, significant weight shall also be given to any detailed assessment

documents, such as Conservation Area Character Appraisals and Conservation Area Management Plans, that the Council adopt. Further guidance is also to be prepared as part of SPG in order to provide generic guidance on assessment of character and appropriate forms of development within Conservation Areas where a specific Conservation Area Appraisal or Conservation Area Management Plan is not in place.’

### **Conservation Areas Supplementary Planning Guidance (SPG) (Powys County Council, 2020)**

9.2.35 The Powys Local Development Plan (2011 – 2026) (Ref 9.13) includes the document ‘Supplementary Guidance, Conservation Areas’. The purpose of this SPG is to:

- *‘Provide more detailed guidance to supplement relevant LDP policies.*
- *Provide generic guidance on assessing character within Conservation Areas and appropriate forms of development where a specific Conservation Area Character Appraisal is not in place.*
- *Provide a consistent, objective, evidence-based approach towards assessing character and using this to inform the design of new development.*
- *Provide practical information for applicants/agents, members of the public, elected Members and Council Officers involved in proposals within or affecting the setting of, or significant views in or out of, Conservation Areas, and on respecting local distinctiveness.’*

### **Archaeology SPG (Powys County Council, 2021)**

9.2.36 The Powys Local Development Plan (2011 – 2026) (Ref 9.12) includes the document ‘Supplementary Guidance, Archaeology (Ref 9.14). The purpose of this SPG is to:

- *‘Provide more detailed guidance to supplement relevant LDP policies.*
- *Provide guidance on making planning decisions relating to Scheduled Monuments and other archaeological remains.*
- *Provide practical information for applicants/agents, members of the public, elected Members and Council Officers involved in proposals affecting archaeology.’*

### **Historic Environment SPG (Powys County Council, 2021)**

9.2.37 The Powys Local Development Plan (2011 – 2026) (Ref 9.12) also includes the document ‘Supplementary Guidance, Historic Environment Including Historic Environment Record’ (Ref 9.15). The purpose of this SPG is to:

- *‘Provide more detailed guidance to supplement relevant LDP policies.*

- *Provide guidance on wider designated areas and non-designated sites not subject to individual SPGs.*
- *Provide guidance on how to access and evaluate data on the historic environment.*
- *Provide practical information for applicants/agents, members of the public, elected Members and Council Officers involved in proposals affecting the historic environment.'*

### **Local Policy – England**

9.2.38 Local planning policies in Shropshire are set out within the Shropshire Local Development Framework: Adopted Core Strategy 2006-2026 (Ref 9.16) and the Shropshire Council Site Allocations and Management of Development (SAMDev) Plan 2006-2026 (Ref 9.17).

#### **Core Strategy 2006 – 2026 (Shropshire Council, 2011)**

- 9.2.39 Strategic Objective 11 is to 'Ensure that the character, quality and diversity of Shropshire's built, natural and historic environment is protected, enhanced and, where possible, restored, in a way that respects landscape character, biodiversity, heritage values, and local distinctiveness, and contributes to wider environmental networks.'
- 9.2.40 Core Strategy Policy CS6: Sustainable Design and Development Principles seeks to ensure that all development 'Protects, restores, conserves and enhances the natural, built and historic environment and is appropriate in scale, density, pattern and design taking into account the local context and character, and those features which contribute to local character, having regard to national and local design guidance, landscape character assessments and ecological strategies where appropriate.'
- 9.2.41 Core Strategy Policy CS17: Environmental Networks seeks to ensure that all development:
- 'Protects and enhances the diversity, high quality and local character of Shropshire's natural, built and historic environment, and does not adversely affect the visual, ecological, geological, heritage or recreational values and functions of these assets, their immediate surroundings or their connecting corridors.*
- Contributes to local distinctiveness, having regard to the quality of Shropshire's environment, including landscape, biodiversity and heritage assets, such as the Shropshire Hills AONB, the Meres and Mosses and the World Heritage Sites at Pontcysyllte Aqueduct and Canal and Ironbridge Gorge.'*



## **SAMDev Plan (Shropshire Council 2015)**

9.2.42 The SAMDEV (Ref 9.17) contains policy MD13: The Historic Environment, which states:

*'In accordance with Policies CS6 and CS17 and through applying the guidance in the Historic Environment SPD, Shropshire's heritage assets will be protected, conserved, sympathetically enhanced and restored by:*

- 1. Ensuring that wherever possible, proposals avoid harm or loss of significance to designated or non-designated heritage assets, including their settings.*
- 2. Ensuring that proposals which are likely to affect the significance of a designated or non-designated heritage asset, including its setting, are accompanied by a Heritage assessment, including a qualitative visual assessment where appropriate.*
- 3. Ensuring that proposals which are likely to have an adverse effect on the significance of a non-designated heritage asset, including its setting, will only be permitted if it can be clearly demonstrated that the public benefits of the proposal outweigh the adverse effect. In making this assessment, the degree of harm or loss of significance to the asset including its setting, the importance of the asset and any potential beneficial use will be taken into account. Where such proposals are permitted, measures to mitigate and record the loss of significance to the asset including its setting and to advance understanding in a manner proportionate to the asset's importance and the level of impact, will be required.*
- 4. Encouraging development which delivers positive benefits to heritage assets, as identified within the Place Plans. Support will be given in particular, to proposals which appropriately conserve, manage or enhance the significance of a heritage asset including its setting, especially where these improve the condition of those assets which are recognised as being at risk or in poor condition.'*

### **Guidance**

#### **Guidance – UK**

#### **Chartered Institute for Archaeologists**

9.2.43 The Baseline Assessment underpinning the Historic Environment Chapter of the Environmental Statement (ES) and the Chapter itself will be undertaken with regard to all relevant industry guidance, principally the Standards and Guidance for Archaeological Desk-Based Assessments 2020 (Ref 9.18) and Standard and

guidance for commissioning work or providing consultancy advice on archaeology and the historic environment updated 2020 (Ref 9.19).

### **Principles of Cultural Heritage Impact Assessment in the UK**

- 9.2.44 Further UK-wide guidance is set out in the 'Principles of Cultural Heritage Impact Assessment in the UK (ClfA, IEMA and IHBC, 2021) (Ref 9.20). This sets out high-level guidance for assessing the value/importance of heritage assets and assessing impacts/change to that value.

### **International Council on Monuments and Sites**

- 9.2.45 There is no consistent methodology adopted for cultural heritage for assessing impacts on historic environment assets as part of an EIA, particularly for energy proposals. However, the International Council on Monuments and Sites (ICOMOS) have published the Guidance and Toolkit for Impact Assessment in a World Heritage Context (ICOMOS, 2022) (Ref 9.21) which is also useful for assessing the importance of and impact on heritage assets in a variety of other contexts.
- 9.2.46 Whilst it is noted that there is country specific guidance, these are often broadly equivalent in ethos if not language. Although all of the below guidance has, and will be, considered in the production of the assessment that will inform the ES, where there are differences in approach the English guidance will be applied where applicable. This is in order to maintain a single approach across both countries e.g. the use of 'heritage asset' rather than 'historic asset' when describing the resource assessed.

### **Guidance – Wales**

- 9.2.47 Relevant guidance, specific to the Historic Environment, that has informed this PEIR and will inform the assessment within the ES, comprises:
- Conservation Principles for the Sustainable Management of the Historic Environment in Wales (Cadw, 2011) (Ref 9.22).
  - Historic Environment (Wales) Act 2016: guidance (Welsh Government, 2017) (Ref 9.23).
  - Heritage Impact Assessment in Wales (Cadw, 2017) (Ref 9.24).
  - Technical Advice Note (TAN) 24: the historic environment (Welsh Government, 2017) (Ref 9.25).
  - Setting of Historic Assets in Wales (Cadw, 2017) (Ref 9.26).



## **Guidance – England**

- 9.2.48 Relevant guidance, specific to the Historic Environment, that has informed this PEIR and will inform the assessment within the ES, comprises:
- Conservation Principles Policies and Guidance for the Sustainable Management of the Historic Environment (Historic England, 2008) (Ref 9.27).
  - Managing Significance in Decision-Taking in the Historic Environment. Historic Environment Good Practice Advice in Planning: 2 (Historic England, 2015) (Ref 9.28).
  - The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) (Historic England, 2017, 2<sup>nd</sup> Ed.) (Ref 9.29).
  - Statements of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12 (Historic England, 2019) (Ref 9.30).

## **9.3 Consultation and Engagement**

- 9.3.1 Comments included in the EIA Scoping Opinion from the Planning Inspectorate (PINS) and subsequent applicant responses to this EIA Scoping Opinion are outlined below in Table 9-1.

Table 9-1 – Scoping Opinion from the Planning Inspectorate

ID	Matter	Inspectorate’s Comments	Project Response
3.5.3	Indirect physical effects on heritage assets - construction	<p>The Scoping Report states that given the nature of the Proposed Development and the receiving environment, indirect physical effects on heritage assets beyond the Proposed Development footprint are not predicted to occur. Figure 10.1 of the Scoping Report shows numerous heritage assets located in proximity to the Proposed Development. In the absence of defined locations for the works (including expected route(s) of construction traffic/haul roads) and proposed structures, the Inspectorate does not agree that this matter can be scoped out. Indirect physical effects on heritage assets during construction (eg subsidence; vibration from piling, HGVs and any rock blasting; changes to groundwater flows and levels; movement of contaminants or pollutants) should be assessed in the ES where significant effects are likely to occur.</p>	<p>The Scoping Report sought to scope these effects out of assessment as due to the nature of the receiving environment effects of this nature are not anticipated to occur beyond the Project footprint.</p> <p>The Inspectorate’s comment relates to potential indirect effects arising from construction activity and the current lack of defined locations of works activities and construction activities. As the design develops and the location and nature of construction activity is defined a review will be undertaken to determine whether any heritage assets will experience indirect physical effects. The findings will be presented in the ES either in the main text if significant effects are identified or in an appendix if no significant effects are identified. No significant indirect effects have been identified to date.</p>
3.5.4	Direct effects of heritage assets resulting from setting change -construction	<p>The Scoping Report proposes to scope out this matter on the basis of the temporary nature of construction activities. Figure 10.1 of the Scoping Report shows numerous heritage assets located in</p>	<p>The setting assessment will include an assessment of potential significant effects from construction activity. It is considered that construction compounds will be temporary and once no longer in</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>proximity to the Proposed Development. In the absence of defined locations for the construction compounds, the Inspectorate considers there is insufficient information to conclude that significant effects will not occur. Therefore, impacts on the setting of heritage assets from construction compounds should be scoped into the assessment where significant effects are likely to occur. The Inspectorate is content that that other direct effects on heritage assets resulting from setting change during construction are not likely to be significant and can be scoped out.</p>	<p>use the land will be returned to its former use, therefore any effects on heritage assets will be temporary and reversible. This will be covered in the ES. If significant effects are likely, it is more appropriate to consider design mitigation such as relocation of compounds (where practicable) or appropriate screening.</p>
3.5.5	Effects during decommissioning	<p>The Inspectorate agrees that decommissioning can be scoped out of the ES, subject to a high-level summary of potential effects for each environmental aspect being appended to the ES.</p>	<p>A high-level summary of potential effects will be included as an appendix to the ES.</p>
3.5.7	Impacts to setting – construction and operation	<p>The Scoping Report states that the Zone of Theoretical Visibility (ZTV/s) (to be developed for the LVIA) will be used to identify heritage assets which may be susceptible to effects related to setting change. As set out in Section 3.2 above (Landscape and Visual Amenity), the Inspectorate considers that the study area and ZTV should represent the extent of the likely impacts from</p>	<p>The comments regarding the ZTV and study area are noted and will be taken forward into the ES, section 9.4 of this chapter sets out our proposed approach to utilising the ZTV to scope the heritage assessment and we will seek agreement on this with relevant stakeholders through the statutory consultation process.</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>construction and operation of the Proposed Development and all proposed structures including the Grug y Mynydd Collector Substation. The Applicant should make effort to agree the study area and methodology for the ZTV with relevant consultation bodies including local authorities. In addition to the ZTV/s, data from other relevant aspect assessment/s (eg Noise and Vibration) should be used to identify heritage assets which may be susceptible to effects related to setting change. The ES should fully justify the choice of heritage assets included in the setting assessment and their locations should be depicted on a supporting plan. The assessment should be supported by appropriate visualisations such as photomontages to help illustrate the likely impacts of the Proposed Development. Effort should be made to agree locations for viewpoints and visualisations with relevant consultation bodies including local authorities, Cadw and Historic England. Cross reference can be made to the Landscape and Visual Amenity ES assessment to avoid duplication.</p>	<p>The Project proposes to utilise appropriate visualisations where they can support understanding of likely significant effects on heritage assets and we will agree a list of proposed visualisations with relevant stakeholders.</p>

ID	Matter	Inspectorate's Comments	Project Response
3.5.9	Data collection – desk-based	<p>Light Detection and Ranging (Lidar) data should be fully analysed for the application site. Cadw has advised that new Lidar datasets are available (see Appendix 2 of this Opinion). The Applicant should make effort to discuss and agree the need for a preliminary desk-based deposit model as part of the HEDBA with Historic England and Cadw, to inform the scope and extent of archaeological field survey required to establish the baseline in locations where geophysical survey might be challenging due to site conditions.</p>	<p>The Project agrees that Lidar is one of the sources that will be consulted for the Historic Environment Assessment. This will be included in the Baseline Assessment supplied with the ES.</p> <p>Our proposed approach to geoarchaeological assessment and any potential need for a deposit model will be developed in consultation with relevant stakeholders.</p>
3.5.10	Data collection – field surveys	<p>As stated in paragraph 10.34 of the Scoping Report, it is anticipated that some form of targeted geophysical survey will be required to inform the EIA. It is not confirmed at this stage whether intrusive investigations and/ or trial trenching are proposed, but the Scoping Report notes that further consultation would be undertaken with relevant consultation bodies to establish the scope of field survey that would be required. Where necessary any intrusive investigations and trial trenching should be completed prior to submission of the DCO application. The Applicant should make effort to discuss and agree the timing, scope and</p>	<p>As outlined in the Scoping Report it is the Project's intention to carry out targeted geophysical survey to inform the application for development consent. Our proposed approach to geophysical survey will be developed in consultation with relevant stakeholders.</p> <p>The Project notes the comments regarding intrusive investigations. It is the Project's intent to maintain a clear line of communication with relevant stakeholder on the need for and scope of intrusive archaeological investigations. The results of the baseline assessment and geophysical survey will be utilised to inform these discussions and the</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>methodology for geophysical survey, any intrusive investigations and trial trenching with relevant consultation bodies.</p>	<p>results of all investigations will be used to inform the assessment of likely significant effects as the assessment progresses through the ES stage.</p>
Appendix 2	Assessment of Importance	<p>A higher level of importance should be included in section 10.37 for sites of international importance, such as World Heritage Sites. (Cadw)</p> <p>Whilst Radii are necessary to a structured approach to the consideration of assets and impacts it is important that professional judgement is deployed to ensure that assets whose significance rests heavily upon structured view and vista's - whether designed or consequential on their location- are assessed appropriately, this may mean bring into the assessment some assets at greater range from the pylons and substations. Likewise, in the banding of asset importance it should be kept in mind that some unlisted buildings may deserve treating in the same band as GII and some GII listed buildings will deserve treating in the same band as GII* depending upon their merits. Undesignated monuments are of demonstrably equivalent importance to scheduled sites should be treated on parity and robust assessment measures</p>	<p>Section 9.4 below sets out our proposed approach to impact assessment, including defining the level of importance of heritage assets and impacts. This represents a greater level of detail than was presented in the Scoping Report.</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>put in place to ensure that where such importance may exist it is tested and demonstrated at the earliest opportunity so that it can inform design.</p> <p>We note that proposed banding of impact across total loss/ substantial harm/ less than substantial harm etc - this is unlikely to produce satisfactory outputs given the breadth of severity of impact encompassed by the NPPF's less than substantial harm - we strongly suggest more work done on refining this aspect of methodology. (Historic England)</p>	

## 9.4 Assessment Methodology and Significance Criteria

- 9.4.1 This section describes the methodology used to establish the existing and future baseline together with the methodology / approach used to undertake the preliminary assessment on the Historic Environment. Whilst it broadly aligns with that outlined in Chapter 5, differences in specific terminology and variances in the significance of effect make it worth detailing in full, below. This section also identifies further assessment needed to be undertaken as part of the ES. The assessment is based on guidance set out by Cadw, IEMA, IHBC and ClfA on how the Historic Environment should be assessed in an EIA (see guidance referred to in Section 9.2).
- 9.4.2 The preliminary Historic Environment assessment determines if effects because of the Project, following the implementation of mitigation, are likely to be positive, negative, or neutral, together with predicting if effects are likely to be significant. All conclusions and assessments are by their nature preliminary. All assessment work has applied, and continues to apply, a precautionary approach, in that where limited information is available (in terms of the proposals for the Project) a realistic worst-case scenario is assessed.
- 9.4.3 The contribution of the setting to the importance of heritage assets has been assessed in accordance with the guidance provided in the Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (Historic England, 2017) (Ref 9.29) and the Setting of Historic Assets in Wales (Cadw, 2017) (Ref 9.26). The baseline setting was informed through a combination of desk-based assessment of online mapping and aerial imagery, the LVIA, and the walkover and setting survey. The importance of the heritage asset, assigned in the Baseline Report (Appendix 9.1: Historic Environment Baseline Report), has been carried into the PEIR for discussion of impact and proportionate mitigation measures.

### **Preliminary Assessment Key Parameters and Assumptions**

- 9.4.4 The assessment has been undertaken based on preliminary Project design information, see Chapter 2, and survey data. This information is iterative and will be updated in the ES as the design evolves and any changes are made.
- 9.4.5 The walkover survey area includes arable fields. It is acknowledged that there are limitations in identifying features of archaeological interest within ploughed fields due to modern agricultural practices, which are likely to have truncated or



removed above-ground earthworks or other evidence of heritage assets. While it is acknowledged that artefacts brought to the surface from ploughing have the potential to provide evidence for the location of archaeological sites, the purpose of the walkover survey is to ground truth site conditions and not to conduct a systematic fieldwalking exercise.

- 9.4.6 At this stage of the Project, it is anticipated that there would be no direct physical impacts on designated heritage assets as a result of the Project. To ensure this is the case, assets may be scoped into the assessment as a 'worst-case' in order to ensure that any necessary protective measures are put in place to avoid unintentional harm.
- 9.4.7 Where issues derive primarily from visual impacts or through changes in the setting of an asset due to the physical presence of the Project, the greatest impact will occur during the operational phase of the Project and will be assessed in that temporal phase.
- 9.4.8 The key parameters and assumptions will be reviewed based on the final Project description and design and, where required, updated, or refined. The ES will present the final key parameters and assumptions used within that assessment, particularly drawing attention to any areas that may have changed from what is presented in this preliminary assessment.

### **Study Area**

- 9.4.9 The Scoping Report set out the study area for the Historic Environment assessment as 3km from the Project's draft Order Limits for all designated and non-designated heritage assets. The Scoping Report also notes that the ZTV will be utilised to screen assets to exclude those with no theoretical intervisibility /in combination visibility and/or no/low susceptibility to setting change.
- 9.4.10 The study area, whilst a useful starting point, will continue to be refined during the iterative design and assessment process. This will be supplemented by information gathered during the walkover surveys of the Project. Therefore, not all assets within 3km of the Project will ultimately be assessed but may be used to provide context for the historic background of the landscape. Conversely, if the results of the walkovers in combination with the refined ZTV suggest that assets beyond 3km will be adversely affected they will also be scoped in to further assessment.

### **Baseline Data Collection**

- 9.4.11 Data will be drawn from a range of sources and managed through a project-specific GIS system. The Scoping Report sets out the specific sources that the Project intended to consult to support the ES. Following receipt of the Scoping Opinion, it is confirmed that the following sources will also be consulted:
- Early and mid-19th century historic Ordnance Survey mapping.
  - Relevant Estate and Tithe maps.
  - Lidar Data, specifically including the new National Wales 1 metre DTM and DSM Lidar datasets. Lidar data will be reviewed for the whole of the Project's draft Order Limits plus a 250m buffer, where the data is available.
- 9.4.12 Work to incorporate information gathered from these sources is underway at the time of production of this PEIR and the Historic Environment Baseline Report (Appendix 9.1) incorporates information identified from these sources to date, but does not represent a full and final assessment. The Baseline Report will be updated and finalised to support the ES and will contain a full assessment of these sources at that point.

### **Existing Baseline**

- 9.4.13 The baseline assessment has been informed by the Historic Environment Baseline Report (Appendix 9.1) which has drawn on the following key information sources:
- The National Heritage List for England.
  - Cadw designations.
  - Shropshire Council conservation area information.
  - Powys County Council conservation area information.
  - Shropshire Council Historic Environment Record (HER).
  - Heneb: Clwyd-Powys Archaeology HER.
  - Walkover Survey.
  - British Geological Survey mapping.
  - The Land Information System soil data for England and Wales.
  - Secondary published and online sources including historic maps.
  - Project plans and sections.
  - 3D KML models of the Project.

### **Data Presentation**

- 9.4.14 Known heritage assets identified from the sources listed above have been referenced using a consistent project-specific identification number in the PEIR. The preferred identification number (HER number/List Entry Number/Cadw Reference Number etc.) from the originating organisations will be provided in a

gazetteer accompanying the Baseline Report for cross-reference. Descriptions of the heritage assets will be reproduced in the appended gazetteer to the Baseline Report.

### **Further Data to be Collected to Inform the ES**

9.4.15 In addition to the data collected for this PEIR, the ES will be informed by the following additional third-party data and data obtained through surveys:

- Historic maps, including OS, Estate Maps, Enclosure Maps, Tithe Maps and military plans, all available scales of OS maps will be utilised.
- Recent aerial photography.
- Historic aerial photography.
- LiDAR data.
- Walkover and setting survey.
- Geoarchaeological assessment.
- Non-intrusive archaeological evaluation.
- Intrusive archaeological evaluation.
- Further desk-based information will be sourced for any areas of the Project's draft Order Limits and associated study area not currently included in assessment.

### **Site Visits and Surveys**

9.4.16 Site walkovers are currently underway and are ongoing with visits completed in July, August, and November 2024. Further visits are planned for early 2025 which will be reported on in future iterations of the Baseline Report.

9.4.17 Initial surveys visited heritage assets to inform the assessment of effects due to setting change, whilst those in November 2024 were targeted on land within the Project's draft Order Limits in order to identify previously unrecorded heritage assets and to assess the condition and survival of known assets. The results of the targeted walkover survey and setting assessment will be used to supplement the existing baseline datasets. Only designated heritage assets were visited as part of the setting assessment surveys, where access was available and permitted.

9.4.18 Recording of observations for the settings assessment, including a photograph record, was undertaken. Access to undertake the setting assessment was principally from publicly accessible areas/paths.

### **Environmental Impact Assessment methodology**

#### **Setting Assessment Methodology**

- 9.4.19 The contribution that setting makes to significance will be determined with reference to Historic England and Cadw guidance. The assessment of setting will utilise the ‘five-step’ approach given in part 4 of the Setting of Historic Assets in Wales (Cadw, 2017) (Ref 9.26) and part 2 of the Good Practice Advice Note (GPA3) (Historic England, 2017, 2<sup>nd</sup> Ed.) (Ref 9.29).
- 9.4.20 The assessment will consider the setting of both built heritage and buried/above-ground archaeology. This assessment will be principally carried out on site whilst experiencing the setting and reported on in the baseline study where appropriate.
- 9.4.21 The assessment of curtilage will not be a standard consideration alongside setting, and therefore will not be applied across the Project study area. Design principles to avoid physical impacts to Listed Buildings and built structures are anticipated to generally result in the avoidance of any land immediately surrounding historic buildings. Therefore, no cases where curtilage becomes a relevant factor of assessment are anticipated.

#### **Assigning Importance to Heritage Assets**

- 9.4.22 The Scoping Report sets out the proposed Project approach to assigning importance to heritage assets. This is based on a scale of High to Low with a further grade of Uncertain where an asset’s importance cannot be determined. In response to the Scoping Opinion received it is proposed to add a further grade of Very High to the scale. This will be applied to assets that meet the following criteria;
- World Heritage Sites (including nominated sites) inscribed for their cultural heritage importance.
  - Assets that can contribute significantly to acknowledged international research objectives.
  - Assets of acknowledged international importance.
- 9.4.23 For clarity, the criteria for determining the importance of heritage assets will be broadly based on those below (Table 9-2). However, using professional judgement and stakeholder feedback, assets may also be assessed on an individual basis, where this is appropriate and proportionate. It is important to note that non-designated assets may hold demonstrable significance equivalent to that of a designated asset.

Table 9-2 – Criteria for Assigning Importance to Heritage Assets

Importance	Criteria
Very High	<p>World Heritage Sites (including nominated sites) inscribed for their cultural heritage importance.</p> <p>Assets that can contribute significantly to acknowledged international research objectives.</p> <p>Assets of acknowledged international importance</p>
High	<p>Scheduled Monuments (including proposed sites).</p> <p>Grade I and II* Listed Buildings.</p> <p>Grade I and II* Registered Parks and Gardens.</p> <p>Registered Battlefields.</p> <p>Registered Historic Landscapes</p> <p>Protected Wrecks.</p> <p>Conservation Areas containing buildings of predominantly high value.</p> <p>Non-designated assets of the equivalent quality and importance to be designated</p> <p>Assets that can contribute significantly to acknowledged national research objectives</p>
Medium	<p>Grade II Listed Buildings</p> <p>Grade II Registered Parks and Gardens</p> <p>Conservation Areas containing buildings of predominantly medium value.</p> <p>Assets that can contribute to regional research objectives and/or have exceptional quality in their fabric or historical associations</p>
Low	<p>Locally listed buildings, or those of equivalent quality in their fabric or historical associations.</p> <p>Assets of local importance.</p> <p>Assets compromised by poor preservation and/or poor survival of contextual associations.</p> <p>Assets of limited value, but with potential to contribute to local research objectives</p>
Uncertain	<p>The importance of the resource has not been ascertained/is inaccessible</p>

## **Archaeological Potential**

- 9.4.24 Using the baseline as determined to date, the ES will also present an understanding of the likelihood for previously undiscovered/unrecorded archaeological remains to be present within the Project's draft Order Limits. Historic and modern impacts that might potentially have degraded the archaeological resource will be examined to assist in this process.
- 9.4.25 The assessment of archaeological potential will identify the likelihood of the presence of unidentified archaeological remains based on an analysis of the available data sets, previous archaeological findings within the study area and professional judgement. This will be supplemented with mapping of activity to geological and topographical landscape features/zones. Discussion of archaeological potential will require a holistic approach from baseline assessment to predicting patterns of past activity.
- 9.4.26 The ES will also include a narrative about the nature of the archaeological resource along the route by location and period. This will be essential in aiding the understanding of the nature of human activity since the prehistoric period, the evolving nature of settlement and exploitation of the landscape, the way in which past communities have harnessed local resources and consequently the way in which surviving archaeological remains reflect these activities.
- 9.4.27 In the ES, archaeological potential will be classified as:
- High for areas where there is a strong likelihood of finding archaeological remains of a given period or type.
  - Medium for areas where there is a likelihood of finding archaeological remains of a given period or type.
  - Low for areas where there is little likelihood of finding archaeological remains of a given period or type.
- 9.4.28 It is intended that as part of a staged approach to assessment, the baseline study (particularly the archaeological potential section) will be used to discuss potential further assessment work. The scoping of further works would be led by a series of research questions to tailor a proportionate and targeted approach to the gaps in our understanding, following the baseline study. Therefore, any results from such further assessment will be captured in the ES baseline and or the mitigation strategy, dependent on the programme of this work.

## **Impact Assessment Methodology**

- 9.4.29 It is recognised that the Scoping Opinion comments highlighted that the proposed impact assessment methodology presented in the Scoping Report should be refined to present a fuller picture of the breadth of impacts that may be experienced by heritage assets from the Project. Therefore, an alternative and more detailed impact assessment methodology is presented below.
- 9.4.30 In establishing impact, the Overarching National Policy Statement for Energy (EN-1) (DESNZ, 2023) (Ref 9.10) has the following discussion:
- ‘The applicant should ensure that the extent of the impact of the proposed development on the significance of any heritage assets affected can be adequately understood from the application and the supporting documents.’ (Paragraph 5.9.12).*
- In considering the impact of a proposed development on any heritage assets, the Secretary of State should consider the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between conservation of that significance and proposals for development.’ (Paragraph 5.9.24).*
- 9.4.31 There is no consistent methodology adopted for cultural heritage for assessing impacts on historic environment assets as part of an EIA, particularly for energy proposals. However, the ICOMOS have published the Guidance and Toolkit for Impact Assessment in a World Heritage Context (ICOMOS, 2022) (Ref 9.21).
- 9.4.32 There is also guidance from ClfA, the IHBC and IEMA in the form of the 2021 document ‘Principles of Cultural Heritage Impact in the UK’ (Ref 9.20). The document notes that:
- ‘The magnitude of the impact on cultural significance needs to be assessed. A distinction needs to be drawn as to whether the change will result in only a ‘small’ impact on, say just one component of cultural significance or whether the change would have a greater impact on the totality of cultural significance. The terms ‘large’ ‘medium’ or ‘small’ are acceptable or any other simple scale that offers a form of gradation easily articulated in a written report (ClfA; IEMA; IHBC, 2021).’*
- 9.4.33 A simple graded scale of effects should be defined and applied. However, decisions regarding the acceptability of the proposal will often require the effect to also be articulated within the parameters of the relevant legislative or policy tests that use their own specific language and terminology. For instance, in EIA, an impact can result in a significant or non-significant effect (ClfA; IEMA; IHBC, 2021).



- 9.4.34 Although no fixed assessment methodology is provided in the overarching National Policy Statement for Energy (EN-1), the ES will be carried out in line with the direction of the document which underpins the Planning Act 2008 which sets out the process through which applications for development consent are made for Nationally Significant Infrastructure Projects.
- 9.4.35 Where there is any potential for an impact to a heritage asset resulting from the Project, these assets will be assessed in full in the ES. This assessment will utilise the assessment of importance assigned to heritage assets in the Baseline Report and will assign a magnitude of impact in line with the most up to date design information for the Project.
- 9.4.36 Potential impacts to heritage assets could arise from construction activity, including creation and use of access routes and traffic management, site compounds and working/storage areas, and the operational presence of the Overhead Line (OHL) and associated infrastructure. In addition, the potential impact of other environmental mitigation, such as ecological habitat creation or landscape planting, will be assessed in the ES for any impact to heritage assets.
- 9.4.37 Accounting for the above discussion, the following terminology for describing the magnitude of impact, is presented in 9-3, below.

*Table 9-3 – Criteria for Quantifying the Magnitude of Impact to Heritage Assets*

<b>Magnitude of Impact (term)</b>	<b>Criteria of Impact</b>
High	<p>Change to most or all key archaeological materials, such that the importance of the asset is totally altered.</p> <p>Comprehensive changes to setting of an asset that has a comparable level of impact upon the importance of the asset.</p> <p>Changes to key historic building or historic landscape elements, such that the importance of the asset is totally altered.</p>
Medium	<p>Changes to many key archaeological materials, such that the importance of the asset is considerably modified.</p> <p>Considerable changes to setting that impact the importance of the asset.</p>



Magnitude of Impact (term)	Criteria of Impact
	Change to many key historic building or historic landscape elements, such that the importance of the asset is considerably modified.
Low	<p>Slight changes to key archaeological materials, such that the importance of the asset is slightly altered.</p> <p>Slight changes to elements of the setting that contribute to the importance of the asset.</p> <p>Slight changes to key historic building or historic landscape elements, such that the importance of the asset is slightly altered.</p>
Negligible	<p>Very minor changes to archaeological materials that barely impact upon the importance of the asset.</p> <p>Very minor changes to key elements of the historic building or historic landscape that contribute to its importance, such that its importance is barely impacted upon.</p>
No change	No change to the importance of an asset.

9.4.38 Following an assessment of the magnitude of impact, mitigation measures may be proposed.

#### **Significance Criteria**

9.4.39 The significance of effect will be assessed against the importance of the heritage asset and the magnitude of impact it would experience as a result of the Project. The significance will be expressed as major, moderate, minor, negligible or neutral and can be adverse or beneficial. The matrix for reporting of significance of effect is shown in Table 9-4, adapted from 'Heritage Impact Assessments for Cultural World Heritage Properties' (Ref 9.31).

9.4.40 The matrix (Table 9-4) will be used as a check to ensure that judgements on importance magnitude of impact and significance of effect are balanced, but in all cases professional judgement will be used and the importance and impact judgements will be revisited if the significance of effect is unreasonable. Where the matrix allows for a range in effect, professional judgement will be used in the

ES to provide a single value. A range has been presented in the PEIR due to assessment work on value being ongoing. In EIA terms a significant effect is a moderate or major effect. While there is currently no pre-determined methodology for drawing a direct parallel between significance of effect as applied in an EIA context and a judgement of substantial harm as outlined in the NPPF and its associated guidance for the purposes of this assessment it will be considered that substantial harm is likely to occur when a significance of effects reaches the level of Major. This conclusion is based on a combination of professional judgment and the level of impact to heritage assets that would be required (in accordance with table 9-3 above) for the significance of a heritage asset to be completely or almost completely destroyed.

Table 9-4 – Significance of Effect Matrix

Importance of Receptor	Magnitude of Change				
	High	Medium	Low	Negligible	No change
Very High	Major	Major to Moderate	Moderate	Minor	Neutral
High	Major Major	Major to moderate	Moderate to Minor	Minor to Negligible	Neutral
Medium	Major to moderate	Moderate	Minor	Negligible	Neutral
Low	Moderate to minor	Minor	Negligible	Negligible	Neutral

### Further Assessment within the ES

- 9.4.41 The ES will present a detailed assessment in accordance with guidance with the significance of the effect on an asset presented, where relevant, during construction and operation (and maintenance), when considered in relation to the importance of the asset and the magnitude of the potential effect. Where there is any potential for an impact to a heritage asset resulting from the Project, these assets would be assessed in full in the ES. The assessment will utilise the assessment of importance assigned to heritage assets in Appendix 9.1: Historic Environment Baseline Report and an assigned magnitude of impact, following the methodology presented in the Scoping Report and the PEIR, in line with the most up-to-date design information for the Project.

- 9.4.42 The ES will include the full results of the site surveys and will also consider any effects on the Historic Environment associated with mitigation proposals for other environmental receptors.
- 9.4.43 The assessment of impact due to a change in the setting of an asset that affects its importance would be informed by the most up to date LVIA, including ZTVs (and wireframes and photomontages if available).

### **Assumptions and Limitations**

- 9.4.44 The following limitations and assumptions have been identified:
- The Historic Environment assessment depends on third-party information, such as Historic Environment Record data. It is assumed that third-party information is relatively reliable and accurate and can be relied upon as a basis for assessment.
  - Assessment of archaeological potential will be based on information available at the time and is subject to change on receipt of additional ground truthing information.
  - The PEIR represents a preliminary assessment only and is based on Project design information available at the time of writing.
  - As the PEIR is a preliminary assessment, where impacts are uncertain a worst-case assessment has been made based on the known baseline conditions at the time of production. It is expected and anticipated that the impact assessment will evolve as knowledge gained from further assessment increases and the baseline becomes further understood. It is anticipated, however, that in some limited instances it may be necessary to also apply a worst-case assessment at ES stage where uncertainty cannot be fully eliminated through the application of a programme of archaeological investigations.

## **9.5 Baseline Conditions**

- 9.5.1 The Historic Environment baseline conditions understood to date are reported in the Historic Environment Baseline Report and its associated gazetteer (Appendix 9.1). This section will present a brief summary of the findings of the Baseline Report for a more detailed assessment of the baseline conditions please refer to Appendix 9.1.

### **Current Baseline**

- 9.5.2 Archaeological remains include material remains of human activity from the earliest periods of human evolution to the present. These may be buried traces of

human activities, sites visible above ground, or moveable artefacts. These included both designated (scheduled monuments) and non-designated remains.

- 9.5.3 The term Historic Buildings includes architectural, designed, or structures with a significant historical value as well as conservation areas or structures not usually considered as buildings such as milestones or bridges. Registered parks and gardens are included in this section as these assets contain built heritage elements and are designed landscaped features. These included both designated and non-designated structures.
- 9.5.4 The following designed and non-designated heritage assets are located wholly or partially within the study area:
- 43 Scheduled Monuments.
  - 475 listed buildings (five grade I, 26 Grade II\* and 444 Grade II).
  - Eight Conservation Areas.
  - One Registered Historic Park and Garden.
  - 5577 non-designated heritage assets recorded on the Historic Environment Records.

### **Future Baseline**

- 9.5.5 The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed as part of the Project in the ES.
- 9.5.6 The future baseline of heritage assets in the Project's draft Order Limits and study area would be expected to remain in the same condition as at present without the implementation of the Project at the time of the Project opening year. Assuming there are no changes in land use, the condition of any buried archaeological remains would stay as they are currently for an indefinite period within areas of pasture. Within arable fields, it is possible that they may suffer a slow deterioration, given the impacts of periodic deep-ploughing regimes. Equally, features of the historic landscape would remain in their current condition if there were no changes in land use or management regime. In the case of historic building assets, they would be more susceptible to slow deterioration in their condition, without regular maintenance. However, if they were maintained then they too would be expected to remain in their current condition for an indefinite period.
- 9.5.7 Climate change or unusual weather events could change the condition of heritage assets. For example, a change in water table could change the conditions of buried archaeological remains. If this were a change from wet to

dry, then any preserved organic material would deteriorate very quickly. If the change were from dry to wet this could also cause a deterioration in condition.

- 9.5.8 However, the assessment has been undertaken using a precautionary approach, and there are no anticipated changes to the baseline data that would materially alter the assessment.

## **9.6 Preliminary Mitigation Measures**

### **Embedded Mitigation**

- 9.6.1 Environmental appraisal, including the Historic Environment has been an integral part of the Project design from the outset, which has meant that the Project has been able to avoid sensitive heritage assets as far as reasonably practicable.
- 9.6.2 Embedded mitigation measures to date that are relevant to Historic Environment include the sensitive routeing and siting to avoid and reduce as far as practicable, effects on identified Historic Environment receptors
- 9.6.3 Relevant good practice mitigation measures to be implemented during the construction phase of the Project relating to Historic Environment will include, but not be limited to:
- The location of known archaeological remains, built heritage assets or areas where archaeological investigations will be undertaken will be signposted/fenced off to avoid unintentional damage.
  - Where a previously unknown heritage asset has been discovered, or a known heritage asset has proven to be more significant than foreseen at the time of application, the Project will inform the Local Planning Authority and discuss a solution that protects the significance of the new discovery, so far as is practicable within the Project construction requirements.
  - Where practicable, maintain elements within the landscape such as hedgerows and other historic field boundaries. Where complete retention is not possible replacements will be used as appropriate (including re-instating hedgerows and other field boundaries that may need to be temporarily removed to facilitate construction activities).
  - Where practicable within the Project construction requirements, use no-dig techniques for temporary construction elements (e.g. access tracks) to avoid permanent harm to buried archaeology.

- 9.6.4 The mechanisms by which these mitigation measures will be secured and delivered will be set out in the ES, but it is considered that a CEMP, secured by requirement to the DCO, would be an appropriate approach.
- 9.6.5 Essential mitigation measures over and above those outlined above will include archaeological mitigation in the form of excavation and recording of heritage assets that are identified as experiencing direct physical impacts. This will be specified through a draft Heritage Mitigation Strategy and Outline Written Scheme of Investigation (WSI) to be submitted within the application and secured by requirement to the DCO.

## **9.7 Preliminary Likely Significant Effects**

- 9.7.1 This section outlines the preliminary assessment of impacts for the Project during construction and operation phases. An assessment of the likely significant effects is presented below for the assets that have been identified in the Baseline Report (Appendix 9.1) as being susceptible to effects according to the methodology outlined in that document. Those heritage assets potentially affected by the Project are shown on Figure 9.1.
- 9.7.2 The preliminary likely significant effects of the Project have been assessed using current available data relating to both the construction and operation phases of the Project. The preliminary potential residual effects are outlined below in Table 9-5 and 9-6. It assumes that all mitigation - embedded (design measures), standard practice, and any additional mitigation measures are in place before assessing the effects.
- 9.7.3 It should be noted that this assessment is ongoing and is subject to change through ongoing development of the Project proposals. The mitigation currently proposed is based on available validated data and professional judgement.
- 9.7.4 A full detailed assessment will be presented within the ES submitted with the application for development consent.

### **Construction**

- 9.7.5 Table 9-5 below sets out the likely impacts and significance of effects that will be experienced by the heritage assets (so far identified through the preliminary baseline assessment as having an interaction with the project) from the elements of the construction phase of the Project that were scoped into assessment at the Scoping stage.

Table 9-5 – Construction Phase – Preliminary Assessment of Potential Impacts

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
<b>Scheduled Monuments</b>				
1017006	Bromwich Park moated site and formal garden remains	N/A	High	The asset is a medieval moated site and post-medieval formal gardens now within the wider grounds of a farm and farmhouse. Although the setting makes only minimal contribution to the significance of the asset, the presence of the OHL construction, less than 200m to the west, will result in some change to the setting. The impact to and loss of contemporaneous buried archaeology (MSA1579) will result in a low magnitude of impact and minor adverse effect which is not significant.
<b>Listed Buildings</b>				
7609	Pen-y-Lan Hall	II*	High	The asset is an 18 <sup>th</sup> to 19 <sup>th</sup> century mansion with apparent designed views out over the river and valley floor to the north, formerly part of the parkland of the house. The OHL would lie approximately 220m northwest of the asset with a tower sited within this view. Construction activities would introduce noise and movement and construction machinery within the otherwise broadly rural view. This would create change in the setting of the asset, which contributes to its importance, resulting in a low magnitude of impact. This would lead to a moderate adverse temporary effect, which is significant.

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
14217	Pentref	II	Medium	An early 19 <sup>th</sup> century farmhouse located within a agricultural landscape that contributes to the significance of the asset. The use of functionally associated farmland for laydown areas and temporary access tracks for several towers and the associated construction traffic and noise will temporarily change to the setting, although not enough to alter its understanding. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
7636	Lower Trewlyan (Trewlyan Isaf)	II	Medium	An 18 <sup>th</sup> century timber-framed and brick nogged dwelling overlooking the Afon Eferynwy valley. Whilst unlikely to have been located for designed views, the location allows for an intervisibility with other contemporaneous dwellings. The presence of laydown areas and access tracks, along with construction traffic, noise and movement would alter the broadly rural views out. Resulting in a low magnitude of impact and a minor adverse effect which is not significant.
15992	Mile Post	II	Medium	Asset located within the Project's draft Order Limits adjacent to a construction compound and a temporary access bell mouth. Physical impact resulting from accidental contact with machinery undertaking construction activities would result in a high magnitude of impact and a moderate to major adverse effect, which is significant. However, appropriate mitigation can be implemented to reduce impact to negligible.



ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
15976	Tan-y-Fron	II	Medium	An early 19 <sup>th</sup> century villa set to the back of a large garden on the A495, with expansive views over the Afon Efyrynwy valley. The construction of a temporary bell mouth and access track would temporarily alter the landscape setting and introduce construction traffic to the vicinity. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
7655	Bron-y-Main	II	Farmhouse	An early 19 <sup>th</sup> century farmhouse set above its farmyard and associated farm buildings. A temporary access bell mouth and the temporary access track for Towers 066 and 067 would be located through the farmyard, increasing traffic and noise through the farm. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
14187	Bridge 95 over the Montgomeryshire Canal adjoining No 1 The Locks	II	Medium	Asset is located within the Project's draft Order Limits adjacent to a temporary access bell mouth. The bridge is narrow and noted on road signage as weak. Heavy construction traffic would cause physical impact resulting in up to a high magnitude of impact and a major adverse effect, which is significant.
1307603	Aston Hall	II	Medium	The garden and park at Aston Hall forms the landscape setting for the Grade II listed Aston Hall and a number of related assets. The parkland has been much altered with the eastern extent now in use as a golf course. The proposed OHL would run through the park on a roughly north-south alignment and include Towers 149-151, their laydown

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
				areas and the associated temporary access tracks. Construction activities would alter the current rural experience of this part of the parkland resulting in a low magnitude of impact and a minor adverse effect which is not significant.
Non-Designated Heritage Assets				
4803	Bryn Gwyn Potato Store	N/A	Low	Asset is located within a collector substation compound. Construction of this element would require the total removal of the asset resulting in a high magnitude of impact and a moderate to minor adverse effect which would be significant in the case of a moderate effect. Protective measures such as avoidance of the asset during temporary works would reduce this to negligible. These measures would be secured through the CEMP
81329	Lluest lynchet	N/A	Low	Asset is located within the Limit of deviation for the Underground Cable (UGC) in a location of planned drainage infrastructure. There is potential for physical impacts to part of this asset from construction activity associated with the drainage infrastructure. Resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
1241	Ffynnon Wtra Heilyn Well	N/A	Low	Asset is located within area of temporary access track leading to Tower 032. Construction of the temporary access track will physically impact the remains of the well resulting in a medium magnitude of impact and a minor adverse effect which is not significant.

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
34318	Glanhafesp Well	N/A	Low	Asset is located on the edge of a temporary access track leading to Tower 039. Although recorded as a well the asset is more accurately described as a spring, which has recently been further excavated to provide a pool for watering animals. Construction of the temporary access track will physically impact part of the remains of the already altered asset resulting in a negligible magnitude of impact and a negligible adverse effect which is not significant.
114420	Mathrafal Strip Fields	N/A	Low	Asset is located across an area that contains temporary access routes and the laydown area for Tower 045. There is potential for physical impacts to part of this asset from construction activity associated with the tower and damage from the use of access tracks causing compaction and truncation. Resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
7124	Pont Mathrafal Ring Ditch	N/A	Medium	Asset is located within a construction compound and partly intersects with the laydown area for Tower 48. Construction of the compound area would likely result in the total removal of the asset, resulting in a high magnitude of impact and a moderate adverse effect which is significant.
68	Pont Mathrafal Mound	N/A	Medium	Asset is located within a construction compound. Construction of the compound area would likely result in the total removal of the asset, resulting in a high magnitude of impact and a moderate adverse effect which is significant.

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
26991	Rivery Vyrnwy outfall culvert 1 (Upper Maen Farm)	N/A	Low	Asset is located within area of temporary access track leading to Towers 068, 069 and 071. Construction of the temporary access track would physically impact the remains of the culvert, whilst the weight of construction vehicles across the culvert could cause further damage resulting in a medium magnitude of impact and a minor adverse effect which is not significant.
128378	Pontysgawrhyd, ridge and furrow	N/A	Low	Asset is located across an area that contains the laydown areas and access tracks for Towers 073 – 075. Unclear whether there are extant earthworks or just buried remains. There is potential for physical impacts from construction of the laydown areas, and compaction or truncation from the use of access tracks resulting in some loss of the asset. This would result in a low magnitude of impact and a negligible adverse effect which is not significant.
37312	Ystumcolwyn Bridge earthworks	N/A	Low	Asset is located across an area that contains the temporary access tracks for Tower 079. Construction of the temporary access track would physically impact the earthworks resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
38016	Plas-yn-dinas boundaries	N/A	Low	Asset is located within an area of temporary access tracks to Tower 091. Construction of the temporary access track would physically impact the earthworks resulting in a low magnitude of impact and a negligible adverse effect which is not significant.

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
72417	Lletty Lane ridge and furrow I	N/A	Low	Asset is located across an area that contains the laydown area for Towers 096. Unclear whether there are extant earthworks or just buried remains. There is potential for physical impacts from construction of the laydown area resulting in some loss of the asset. This would result in a negligible magnitude of impact and negligible adverse effect which is not significant.
72418	Lletty Lane ridge and furrow II	N/A	Low	Asset is located across an area that contains the laydown area for Towers 096. Unclear whether there are extant earthworks or just buried remains. There is potential for physical impacts from construction of the laydown area resulting in some loss of the asset. This would result in a negligible magnitude of impact and negligible adverse effect which is not significant.
21	Clawdd Coch Roman Fort B	N/A	Medium	Asset is crossed by temporary access track to Towers 104 and 105 and intersects with the laydown area for Tower 104. Although the asset has had previous archaeological investigation, the construction works for the Tower and tracks will truncate any further remains of the asset, resulting in a low magnitude of impact and a minor adverse effect which is not significant.
64725	Clawdd Coch, ridge and furrow	N/A	Low	The extent of the asset is currently unknown although it may intersect with a temporary access track and laydown area for Tower 106. Construction work associated with these elements would impact on any

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
				earthworks or underlying buried remains resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
4598	Clawdd Coch, cropmark	N/A	Low	Extent of asset unclear but may intersect with the temporary access track and laydown area for Tower 106. Construction of these elements would result in the truncation of any earthworks or underlying buried archaeology. This would result in a low magnitude of impact and a negligible adverse effect which is not significant.
23520	Llanymynech ridge and furrow	N/A	Low	Asset is located across an area that includes the location of the laydown area for Tower 114. There is potential for physical impacts from the construction of the laydown area resulting in some loss of the asset. This would result in a negligible magnitude of impact and negligible adverse effect which is not significant.
MSA35837	Field system and ridge and furrow, N of Pentre-Uchaf Hall	N/A	Low	Asset intersects with a temporary access track for Towers 124-127. Construction of the track would physically impact any earthworks or buried remains resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
MSA13738	Cropmarks of an enclosure c 130m SE of Waen Cottage	N/A	Low	Asset intersects with a temporary access track for Towers 131 and 132. Construction of the track would physically impact any buried archaeological remains resulting in a low magnitude of impact and a negligible adverse effect which is not significant.

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
MSA13468	Cropmarks c.200m N of Lower Morton Farm	N/A	Low	The asset intersects with the temporary access track for Tower 133. Construction of the track would result in physical impacts to the asset resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
MSA720	Wat's Dyke	N/A	Low	The asset intersects with the laydown area for Tower 133 and the Tower location. Construction of these elements would result in physical impacts to the archaeology resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
MSA31040	Earthwork ridge and furrow and possible deserted medieval settlement N of Morton Hall	N/A	Low	Asset intersects with a temporary access track and the laydown area for Tower 136. Construction of these elements would physically impact any earthworks or buried remains resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
MSA13988	Cropmark enclosure and ditch c600m NE of Morton Hall	N/A	Low	Asset intersects with a temporary access track for Towers 137 and 138. Construction of the track would physically impact any earthworks or buried remains resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
MSA1579	Possible deserted	N/A	Low	Asset intersects with the temporary access tracks for Towers 143 and 144 and a temporary access bell mouth. Construction of these elements would physically impact any earthworks or buried

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
	settlement at Bromwich Park			archaeological remains resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
MSA1594	Cropmark features near Fox Hall	N/A	Low	Asset intersects with the temporary access track and laydown area for Tower 146 and access track for Tower 147. Construction of these elements would physically impact any earthworks or buried archaeological remains resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
MSA14605	Enclosure c 440m S of Fox Hall	N/A	Low	Asset intersects with the temporary access track and laydown area for Tower 146. Construction of these elements would physically impact any earthworks or buried archaeological remains resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
MSA4066	Gardens and park at Aston Hall	N/A	Medium	The garden and park at Aston Hall forms the landscape setting for the Grade II listed Aston Hall and a number of related assets. The parkland has been much altered with the eastern extent now in use as a golf course. The proposed OHL would run through the park on a roughly north-south alignment and include Towers 149-151, their laydown areas and the associated temporary access tracks. Whilst there has been alterations to the park, this would introduce power infrastructure resulting in alteration that would result in a low magnitude of impact and a minor adverse effect which is not significant.



ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of potential Impact / Change
MSA14551	Ring ditch c 220m W of Beechfield Farm	N/A	Low	Asset intersects with temporary bell mouth for access and a number of temporary access tracks. Construction of these areas would physically impact any buried remains resulting in a low magnitude of impact and a negligible adverse effect which is not significant.
MSA655	Roman marching camp at Perry Farm, Whittington	N/A	Medium	Asset intersects with a temporary bell mouth and the temporary access track for Towers 164 and 165. Construction of these elements would physically impact any earthworks or buried remains resulting in a low magnitude of impact and a minor adverse effect which is not significant.
MSA1530	Square enclosure with polygonal annexe, and possible field system near Berghill cottages	N/A	Medium	Asset intersects with a temporary bell mouth and the temporary access track for Towers 164, 165 and 168. Construction of these elements would physically impact any earthworks or buried remains resulting in a low magnitude of impact and a minor adverse effect which is not significant.

## Operation

- 9.7.6 Table 9-6 below sets out the likely impacts and significance of effects that will be experienced by the heritage assets (so far identified through the preliminary baseline assessment as having an interaction with the project) from the elements of the operation phase of the Project that were scoped into assessment at the Scoping stage.
- 9.7.7 The impacts arising at operation are limited to the presence of the Project creating an adverse change in the setting of a heritage asset, where that setting contributes to its value.

Table 9-6 – Operation Phase – Preliminary Assessment of Potential Impacts

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
<b>Scheduled Monuments</b>				
MG078	Plas yn Dinas	N/A	High	Asset is located approximately 200m from the OHL. As a defended feature, views out from the asset form an integral part of its setting, which contributes to its significance. The Project will be present in intentional views out from the asset along the river valley. These changes will result in a low magnitude of impact and a minor adverse effect which is not significant.
MG044	Mathrafal Castle	N/A	High	Asset is located approximately 400m from the OHL. The Project would result in impacts through changes in the setting of the asset, due to the presence of prominent towers which will interrupt views from the castle across the landscape to the north. Resulting in a low magnitude of impact and a minor adverse effect which is not significant.
<b>Listed Buildings</b>				
17411	Rhos-y-Gweision	II	Medium	The Project would be within the wider setting of the listed building resulting in a negligible impact and a negligible adverse effect which is not significant.

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
26966	Tan-y-ffridd	II	Medium	The Project would be within the wider setting of the listed building resulting in a negligible impact and a negligible adverse effect which is not significant.
7651	Glascoed	II	Medium	An early 17th century farmhouse located within an agricultural landscape that contributes to the significance of the asset. The presence of the OHL approximately 230m to the south would result in some change to the setting, although not enough to alter the understanding of the asset. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
7653	Ceunant Faramhouse	II	Medium	An early to mid-18 <sup>th</sup> century farmhouse located above its associated farm buildings set at road level. Allowing for expansive views across its broadly rural setting. The Project would be within the wider setting of the listed building resulting in a negligible impact and a negligible adverse effect which is not significant.
7655	Bron-y-Main	II	Medium	An early 19th century farmhouse, set above its farmyard and located within an agricultural landscape that contributes to the significance of the asset. The Project will alter the wider rural setting of the listed building resulting in a negligible impact and a negligible adverse effect which is not significant.

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
15965	Cil Bach	II	Medium	A 16 <sup>th</sup> and 17 <sup>th</sup> century farmhouse located within a broadly agricultural landscape that contributes to the significance of the asset. The presence of the OHL approximately 500m to the north would result in some change to the setting, although not enough to alter the understanding of the asset. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
15976	Tan-y-Fron	II	Medium	An early 19 <sup>th</sup> century villa set to the back of a large garden on the A495, with expansive views over the Afon Efyrynwy valley. The Project will be within the wider setting of the listed building resulting in a negligible impact and a negligible adverse effect which is not significant.
7656	Cwm Farmhouse	II	Medium	A later 17 <sup>th</sup> century farmhouse located on a slightly elevated platform, within a broadly agricultural landscape that contributes to the significance of the asset. Whilst located nearly 1km to the northwest of the asset, the presence of the OHL would result in some change to the setting, although not enough to alter the understanding of the asset. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
82556	Castle Cottage	II	Medium	A 17 <sup>th</sup> century farmhouse located within a broadly agricultural landscape that contributes to the significance of the asset. The presence of the OHL approximately 500m to the north would result in some change to the setting, although not enough to alter the understanding of the asset. This

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
				would result in a low magnitude of impact and a minor adverse effect which is not significant.
26966	Tan-y-ffridd	II	Medium	A late 18 <sup>th</sup> or early 19 <sup>th</sup> century farmhouse located within a broadly agricultural landscape that contributes to the significance of the asset. The presence of the OHL approximately 250m to the southeast would result in some change to the setting, although not enough to alter the understanding of the asset. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
15968	Dyffryn Farmhouse, (including railings, dwarf walls and gate piers at splayed entrance)	II	Medium	A 17 <sup>th</sup> and early 19 <sup>th</sup> century farmhouse located within an agricultural landscape that contributes to the significance of the asset. Landscaping to front of house suggests that modern additions were designed to take in the view. The presence of the OHL approximately 450m to the south would result in some change to the setting, although not enough to alter the understanding of the asset. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
7636	Lower Trewlyan (Trewlyan Isaf)	II	Medium	An 18 <sup>th</sup> century timber-framed and brick nogged dwelling overlooking the Afon Eferynwy valley. Whilst unlikely to have been located for designed views, the location allows for an intervisibility with other contemporaneous dwellings. The proximity of the OHL, with Tower 090 c. 200m to the northwest, would create a change to the setting and alter

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
				the fortuitous views out. Resulting in a low magnitude of impact and a minor adverse effect which is not significant.
14217	Pentref	II	Medium	An early 19 <sup>th</sup> century farmhouse located within an agricultural landscape that contributes to the significance of the asset. The presence of the OHL approximately 100m (Tower 108) at its nearest point and cutting obliquely through the principal views from the asset would result in some change to the setting, although not enough to alter its understanding. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
7646	Parish Church of St Tysilio and St Mary	I	High	A 12 <sup>th</sup> century church with probable early Christian origins and 15 <sup>th</sup> century additions. The church has a legible relationship with the village it serves, the setting of both extending to the Afon Efyrynwy valley. The Project would be within the wider setting of the listed building resulting in a negligible impact and a negligible adverse effect which is not significant.
7609	Pen-y-Lan Hall	II*	High	The asset is an 18 <sup>th</sup> to 19 <sup>th</sup> century mansion with apparent designed views out over the river and valley floor to the north, formerly part of the parkland of the house. The OHL would lie approximately 220m northwest of the asset with a tower sited within this view. This would create change in the setting of the asset that contributes to its importance resulting in a

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
				low magnitude of impact and a minor adverse effect which is not significant.
1367158	Pentre-Uchaf Hall Including Attached Service Ranges, Outbuildings and Walls	II	Medium	The asset is a mid-to-late 18 <sup>th</sup> century minor country house with later 19 <sup>th</sup> century additions. The land to the south of the house is currently landscaped gardens. That to the north was previously informal parkland but now lies outside of the ownership of the house and is currently used for grazing, although mature tree belts attest to the former use. The rural setting to the north therefore contributes to the significance of the asset. The OHL would pass through this landscape introducing a more industrial aspect, although views should be partly screened by mature vegetation when looking north. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
1054626	Llwyntidman Farmhouse and Attached Barn	II	Medium	A mid-to-late 17th century farmhouse located within an agricultural landscape that contributes to the significance of the asset. The presence of the OHL to the west and north would result in some change to the setting, although not enough to alter the understanding of the asset. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
1307603	Aston Hall	II	Medium	The proposed OHL would run through the park, that forms the setting of the asset, on a roughly north-south alignment. Whilst there have been alterations to the parkland, this would introduce power infrastructure and



ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
				alter views to the east, resulting in a low magnitude of impact and a minor adverse effect which is not significant.
1054247	Wootton House	II	Medium	A farmhouse, dating to 1700, located within an agricultural landscape that contributes to the significance of the asset. The presence of the OHL to the west and north would result in some change to the setting, although not enough to alter the understanding of the asset. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
1054246	Wootton Castle	II	Medium	A late 16th century farmhouse located within an agricultural landscape that contributes to the significance of the asset. The presence of the OHL to the west and north would result in some change to the setting, although not enough to alter the understanding of the asset. This would result in a low magnitude of impact and a minor adverse effect which is not significant.
1367371	Evanall Farmhouse	II	Medium	The asset is located to the eastern edge of a farmyard with a number of functionally related farm buildings. The rural setting adds to the understanding of the buildings. An existing OHL runs to the east of the asset while the proposed OHL would introduce another line. This would result in a low magnitude of impact. The Project would be within the wider setting of the listed building resulting in a negligible impact and a negligible adverse effect which is not significant.

ID Number	Name	Grade	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
Conservation Areas				
N/A	Llansantffraid-ym-Mechain	N/A	Medium	The conservation area covers the historic core of the village, which grew up around the confluence of several rivers. The supporting rural landscape forms the setting of the asset and contributes to its significance. The presence of the Project would add an additional element of modern infrastructure into the setting resulting in a low magnitude of impact and a minor adverse effect which is not significant.
N/A	Meifod	N/A	Medium	The conservation area covers the historic settlement of Meifod, a historic settlement at a crossing of the Afon Efyrrwy. The setting of the asset, in an agricultural landscape contributes to its significance. The change to the setting from the presence of the OHL would result in loss of minor elements that contribute to the asset's understanding. This would result in a negligible magnitude of impact and a negligible adverse effect which is not significant.

## 9.8 Preliminary Mitigation and Enhancement Measures

- 9.8.1 This section outlines the preliminary avoidance, mitigation and compensation measures which are likely to be required to address the potential impacts assessed in Section 9.7.
- 9.8.2 A number of the potential construction impacts of the Project on the heritage resource could be mitigated by the good practice mitigation measures likely to be included in an Outline Construction Environmental Management Plan (OCEMP), such as those measures used to control dust, noise and vibration as well as limits on construction traffic numbers and routes that avoid sensitive locations e.g. conservation areas.
- 9.8.3 Other good practice mitigation would include demarcation and protection measures for the Grade II listed milestone located within the Project's draft Order Limits. Protection of the asset would reduce the significance of effect to negligible.
- 9.8.4 As noted previously, permanent impacts caused by temporary construction works, such as access tracks, should be avoided through no-dig methods e.g. the use of bog mats or protective matting for access, where this is practicable for the Project.
- 9.8.5 Essential mitigation comprises those measures over and above any embedded and good practice measures. Based on the assessment within this PEIR, it is understood that essential mitigation of some form will be required, to reduce the significance of effects on the historic environment resource. The details of which will be refined as part of the continuing process of data gathering and assessment, but are likely to include:
- Landscape and/or earthwork surveys to record the presence of extant features prior to their removal or truncation.
  - Historic building recording prior to the removal of non-designated built assets.
  - Archaeological mitigation in the form of excavation and recording. The form and extent of mitigation will be developed in discussion with statutory consultees and specified through an OWSI to be submitted with the application for development consent.
  - A draft Heritage Management Strategy that will encompass all the required mitigation techniques

## 9.9 Next Steps

9.9.1 This assessment will be further refined between PEIR and ES as the baseline assessment continues to be refined and updated, and the Project design progresses. An updated Baseline Report will be included with the ES. This will include the results of further walkover survey programmed for 2025 along with review of the further data sources outlined in section 9.4 above, plus further engagement with statutory consultees and stakeholder such as Cadw, Historic England, Heneb (CPAT) and Shropshire LPA Officers. Feedback from statutory consultation will also be taken into account.

### Consultation

9.9.2 Feedback from statutory consultation will help in the development of the design of further archaeological investigations to inform the ES along with identifying areas and assets that are of specific interest to statutory consultees and stakeholders. Stakeholder engagement will continue up to and beyond statutory consultation up to the submission for development consent and through examination.

### Surveys

9.9.3 It is proposed that the ES will be informed by a programme of non-intrusive and, if appropriate, intrusive archaeological investigations. These investigations are likely to comprise geophysical survey, geoarchaeological assessment and archaeological trial trench evaluation.

## 9.10 References

- Ref 9.1 Ancient Monuments and Archaeological Areas Act 1979.
- Ref 9.2 Planning (Listed Buildings and Conservation Areas) Act 1990.
- Ref 9.3 Well-being of Future Generations (Wales) Act 2015.
- Ref 9.4 The Historic Environment (Wales) Act 2016.
- Ref 9.5 Planning Act 2008.
- Ref 9.6 The Infrastructure Planning (Decisions) Regulation (2010).
- Ref 9.7 The Levelling-up and Regeneration Act (2023).
- Ref 9.8 Town and Country Planning Act (1990).
- Ref 9.9 Planning Policy Wales Edition 12 (2024).
- Ref 9.10 Overarching National Policy Statement for energy (EN-1) (DESNZ, 2024).
- Ref 9.11 National Policy Statement for electricity networks infrastructure (EN-5) (DESNZ, 2024).

- Ref 9.12 The Powys Local Development Plan (2011-2026) (2018).
- Ref 9.13 Conservation Areas Supplementary Planning Guidance (Powys County Council, 2020).
- Ref 9.14 Archaeology SPG (Powys County Council, 2021).
- Ref 9.15 Historic Environment SPG (Powys County Council, 2021).
- Ref 9.16 Core Strategy 2006-2026.
- Ref 9.17 Shropshire Council Site Allocations and Management of Development (SAMDEV) Plan (Shropshire Council 2015).
- Ref 9.18 Standard and guidance for historic environment desk-based assessment (ClfA, 2020).
- Ref 9.19 Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (ClfA,2020).
- Ref 9.20 Principles of Cultural Heritage Impact Assessment in the UK (ClfA;IEMA;IHBC, 2021).
- Ref 9.21 Guidance and Toolkit for Impact Assessment in a World Heritage Context (ICOMOS, 2022).
- Ref 9.22 Conservation Principles for the Sustainable Management of the Historic Environment in Wales (Cadw, 2011).
- Ref 9.23 Historic Environment (Wales) Act 2016: guidance (Welsh Government, 2017).
- Ref 9.24 Heritage Impact Assessment in Wales (Cadw, 2017) (Ref 9.24)
- Ref 9.25 Technical Advice Note (TAN) 24: the historic environment (Welsh Government, 2017).
- Ref 9.26 Setting of Historic Assets in Wales (Cadw, 2017).
- Ref 9.27 Conservation Principles Policies and Guidance for the Sustainable Management of the Historic Environment (Historic England, 2008).
- Ref 9.28 Managing Significance in Decision-Taking in the Historic Environment. Historic Environment Good Practice Advice in Planning: 2 (Historic England, 2015).
- Ref 9.29 The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) (Historic England, 2017, 2nd Ed.).
- Ref 9.30 Statements of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12 (Historic England, 2019).
- Ref 9.31 Heritage Impact Assessments for Cultural World Heritage Properties (ICOMOS, 2011).

## 10 Traffic and Transport

### 10.1 Introduction

- 10.1.1 This Chapter provides the results of the preliminary assessment of the potential impacts and effects of the Project on Traffic and Transport and describes:
- Legislation, Policy and Guidance.
  - Consultation and Engagement.
  - Assessment Methodology and Significance Criteria.
  - Baseline Conditions.
  - Construction Details.
  - Preliminary Assessment of Effects.
  - Preliminary Mitigation Measures.
  - Preliminary Likely Significant Effects.
  - Preliminary Mitigation and Enhancement Measures.
  - Next Steps.
- 10.1.2 This Chapter (and its associated figures and appendices) is intended to be read as part of the wider PEIR.
- 10.1.3 A number of preliminary proposed construction routes have been identified in the PEIR for the construction of the Project (the Preliminary Construction Routes) and these have formed the basis for the assessment presented in all relevant chapters of the PEIR.
- 10.1.4 It should be noted that the Preliminary Construction Routes will need to be discussed with National Highways, North and Mid Wales Trunk Road Agent (NMWTRA) and all affected Local Highway Authorities. A site visit will also be undertaken to inform the ES, and determine whether the Preliminary Construction Routes are appropriate, and note where mitigation measures would be required. Following this consultation, the feedback received will be considered.
- 10.1.5 Thereafter a decision would be taken as to the preferred construction routes for delivery of the Project, having taken into consideration all available information. The preferred construction routes will be fully assessed, and the results of that assessment will be reported in the ES.

## 10.2 Legislation, Policy and Guidance

### Legislation

10.2.1 This section provides a summary of legislation which is specific to Traffic and Transport.

#### Wales

10.2.2 The Active Travel (Wales) Act 2013 (Ref 10.1) promotes walking and cycling by requiring local authorities to plan and develop active travel routes, aiming to increase physical activity and reduce congestion and emissions.

10.2.3 The Well-being of future generations (Wales) Act 2015 (Ref 10.2) requires the consideration of the long-term impacts of decisions including preventing persistent problems such as poverty, inequality and climate change. It mandates that transport policies contribute to the long-term well-being goals of Wales, including environmental sustainability.

10.2.4 The Planning (Wales) Act 2015 (Ref 10.3) mandates the inclusion of Transport Assessments for major developments and encourages developments that support sustainable transport options. The Act allows planning authorities to impose conditions and obligations relating to transport when granting planning permission and embeds the principle of sustainable development into the planning process.

10.2.5 The Environment (Wales) Act 2016 (Ref 10.4) requires the Welsh government to reduce emissions of greenhouse gases in Wales to net zero by the year 2050 and establishes a framework of interim emissions targets and carbon budgets. It requires the Welsh government to consider environmental sustainability in all transport policies, aiming to reduce carbon emissions and promote green transport solutions.

#### England / UK

10.2.6 The Environment Act 2021 (Ref 10.5) established the Environment Agency (EA) and provides a framework for environmental protection and improvement including the impacts of transport.

10.2.7 The Climate Change Act 2008 (Ref 10.6) set legally binding targets for reducing greenhouse emissions, including promoting sustainable and low-carbon transport solutions.

- 10.2.8 The Planning Act 2008 (Ref 10.7) emphasises the importance of sustainable development with project being required to consider environmental impacts, including those generated by development traffic, and incorporate measures to mitigate effects.
- 10.2.9 The Transport Act 2000 (Ref 10.8) includes '*measures to create a more integrated transport system*' with the aim of improving local passenger transport services, alongside reducing congestion and pollution. This is exemplified by the requirement for local authorities to prepare, publish and review a local transport plan to achieve the outlined aims of this legislation. These plans will be taken into consideration in the assessment of traffic and transport.
- 10.2.10 The Highways Act 1980 (Ref 10.9) outlines the duties of the highway authorities, and the management and operation of the highway network. The legislation most relevant to this traffic and transport chapter, include 'Improvement to Highway', which is covered in Part V, and 'Environmental Impact Assessment', which is covered in Part VA.
- 10.2.11 The New Roads and Street Works Act 1991 (Ref 10.10) is an 'Act to amend the law relating to roads so as to enable new roads to be provided by new means; to make new provision with respect to street works.' The objectives of the Act are to ensure safety, minimise inconvenience to people using a street and protect the structure of the street and the apparatus in it. Operative must be on site when work is in progress, in addition to a supervisor to monitor the streetworks. They must both be registered with Street Works Qualifications Register (SWQR). It should be noted that regulations 'may make special provision in relation to street works in a street designated by the street authority as traffic-sensitive.'

### **National Planning Policy**

#### **Planning Policy Wales, Edition 12**

- 10.2.12 Planning Policy Wales (PPW) (Ref 10.11) sets out the land use planning policies of the Welsh Government. In relation to transport, in particular freight movement, the PPW highlighted the need for '*maximising the use of our sustainable transport infrastructure, including ports and railways to directly support freight movements and serve economic development opportunities and mineral workings.*'

#### **Overarching National Policy Statement for Energy (EN-1)**

- 10.2.13 National Policy Statements (NPS) are produced by government, outlining the reasons for each policy set out in the statement comprising details on how the policy accounts government policy regarding the mitigation of, and adaptation to,



climate change. They include the governments objectives for the development of nationally significant infrastructure.

- 10.2.14 Within 'Chapter 2: Key Legislation and Planning Policy Context' the overarching policy relevant to the Project including the NPS EN-1 (DESNZ, 2024) (Ref 10.12) has been outlined, which is supported by NPS EN-5 (DESNZ, 2024). EN-1 states that energy projects have the potential to have a variety of impacts on traffic and transport which has been considered within this chapter.
- 10.2.15 NPS EN-1 Paragraph 5.14.1 states 'The transport of materials, goods and personnel to and from a development during all project phases can have a variety of impacts on the surrounding transport infrastructure and potentially on connecting transport networks, for example through increased congestion. Impacts may include economic, social and environmental effects.'
- 10.2.16 Paragraph 5.14.4 states 'The consideration and mitigation of transport impacts is an essential part of Government's wider policy objectives for sustainable development as set out in Section 2.6 of this NPS.'
- 10.2.17 Paragraph 5.14.6 states 'National Highways and Highways Authorities are statutory consultees on NSIP applications including energy infrastructure where it is expected to affect the strategic road network and / or have an impact on the local road network and applicants should consult with National Highways and Highways Authorities as appropriate on the assessment and mitigation to inform the application to be submitted.'
- 10.2.18 Paragraph 5.14.11 states 'Where mitigation is needed, possible demand management measures must be considered. This could include identifying opportunities to:
- *Reduce the need to travel by consolidating trips.*
  - *Locate development in areas already accessible by active travel and public transport.*
  - *Provide opportunities for shared mobility.*
  - *Re-mode by shifting travel to a sustainable mode that is more beneficial to the network.*
  - *Retime travel outside of the known peak times.*
  - *Reroute to use parts of the network that are less busy'*
- 10.2.19 NPS EN-1 paragraph 5.14.21 states that 'The Secretary of State should only consider refusing development on highways grounds if there would be an

unacceptable impact on highway safety, residual cumulative impacts on the road network would be severe, or it does not show how consideration has been given to the provision of adequate active public or shared transport access and provision.'

#### **National Planning Policy Framework, 2024**

- 10.2.20 The National Planning Policy Framework (NPPF) (Ref 10.13) sets out the Government's economic, environmental, and social planning policies for England. Taken together, these policies articulate the Government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations.
- 10.2.21 The NPPF clearly promotes sustainable transport as the document highlights the following:
- Transport policies have an important role to play in facilitating sustainable development but also in contributing to wider sustainability and health objectives.
  - The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel.
  - The Government recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas.
  - The environmental impacts of traffic and transport infrastructure can be identified, assessed, and considered. Therefore, encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion.
- 10.2.22 Transport specific policies are also highlighted throughout the NPPF with Paragraph 109 stating that:
- 10.2.23 'Transport issues should be considered from the earliest stages of plan-making and development proposals, using a vision-led approach to identify transport solutions that deliver well-designed, sustainable and popular places. This should involve:
- *Making transport considerations an important part of early engagement with local communities.*
  - *Ensuring patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places.*

- *Understanding and addressing the potential impacts of development on transport networks.*
- *Realising opportunities from existing or proposed transport infrastructure, and changing transport technology and usage – for example in relation to the scale, location or density of development that can be accommodated.*
- *identifying and pursuing opportunities to promote walking, cycling and public transport use.*
- *identifying, assessing and taking into account the environmental impacts of traffic and transport infrastructure – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.'*

10.2.24 Paragraph 115 of the NPPF highlights that when assessing sites which me be allocated to developments, the following should be ensured:

- Appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location.
- Safe and suitable access to the site can be achieved for all users.
- Any significant impacts of the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

10.2.25 Paragraph 116 of the NPPF indicates that a refusal of planning permission on transport grounds will only be defensible if there are severe impacts arising from the development. Examples of unacceptable impacts include highway safety, or the residual cumulative impacts on the road network following the implementation of mitigation measures.

10.2.26 Paragraph 199 of the NPPF states that: 'Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management.' This policy shows that the need to manage all traffic is essential to protect the natural environment as much as reasonably possible.

## **Local Planning Policy**

### **The Powys Local Development Plan 2011-2026**

10.2.27 The Powys Local Development Plan 2011-2026 (Ref 10.14) emphasises promoting sustainable transport options, including walking, cycling, and public transportation to minimise environmental impacts of travel. Policies aim to reduce reliance on private cars by encouraging the use of more sustainable modes of transport.

10.2.28 Policy T1 - Travel, Traffic and Transport Infrastructure states that ‘Transport infrastructure, traffic management improvements and development proposals should incorporate the following principal requirements:

- *Safe and efficient flow of traffic for all transport users, including more vulnerable users, and especially those making ‘Active Travel’ journeys by walking or cycling.*
- *Manage any impacts to the network and the local environment to acceptable levels and mitigate any adverse impacts.*
- *Minimise demand for travel by private transport and encourage, promote and improve sustainable forms of travel including Active Travel opportunities in all areas.’*

### **Mid Wales Joint Local Transport Plan 2015-2020**

10.2.29 The Mid Wales Joint Local Transport Plan (LTP) 2015-2020 (Ref 10.15) focuses on enhancing connectivity through sustainable transport modes to reduce environmental impacts and supports projects that facilitate economic growth and integrate consideration of the environment.

10.2.30 The LTP vision for Transport in Mid Wales is for ‘the Mid Wales Local Authorities will plan for and deliver in partnership an integrated and affordable transport system in the region that facilitates economic development, ensures access for all to services and opportunities, sustains and improves the quality of community life, and makes an active contribution to the management of carbon and the quality of the environment.’

10.2.31 The following issues and opportunities which are relevant to the Project have been identified:

- *Journey time reliability and strategic connections – ‘The key issues are around journey time reliability, overtaking opportunities, road safety and journey times rather than congestion.’*
- *Freight connections – ‘The main issue for freight vehicles in Mid Wales is that very few strategic highway corridors adequately provide for movements, for example with only short sections of dual carriageway in the whole region. The substandard highway network means that heavy goods vehicles have a disproportionate impact on communities and other road users.’*
- *Highway condition and road safety – ‘A well maintained road network is essential to ensure road safety, journey reliability and efficiency.’ ‘A further key challenge for the region and the LTP is to continue to improve road safety across Mid Wales, by both reducing the number of accidents and reducing the*

*number of casualties, in particular the number of killed and seriously injured (KSI) casualties.'*

### **The Welsh Transport Strategy**

- 10.2.32 The Welsh Transport Strategy (Ref 10.16) sets out an aim for a net-zero carbon transport system by 2050 and therefore emphasizes the importance of low-emission vehicles and sustainable transport. The vision is for *'an accessible, sustainable and efficient transport system.'* It also ensures that projects consider and protect Wales's biodiversity and ecosystems.
- 10.2.33 Three headline priorities have been identified for the next five years. This includes:
- *'Priority 1: bring services to people in order to reduce the need to travel'*
  - *'Priority 2: allow people and goods to move easily from door to door by accessible, sustainable and efficient transport services and infrastructure'; and*
  - *'Priority 3: encourage people to make the change to more sustainable transport.'*

### **Shropshire Core strategy 2006-2026**

- 10.2.34 Shropshire's Adopted Core Strategy (Ref 10.17) sets out how development will be achieved sustainably in Shropshire in the period up to 2026. There are no specific policies relating to the transport requirements of major projects.
- 10.2.35 Policy CS6: Sustainable Design and Development Principles states that 'to create sustainable places, development will be designed to a high quality using sustainable design principles, to achieve an inclusive and accessible environment which respects and enhances local distinctiveness and which mitigates and adapts to climate change.'
- 10.2.36 Policy CS7: Communications and Transport states that 'a sustainable pattern of development requires the maintenance and improvement of integrated, accessible, attractive, safe and reliable communication and transport infrastructure and services.'

### **Draft Shropshire Local Plan 2016-2038**

- 10.2.37 The draft Shropshire Local Plan (Ref 10.18) was submitted to the secretary of state for examination on 3rd September 2021. Whilst not currently adopted the document is useful nonetheless and sets out Shropshire's planned framework for development up until 2038.

- 10.2.38 Policy SP3 describes how developments will support the transition to net-zero through reduced transport emissions and supporting renewable energy production and delivery.
- 10.2.39 Policy DP26 sets out how non-wind renewable and low-carbon development supported where its impacts, including transport impacts, are either acceptable in their own right or are accompanied by acceptable mitigation measures. All applications must be accompanied by an appropriate and proportional assessment of environmental impacts.

### **Guidance**

- 10.2.40 Relevant guidance, specific to Traffic and Transport, which has informed this PEIR and will inform the assessment within the ES, comprises:
- Transport Evidence Bases in Plan Making and Decision Taking (Department for Levelling Up, Housing and Communities, 2015) (Ref 10.19).
  - The Design Manual for Roads and Bridges (DMRB LA) 104 Environmental Assessment and Monitoring (National Highways, 2020) (Ref 10.20).
  - Guidelines for the Environmental Assessment of Road Traffic, Environmental Assessment of Traffic and Movement ('IEMA Guidelines') (IEMA, 2023) (Ref 10.21).
  - The Planning Policy Wales Technical Advice Note 18: Transport (TAN 18) (Welsh Government, 2007) (Ref 10.22).

## **10.3 Consultation and Engagement**

- 10.3.1 The scope of the assessment has been informed by the Scoping Opinion provided by the Planning Inspectorate on behalf of the Secretary of State, following the submission of the Environmental Impact Assessment (EIA) Scoping Report.
- 10.3.2 Engagement will be undertaken with the relevant National Highways, NMWTRA and Local Highway Authorities to agree the assessment methodology and approach and will occur throughout the EIA process.
- 10.3.3 The affected PRowS and mitigation measures, including diversionary routes are yet to be confirmed. Once this information is available, the Public Rights of Way (PRow) and Highways officers for each Local Authority would be consulted.
- 10.3.4 Meetings with National Highways, NMWTRA and Local Highway Authorities will take place to discuss the Preliminary Construction Routes, access, highway

improvements and mitigation for the Project. Technical workshops with National Highways, NMWTRA and Local Highway Authorities will also take place to discuss the Transport Assessment (TA) and Outline Construction Traffic Management Plan (OCTMP) as and when required.

- 10.3.5 A summary of the EIA Scoping Opinion from the Planning Inspectorate (PINS) and subsequent applicant responses to this EIA Scoping Opinion are outlined in Table 10-1 below.

Table 10-1 – Scoping Opinion from the Planning Inspectorate

ID	Matter	Inspectorate’s Comments	Project Response
3.6.1	Operation	<p>The Scoping Report proposes to scope out traffic and transport effects related to operation, on the basis that any operational traffic would be limited to routine maintenance and inspection activities. The Inspectorate agrees that the number of vehicle trips generated by the operation of the Proposed Development are unlikely to result in significant effects and is content to scope this matter out. The Project Description chapter of the ES should clearly set out the likely number and type of operation and maintenance vehicles.</p>	<p>Agreement noted. This matter will not be assessed further within in the ES.</p> <p>It will be ensured that within the Description Chapter of the ES, details for the number and type of operation and maintenance vehicles will be included.</p>
3.6.2	Decommissioning	<p>The Inspectorate agrees that decommissioning can be scoped out of the ES, subject to a high-level summary of potential effects for each environmental aspect being appended to the ES.</p>	<p>Agreement noted. This matter will not be assessed further within in the ES.</p> <p>A high-level summary of the potential effects associated with the vehicle movements will be provided as an Appendix within the Traffic and Transport Chapter.</p>



ID	Matter	Inspectorate's Comments	Project Response
3.6.3	Abnormal Indivisible Loads and Cumulative Impact Assessment	Should the position change and any abnormal loads be required during construction of the Proposed Development, their associated effects should be assessed in the ES. The assessment should consider impacts on bridges, culverts and Strategic Road Network junctions, as well as potential cumulative effects on the road network with other committed developments.	<p>It is anticipated that Abnormal Indivisible Loads (AILs) will be required for the construction of the Project. Approximately 120 AILs predominantly for cable drums will be required.</p> <p>An assessment of the associated effects of the AILs will be undertaken and included within the Traffic and Transport Chapter of the ES. An OCTMP be submitted in support of the ES, which will describe the proposed construction routes and any required mitigation measures which will be discussed and agreed with the relevant Highway Authority.</p> <p>A cumulative impact assessment will be undertaken to identify any committed development in the vicinity of the Project. If there are any developments in the area which have been approved and are likely to coincide with the Project in terms of using the same construction routes and peak construction activity being assessed, these will be identified and where appropriate, will be assessed.</p>

ID	Matter	Inspectorate's Comments	Project Response
3.6.4	Study area and data collection	<p>The ES should confirm the final study area for the assessment and justify how this has been selected, with reference to relevant industry guidance, the extent of the likely impacts and locations of sensitive receptors. A plan illustrating the extent of the study area and the expected route(s) of construction traffic should be included in the ES. The Scoping Report does not anticipate that any field surveys will be needed, on the basis that there is a high level of existing publicly available data. To provide assurance that the assessment of LSE is supported by a robust dataset, the ES should include a justification to support the extent of the data collection, including how the data collected relates to the expected route(s) of construction traffic. Effort should be made to agree the study area and need for any field surveys with relevant consultation bodies.</p>	<p>The Study Area has been identified in the PEIR in Section 10.4 and 10.5.</p> <p>Figure 10.1 illustrating the extent of the Study Area including the proposed construction routes and access points / bellmouths, sensitive receptors, collisions, and traffic count locations is included within the PEIR.</p> <p>The data collection methodology has been outlined in the PEIR in section 10.4, in addition to a review of the baseline conditions described in section 10.5.</p> <p>Additional traffic surveys are anticipated to be required. The location and scope of any proposed surveys and study area would be shared with the relevant Highway Authority for review and agreement of study area prior to commissioning traffic surveys.</p>
3.6.5	Impacts on users of PRowS	<p>The assessment of impacts on users of PRow should be supported by pedestrian/ user counts where possible, with effort made to agree the</p>	<p>PRowS may need to be temporarily diverted or closed during construction works. Should a diversion or closure be required, the Applicant</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>locations for such counts with relevant consultation bodies. Where relevant, the ES should assess potential interactions between aspect assessments (for example traffic and transport, noise, dust, recreation and visual impact). The locations of any diversions or closures should be illustrated on suitable figures in the ES.</p>	<p>would seek to provide a safe diversion where feasible and/or reduce periods of closure. It is assumed that once works are complete, the affected PRow would be reinstated.</p> <p>PRow surveys will be undertaken following a review of the likely impact as a result of the Project. The survey scope and locations will be discussed with the relevant Local Authority PRow Officers prior to commissioning.</p> <p>A preliminary assessment of potential effects is outlined within Chapter 17 Socio-economics, Recreation and Tourism of this PEIR.</p> <p>The locations of any diversions or closures will be illustrated on figures in the ES.</p>
3.6.6	Mitigation	<p>Where the ES relies upon mitigation measures which would be secured through the outline Construction Traffic Management Plan, it should be demonstrated (with clear cross-referencing) where each measure is set out in the outline document.</p>	<p>The ES will provide clear cross referencing when referring to mitigation measures identified within the OCTMP.</p>

ID	Matter	Inspectorate's Comments	Project Response
3.6.7	Impacts from transportation of waste	<p>Any LSE resulting from the transport of waste generated during construction of the Proposed Development should be assessed in the ES.</p> <p>Any assumptions made (such as with regard to quantities of contaminated land) should be clearly set out and justified in the ES.</p>	<p>Any significant effects as a result of the transportation of waste generated during construction of the Proposed Development will be assessed in the ES. This will include an outline of any assumptions made and the identification of appropriate mitigation measures which will be contained in the OCTMP. This will ensure that waste transportation is conducted in a safe, efficient, and environmentally responsible manner.</p>

10.3.6 Additional comments from other organisations and Project responses are outlined in Table 10-2 below:

Table 10-2 – Comments from Relevant Organisations and the Project Response

Organisation	Comment	Project Response
Denbighshire County Council	<p>Topic: Quarries</p> <p>They seem to be scoping in the main Highway related concerns into the EIA (although the scoping corridor is a significant distance from our County border).</p> <p>Although Denbighshire is a significant distance from</p>	<p>Details will be shared with all relevant authorities in terms of the quarries intended to be used (which fall within their district boundary), including expected quantities.</p>

Organisation	Comment	Project Response
	<p>the scoping corridor (in which case I would suggest it would be on the limit of local concrete plants providing concrete due to the setting time during transport) I would like to request any details of quarries they may intend using in Denbighshire for aggregate etc and quantities expected.</p>	
<p>Kinnerley Parish Council</p>	<p>Topic: Accuracy of Traffic and Transport Assessment</p> <p>Paragraph 6.19 of the Scoping Report states that steel for use in towers will equate to approximately 1,000 - 2,000 tonnes and concrete for use in tower construction will equate to approximately 2,000 - 4,000 tonnes.</p> <p>Paragraph 3.3 states that the average span length between towers is approximately 250m. Paragraph 1.28 states that the Project is approximately 50km in length. With these parameters it should be possible to determine fairly accurately how many towers are required and therefore to predict more accurately the requirement for steel and concrete than the rather vague ranges noted above.</p> <p>The realistic environmental impacts of traffic and transport during construction can clearly be more</p>	<p>The number of towers and volume of materials required will be identified within the ES. The anticipated construction traffic has been outlined in section 10.6 of the PEIR.</p> <p>A preliminary assessment of the traffic flow increase due to the Project peak construction traffic has been undertaken where traffic data is available in section 10.7. However, a more in- depth analysis will be undertaken in the ES which will assess the likely magnitude and significance of effects for all roads above the threshold based on their sensitivity.</p>

Organisation	Comment	Project Response
	<p>accurately assessed if the quantities of steel, concrete and materials are known fairly accurately. It would therefore be better if the EIA is delayed until such more accurate assessments are made.</p>	
<p>Kinnerley Parish Council</p>	<p>Topic: Agricultural Traffic</p> <p>Local roads and narrow country lanes are subject to large modern agricultural traffic, particularly at seasonal times of cultivation work; of silage, hay, corn and maize harvests; and of muck carting. Traffic surveys carried out over only a short period of time are unlikely to capture these traffic flows and may therefore not be properly representative.</p>	<p>Where possible, baseline traffic flows have been obtained using DfT traffic counts which provide annual average daily traffic (AADT) flows. Additional traffic surveys will be undertaken using Automatic Traffic Counts (ATC) surveys where possible. This is typically undertaken during a neutral month, over a seven-day period, 24hours a day to capture the typical traffic conditions for the roads forming the construction period.</p> <p>As the seasonal agricultural traffic will be temporary, in the OCTMP, it will be noted for discussions to be held with landowners to mitigate any issues.</p> <p>Similarly to seasonal agricultural traffic, it is anticipated that construction traffic related to the proposed scheme will be short-term.</p>
<p>Kinnerley Parish Council</p>	<p>Topic: Environmental effects of Traffic and Transport</p>	<p>This has been noted. The anticipated construction flows for the Project has been outlined in section</p>

Organisation	Comment	Project Response
	<p>The environmental effects of Traffic and Transport, and construction generally, should include the effects of any possible Underground Cable Construction, or of the relatively new technology of Cable Trenching if that is to be deployed anywhere. Again, the possibility of Underground Cable Construction or Cable Trenching would have been raised during the consultation from 6 September to 18 October 2023; it would facilitate the assessment of environmental impacts if some preliminary results from that consultation had been made available before seeking a Scoping opinion.</p>	<p>10.6. The worst-case scenario in terms of traffic impact will be considered within the construction phase assessment. Therefore, the peak construction traffic flows associated with the Project will be used for the traffic and transport assessment.</p> <p>A preliminary assessment of the traffic flow increase due to the Project peak construction traffic has been undertaken where traffic data is available in section 10.7. However, a more in depth analysis will be undertaken in the ES which will assess the likely magnitude and significance of effects for all roads above the threshold based on their sensitivity.</p>
Network Rail	<p>Topic: Usage of Level Crossings</p> <p>During and post construction phase it is not clear whether transport or pedestrian routes will include those that cross a level crossing. Network Rail's position is that there shouldn't be any increase or change in usage to Level Crossings may require appropriate mitigation. The submitted transport assessment should include an assessment of any level crossing used during the construction of the proposed development and future access routes to the site.</p>	<p>An assessment of any level crossings used during the construction of the Project and future access routes to the site will be undertaken and detailed within the ES and OCTMP submitted in support of the application for Development Consent.</p>

## 10.4 Assessment Methodology and Significance Criteria

### Study Area

- 10.4.1 The Study Area for traffic and transport includes all roads included within the Preliminary Construction Traffic Routes to and from the Project, up to the Strategic Road Network (SRN). The Study Area comprises the area within a 150m radius from those roads to ensure all receptors are considered.
- 10.4.2 Several construction site access points have been identified. These, alongside the Preliminary Construction Traffic Routes are presented within Figure 10.1.
- 10.4.3 PRoW and WCH routes that lie within, connect to or interact with PRoW within the Order Limits and the construction routes are also included within the Study Area for traffic and transport.

### Baseline Data Collection

- 10.4.4 Data collection to establish the baseline traffic and transportation situation within the Study Area has been obtained from a range of sources.
- 10.4.5 Engagement will be undertaken with the relevant National Highways, NMWTRA and Local Highway Authorities to agree the data assessment methodology and approach used within the ES.

### Desk Study

- 10.4.6 To inform this assessment, a desk-based study has been undertaken for the existing baseline. The baseline data has been derived from multiple sources, which include the following:
- Annual Average Daily Traffic (AADT) flows for the year 2019-2023 have been obtained from Department for Transport (DfT) static traffic counters (Ref 10.23). Location of the counters is shown in Figure 10.1.
  - The AADF flows from the DfT counts have been converted into average weekday traffic flows. 12-hour flows (07:00-19:00 hrs) have been then derived from the DfT traffic data by applying an appropriate factor. This has been based on a standard daily profile over 24-hour period from the DfT's online road traffic statistics table TRA0307 (Ref 10.24).



- Road collision data for the latest five-years for all roads on the Preliminary Construction Routes and connecting junctions using DfT Road Safety Data (Ref 10.25).
- Public Right of Way (PRoW) maps obtained from local authorities.
- Identification of National Cycle Routes obtained from Sustrans (Ref 10.26).
- Online mapping and aerial photograph from Google Maps, which includes identifying the locations of possible highways and sensitive receptors to traffic.

### **Site Visits and Surveys**

- 10.4.7 Baseline traffic flows have been obtained from existing DfT static traffic counters. However, in instances where the available traffic data is deemed no longer useable (e.g. due to year undertaken) or where there are no existing traffic counts available, ATC traffic surveys will be commissioned. The surveys must be undertaken during 'neutral' operation periods avoiding holidays/local half-terms/abnormal conditions. Prior to commissioning traffic surveys, the location of any proposed surveys would be shared with the local highway authorities for review.
- 10.4.8 Site surveys will be undertaken to allow for a visual inspection of the potential construction vehicle routes, confirming findings of background data and identifying any unknown constraints or opportunities.

### **Environmental Impact Assessment Methodology**

- 10.4.9 Chapter 5: Environmental Assessment Methodology sets out the overarching approach which has been used in developing the preliminary environmental information. This section sets out the scope and detailed assessment methodology that would be used to assess the Traffic and Transport impacts during the construction phase of the Project. The following methodology and assessment criteria have been developed using The DMRB LA 104 Environmental Assessment (Ref 10.20) and Monitoring and Guidelines for the Environmental Assessment of Road Traffic ((Institute of Environmental Management and Assessment (IEMA)) guidelines (Ref 10.21) and take into account relevant policies and legislation.
- 10.4.10 The proposed methodology is broadly based on assessment criteria developed for similar major infrastructure projects.
- 10.4.11 The assessment will examine a worst case scenario in terms of Traffic and Transport impacts and effects, i.e. the peak period when the highest levels of

construction traffic are expected to occur. It would be informed by a desk-based study, and would be informed through collaboration with the design team, particularly around anticipated construction traffic movements and proposed mitigation measures.

10.4.12 For road users, the following rules taken from the IEMA Guidelines (Ref 10.21) are used to define the scale and extent of the assessment:

- Rule 1: Include highway links where the total traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%).
- Rule 2: Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

10.4.13 Increases below 10% are generally considered insignificant given that daily variations in background traffic flow would usually fluctuate by this amount. Therefore, changes in traffic flow below this level are assumed to result in no discernible environmental impact.

10.4.14 Where Rule 1 and Rule 2 would apply, the following potential environmental impacts on 'existing road users' would be considered and likely would need to be addressed:

- Severance (reduced ability for pedestrians, cyclists and where relevant horse-riders to cross road links).
- Vulnerable users delay (changed journey times and distances for pedestrians, cyclists and where relevant horse-riders).
- Public transport users and driver delay (changed journey times and distances for private and commercial vehicle occupants and for public transport users);
- Pedestrian, cycle and horse-rider amenity (loss of amenity for vulnerable road users).
- Fear and intimidation (fear and intimidation issues for pedestrians, cyclists and horse-riders due to increased traffic flows and change in composition);
- Accidents and safety (reduction in road safety for all road users);
- Hazardous loads.
- Air Pollution including dust and dirt.

### **Value / Sensitivity**

10.4.15 Resources are the assets and facilities which may be affected by the Project such as the highway network. Receptors are the users or beneficiaries of those resources such as pedestrians, cyclists and drivers who travel within the Study

Area. This would include the areas along the highway routes that could be sensitive to changes in traffic volumes. Sensitive areas are defined by the presence of sensitive receptors and inadequate facilities, such as community centres, schools, equestrian facilities, narrow well-used footways along busy roads or accident black spots.

- 10.4.16 The criteria used to determine the value and sensitivity of receptors specific to traffic and transport are set out in Table 10.3. These values are based on the IEMA Guidance (Ref 10.21).

*Table 10-3 – Criteria for Determining Value / Sensitivity*

Sensitivity / Value	Resource	Receptor
High	Receptors of greatest sensitivity to traffic flow: schools, colleges, playgrounds, accident blackspots, retirement homes, urban/residential roads without footways that are used by pedestrians (para 2.5 of IEMA Guidance).	Residents, workers, pedestrians (sensitive groups such as children, elderly and disabled), cyclists and equestrians using the highway.
Medium	Traffic flow sensitive receptors including: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks and recreational facilities.	Residents, workers, pedestrians (sensitive groups such as children, elderly and disabled), cyclists and equestrians using the highway.
Low	Receptors with some sensitivity to traffic flow: places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision.	Residents, workers, pedestrians (sensitive groups such as children, elderly and disabled), cyclists and equestrians using the highway.
Negligible	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.	Residents, workers, pedestrians (sensitive groups such as children, elderly and disabled), cyclists and equestrians using the highway.

## Impact Magnitude

- 10.4.17 The expected traffic generated by the Project during construction has been quantified where appropriate and assessed against anticipated background traffic flows to outline the anticipated percentage increase in total vehicles and HGVs.
- 10.4.18 The methodology proposed for determining the magnitude of impact follows guidance set out by the DMRB LA 104 (Ref 10.20) together with professional judgement derived from previous similar electricity connection projects. The order of magnitude criteria is shown in Table 10.4.

*Table 10-4 – Magnitude of Change (Impact) Categories*

Magnitude of Change	Change from Baseline
Major	Total loss or major alteration to key elements or features of the baseline conditions to the extent that post-scenario character or composition of baseline conditions would be fundamentally changed.
Moderate	Loss or alteration to one or more key elements or features of the baseline conditions to the extent that post-scenario character or composition of the baseline conditions would be materially changed.
Minor	Minor shift away from baseline conditions. Changes arising would be detectable but not material; the underlying character or composition of the baseline conditions would be similar to the pre-scenario situation.
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a 'no change' situation.

## Significance

- 10.4.19 Significance has been derived using the matrix set out in Chapter 5: Environmental Impact Assessment (EIA) Approach and Method. This has been supplemented by professional judgement based on previous projects, which where applicable, has been explained to give the rationale behind the values

assigned. Likely significant effects, in the context of the EIA Regulations, are effects of moderate or greater significance.

- 10.4.20 The significance of transport effects uses professional judgement to consider the identified impact magnitudes on the receptors affected by those impacts (taking account of their sensitivity) to determine the significance of effects. Moderate and major adverse/beneficial effects are assumed to represent significant effects.
- 10.4.21 Where Rule 1 and Rule 2 are above the significance thresholds, the criteria detailed in Table 10.5 will be considered and likely would need to be addressed.
- 10.4.22 The criteria described in Table 10.5 would be used to assess the significance of effect.

Table 10-5 – Significance of Effect

Significance	Assessment
Driver delay and public transport delay to passengers	<p>Where there is a change in traffic flow of greater than 30%. Net traffic and/or HGV flows of 30%, 60% and 90% are considered minor, moderate and major changes in magnitude.</p> <p>Changes to bus services/bus stops or taxi facilities for over four weeks in any 12-month period.</p>
Pedestrian, Cyclist and Horse-Rider Delay, Severance and Amenity	<p>Where there would be a temporary maximum increase in journey length along a road or other PRow for pedestrians, cyclists or horse-riders for more than four weeks in any 12-month period; Pedestrian severance occurs when there is difficulty experienced in crossing a heavily trafficked route. Changes in net traffic flows of 30%, 60% and 90% are considered to have a minor, moderate and major effects in severity respectively.</p> <p>The pedestrian amenity threshold, as set out in the IEMA Guidelines to assess the significance of change, is where the traffic flow is doubled (increase over 100%) or where the HGV flows are over 30%, 60% and 90% (considered to have minor, moderate, and major effects respectively). Pedestrian amenity is defined as the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and footway width/separation from traffic; and</p> <p>Where a temporary increase is forecast of more than 30% in lorries or total flow on a route intersecting a PRow, bridleway or near an equestrian centre for more than four weeks in any 12-month period. Changes in net traffic flows of 30%, 60% and 90% are considered to have a minor, moderate and major effects in severity respectively.</p>
Fear and intimidation	<p>Fear and intimidation occur through a combination of traffic flow, speed, HGV composition and its proximity to people or lack of protection caused by such factors as narrow pavements.</p> <p>The assessment has been based on the sensitivity establish for the WCH Amenity and severance and a weighting system defined in the IEMA Guidelines Environmental Assessment of Traffic and Movement. This weighting system is based on the average hourly traffic flow, 18-hour heavy vehicle flow and average speed over an 18-hour day.</p>

Significance	Assessment
	<p>The degree of hazard is assessed with reference to the established thresholds, and a score provided for each combination on a highway link under consideration. The total score from all three elements is combined to provide a 'level' of fear and intimidation for all three elements (small, Moderate, Great, Extreme).</p>
Accidents and road safety	<p>Accidents and safety is assessed using personal injury accident data obtained from highways authority records. The IEMA Guidelines recommend that professional judgement would be needed to assess the effects. The following criteria would be used to assess the effects:</p> <ul style="list-style-type: none"> <li>• Where junctions have had ten or more collisions in a three-year period; or</li> <li>• Where links have recorded ten or more collisions per 100m lengths in a three-year period.</li> </ul> <p>The collision data will be analysed along the full length of the links to identify patterns in accident locations in order to establish any areas of safety concerns. Where there are no discernible collision patterns and different causation factors are identified this would represent a negligible level of magnitude that is not significant.</p>

- 10.4.23 The assessment of significance is based on professional judgement, consultation and is derived from receptor value and magnitude of impacts.
- 10.4.24 Chapter 5: Environmental Assessment Methodology sets out the process when considering the likely significance of an effect on a receptor in relation to the sensitivity or value of the receptor and the magnitude of the potential impact. Table 5.3 provides a matrix of magnitude of impact against sensitivity of receptors to identify where significant effects are anticipated to occur.
- 10.4.25 This transport and access assessment considers Major and Moderate adverse effects to be significant, whilst Minor and Negligible adverse effects are considered not significant.
- 10.4.26 The overall significance of effects has been based on professional judgement as to whether the magnitude and duration of impacts, when combined with the characteristics of the road network and the sensitivity of receptors would cause adverse effects.

### **Assumptions and Limitations**

- 10.4.27 The following limitations and assumptions have been identified:
- Construction traffic forecasts are based on an initial high-level estimate of construction materials and programme and are considered to provide a reasonable worst-case scenario for peak activity. However, at this stage, the full construction programme for all anticipated construction activities associated with the Project is yet to be confirmed. Therefore, as the Project progresses and the construction traffic and programme is available, a full traffic and transport assessment will be undertaken in the ES.
  - The construction traffic forecasts assumes that one tower will be constructed at a time. Therefore, it has been assumed that there will be no overlap with the construction of towers.
  - It is anticipated that all construction traffic would access the Project's draft Order Limits from the Primary Access Routes along the local highway network. The Primary Access Routes would connect to the SRN and Major Road Network (MRN), i.e. those routes between major settlements and ports / airports across Great Britain;
  - It has been assumed that construction workers would report to a compound before loading into a site vehicle and travelling to site. Information detailing the instructions given to construction workers will be contained within the OCTMP.



- At this stage of the planning application, no admin staff, visitors, or additional tradesmen to compounds during the construction period have been included in the assessment. If the traffic flows associated with these are considered to be significant, they will be accounted for in the ES.
- With regards to cumulative effects from nearby committed developments, historical traffic data will be included in the assessment by using TEMPro growth factors. This would account for background traffic growth between the various traffic data survey dates and the traffic model years. The TEMPro database accounts for all background development in the Local Plan in the vicinity of the Study Area and covers all committed development schemes. Therefore, the assessment is inherently cumulative as these schemes will be accounted for, no additional effects are anticipated. However, if there are any developments in the area which have been approved and are likely to coincide with the Project in terms of using the same construction routes and peak construction activity being assessed, these will be identified if needed. These will be agreed with the Local Authorities and a cumulative impact assessment will be undertaken in the ES if required.

## 10.5 Baseline Conditions

### Existing Baseline

#### Local Highway Network

- 10.5.1 The Preliminary Construction Routes between the SRN and access points were developed using the following considerations where possible:
- Avoid existing highways constraints such as weight restricted bridges or low bridges.
  - Avoid settlements and sensitive receptors to minimise potential impact on other road users.
  - Use the shortest available route between the Proposed draft Order Limits and SRN/MRN.
  - Avoid single carriageway roads unless these provide direct access to a construction site.

10.5.2 There are a number of A-roads which interact with the Study Area and provide a potential link between the Project and the Strategic Road Network (SRN). These are:

- A458: the A458 is a single carriageway subject to the National Speed Limit between the A470 at Mallwyd, Machynlleth to the west and the A5 to the west of Shrewsbury in England to the east.
- A483: the A483 is a single carriageway subject to the National Speed Limit between Oswestry to the north and Llandovery to the south.
- A490: the A490 is a single carriageway subject to the National Speed Limit between Llanfyllin to the west and Church Stoke to the east in England; and
- A495: the A495 is a single carriageway subject to the National Speed Limit between Llynclys in England to the north and the A485 to the south.
- A5: the A5 is a single carriageway forming part of the strategic road network. It is a major road in England and Wales running for approximately 420 km from London, England to Holyhead, Wales. Between Mile End Roundabout and Wolfshead Roundabout, the A5 it is predominantly subject to the national speed limit, however, through the section through Shotatton, Shrewsbury, the speed limit reduces to 40mph.

10.5.3 Additionally, there are several B roads and C roads which form part of the Preliminary Construction Route. These include:

- B-roads
  - B5009: the assessed section between the junction with Berghill Lane and junction with the A5, is a single carriageway with one lane in each direction. It is predominantly subject to the national speed limit, although the southern section has a speed limit of 30mph on the approach to the junction with the A5.
  - B4396: the B4396 is a single carriageway with one lane in each direction. It is predominantly subject to the national speed limit, although the eastern section through Llynclys and the eastern section on the approach to the A5. Additionally, through Knockin settlement, the B4396 is subject to a speed limit of 30-40mph.
  - B4398: the assessed section between the junction with the B4393 extending northwards for 0.62kms. It is subject to the national speed limit and has a warning sign of a weak bridge (18T).
  - B4393: the B4393 is a single carriageway with one lane in each direction. It is subject to the national speed limit, reducing to 30mph through Clopton settlement. On either side of the route, there is a section where there is only one lane over the bridge.
  - B4382: the assessed section of the B4393 between Welshpool and the junction with the A458 in Heniarth is a single carriageway with one lane in each direction. It is subject to the national speed limit.

- B4389: is a single carriageway, with only one lane for both traffic movements. It is subject to the National Speed Limit.
- C-roads
  - Berghill Lane: is a single carriageway, with only one lane for both traffic movements. It is subject to the National Speed Limit.
  - Maesbury Road: is a single carriageway with one lane in each direction, predominantly subject to the national speed limit. However, through Maesbury settlement, the speed limit is 30mph, reducing to 20mph through pinch point (bridge over canal). To the north of the junction with Morton Lane, Unicorn Nursery fronts the carriageway.
  - Penyarreg Lane: is a single carriageway, with only one lane for both traffic movements. It is subject to the National Speed Limit. Additionally, there is a 10T weight restriction along this road.
  - Long Lane: is a single carriageway, with only one lane for both traffic movements. It is subject to the National Speed Limit.
  - Lletty Lane: is a single carriageway, with only one lane for both traffic movements. It is subject to the National Speed Limit.
  - Ffordd Glyndwr: is a single carriageway, with only one lane for both traffic movements. It is subject to the National Speed Limit. Along this route there appears to be bends and steep gradients.

10.5.4 Furthermore, unclassified roads form the Preliminary Construction route connecting the access points to the classified roads, and the SRN. These unclassified roads are predominantly one lane tracks, which currently appear too narrow to accommodate two-way traffic movements. Mitigation would be necessary to accommodate the anticipated construction traffic. This will be discussed with the local highway authorities and appropriate mitigation measures will be included in the OCTMP. Preliminary mitigation measures have been identified in section 10.8.

10.5.5 Additionally, there are temporary haul roads connecting the access points / temporary bellmouths to the Project. These are shown in Figure 10.1.

### **Baseline Traffic Flows**

10.5.6 The available data for the most recent year available for the highway network forming the Preliminary Construction Routes has been obtained from DfT counts and is summarised in Table 10.6 below.

Table 10-6 – Baseline Traffic Flows, 24-hour AADF two-way Movements

Road	Location	Year	Two-Way AADF		
			All Vehicles	HGVs	HGV Percentage
Powys District Boundary					
Unnamed Road	Brynllugan	2023	213	33	15%
A458	West of Llanfair Caereinion	2023	3371	119	4%
	Sylfaen Railway Station	2023	4017	174	4%
	Welshpool	2022	4865	167	3%
	Welshpool	2022	6609	166	3%
A483	North of Welshpool	2023	20042	1441	7%
	North of A485	2023	9130	852	9%
	Llandysilio	2023	10081	869	9%
	Llanymynech	2023	10081	869	9%
A490	North of Guilsfield	2023	2393	95	4%
	South of Guilsfield	2023	4917	156	3%

Road	Location	Year	Two-Way AADF		
			All Vehicles	HGVs	HGV Percentage
A495	North of Llanfair Caereinion	2023	941	61	6%
	Northeast of A490	2023	3772	249	7%
	West of Godor	2023	1947	141	7%
Shropshire District Boundary					
B5009	North of junction with Berghill Lane	2023	5286	196	4%
A5	South of junction with Shrewbury Road	2023	20240	1805	9%
A5	Shotatton	2021	19908	2023	10%
Maesbury Road	North of junction with Ball Lane	2023	2492	49	2%
Long Lane	North of Llynclys	2019	419	11	3%
B4396	East of junction with the A495 and A483	2023	2261	268	12%

Road	Location	Year	Two-Way AADF		
			All Vehicles	HGVs	HGV Percentage
A483	South of Llynclys	2023	11605	1145	10%
	North of Llynclys	2021	13033	1373	11%
	North of B5069	2023	14031	1132	8%
	Oswestry	2021	12332	1264	10%
A495	West of Porth-y-waen	2023	3590	277	8%

### Sensitive Receptors

10.5.7 Sensitive receptors within a 150 m radius have been identified for the Preliminary Construction Routes. These have been summarised in Table 10.7 and shown in Figure 10.1.

*Table 10-7 – Sensitive Receptors within 150m of the Preliminary Construction Routes*

Road Name	Sensitive Receptor	Sensitivity of Receptor
B5009 (located on the western side of the A5)	Oswestry Golf Club - Golf club	Medium

Road Name	Sensitive Receptor	Sensitivity of Receptor
Maesbury Road	Unicorn Nursery - Education Centre	High
	St John the Baptist Church	Low
	Montgomery Canal Towpath-Cycling Park	Low
B4396	Knockin Medical Centre	High
	Saint Mary's Church	Low
Penygarreg Lane	Waen Wen Basin - Hiking area	Low
	Cambrian Heritage Railways - Penygarreg Halt-Rail Museum	Low
B4398	Llanymynech Playground	High
	Llanymynech Village Hall	Medium
B4398 (located along the A483)	Llanymynech Heritage Area - Heritage preservation	Low
	St Agatha, Llanymynech - Church	Low
B4393	Clopton's Wharf Winding Hole - Tourist attraction	Low

Road Name	Sensitive Receptor	Sensitivity of Receptor
	Montgomery Canal - Hiking area	Low
	Offa's Dyke Path - Hiking area	Low
	Woodside Holiday Park-Holiday Park	Medium
	Trederwen Caravan Park-Holiday Park	Medium
B4393 Canal Road / B4398	Montgomery Canal aqueduct over river Vyrnwy - Historical landmark	Low
A495	Llansantffraid FC - Football Club	Medium
	Llansantffraid Primary School	High
	Llansantffraid - The Dental Practice	High
	Bethesda - Place of worship	Low
	Meifod Village Hall	Medium
	Ysgol Meifod - School	High
	St Tysilio & St Mary's Church - Anglican church	Low
	Meifod Valley Alpacas - Tourist attraction	Low



Road Name	Sensitive Receptor	Sensitivity of Receptor
A495 / B4385	Neuadd Bridge Caravan Park-Holiday Park	Medium
A490	Valley View Holiday Park	Medium
	Groes-lwyd Chapel	Low
	Kingdom Hall of Jehovah's Witnesses - Place of worship	Low
	Pitch / Playground (south of the B4381 – Welshpool)	High
B4389	Pen-Y-Pentre - Caravan Park	Medium
B4382	Peniel bedw gwynnion - Chapel	Low
Unnamed road - SY21 0LP	Sardis Chapel	Low

## **Public Rights of Way (PRoW)**

- 10.5.8 There are several PRoWs crossing or linking onto the roads along the Preliminary Construction Routes. PRoWs in the vicinity of the Preliminary Construction Routes are shown on Figure 10.1.
- 10.5.9 PRoWs affected by the Project would be assessed in the ES. This would include the need for PRoW temporary closures and assumed diversionary routes. As mentioned in Chapter 19: Socio-economics, Recreation and Tourism, a worse-case scenario has been assumed where all PRoWs that fall within the draft OLS will be closed temporarily. A total of 124 PRoWs, 103 within Powys District Boundary and 21 within Shropshire District Boundary have been identified. It should be noted that Footpath 236/5/1 and Footpath 236/1/2 are situated within the proposed substation area. Therefore, it has been assumed that a permanent diversion will be required. However, details of diversions are yet to be determined, and the assessment may be subject to change.
- 10.5.10 The affected PRoWs and mitigation measures, including diversionary routes are yet to be confirmed. Once this information is available, the PRoW and Highways officers for each Local Authority would be consulted and will be assessed in the ES.
- 10.5.11 An Outline PRoW Management Plan would be agreed and submitted with the application for a DCO to address the interactions between PRoWs and the Project. It will detail where PRoWs would be crossed by the Project, how they would be managed to ensure they remain safe to use, and disruption to the users of the PRoW is minimised.

## **Collision Data**

- 10.5.12 The latest available five-year personal injury collision data was obtained from DfT Road Safety Data for the roads forming the Preliminary Construction Traffic Routes. These are shown Figure 10.1. Once the construction routes have been confirmed, an in-depth collision analysis will be undertaken in the ES.

## **Future Baseline**

- 10.5.13 The EIA Guidelines for Traffic and Movement highlight that forecasts of traffic growth need to be utilised to derive the future year baseline traffic conditions.
- 10.5.14 Background traffic growth is anticipated to occur between 2019 to 2023 (for which existing traffic flows are available) and 2028 (when peak HGV movements are

predicted to occur). To account for this growth, an appropriate growth factor derived from Trip End Model Presentation Program TEMPro (Ref 10.27) has been applied to the traffic flow data.

- 10.5.15 The local growth factor applied is shown in Table 10-8 and the 2028 future baseline traffic flows for the available traffic data is shown in Table 10-9.

*Table 10-8 – TEMPro Growth Factors Applied for Future Traffic Baseline, 24hrs*

Base Year	Future Year	Local Growth Figure
Powys District Boundary		
2022	2028	1.0404
2023	2028	1.0331
Shropshire District Boundary		
2019	2028	1.0855
2021	2028	1.0618
2023	2028	1.0423

Table 10-9 – 2028 Future Baseline Traffic, 24-hour AADF

Road	Location	Year	Two-Way AADF		
			All Vehicles	HGVs	HGV Percentage
Powys District Boundary					
Unnamed Road	Brynllogan	2028	220	34	15%
A458	West of Llanfair Caereinion	2028	3483	123	4%
	Sylfaen Railway Station	2028	4150	180	4%
	Welshpool	2028	5062	174	3%
	Welshpool	2028	6876	173	3%
A483	North of Welshpool	2028	20705	1489	7%
	North of A485	2028	9432	880	9%
	Llandysilio	2028	10415	898	9%
	Llanymynech	2028	10415	898	9%
A490	North of Guilsfield	2028	2472	98	4%
	South of Guilsfield	2028	5080	161	3%
A495	North of Llanfair Caereinion	2028	972	63	6%

Road	Location	Year	Two-Way AADF		
			All Vehicles	HGVs	HGV Percentage
	Northeast of A490	2028	3897	257	7%
	West of Godor	2028	2011	146	7%
Shropshire District Boundary					
B5009	North of junction with Berghill Lane	2028	5510	204	4%
A5	South of junction with Shrewbury Road	2028	21096	1881	9%
A5	Shotatton	2028	21138	2148	10%
Maesbury Road	North of junction with Ball Lane	2028	2597	51	2%
Long Lane	North of Llynclys	2028	455	12	3%
B4396	East of junction with the A495 and A483	2028	2357	279	12%
	South of Llynclys	2028	12096	1193	10%
	North of Llynclys	2028	13838	1458	11%
	North of B5069	2028	14625	1180	8%
A483	Oswestry	2028	13094	1342	10%
A495	West of Porth-y-waen	2028	3742	289	8%

- 10.5.16 As the construction activities are anticipated to occur between 07:00 and 19:00 which includes construction workers travelling to and from site, a factor has been applied to the baseline traffic flows from the DfT Counts.
- 10.5.17 The AADF flows from the DfT counts have been converted into average weekday traffic flows. 12-hour flows (07:00-19:00 hrs) have been then derived from the DfT traffic data by applying an appropriate factor. This has been based on a standard daily profile over 24-hour period from the DfT's online road traffic statistics table TRA0307 (Ref 10.24). The 12-hour traffic profile for 2028 future baseline is shown below in Table 10-10.

Table 10-10– 2028 Future Baseline Traffic, 12-hour AADF

Road	Location	Year	Two-Way AADF		
			All Vehicles	HGVs	HGV Percentage
Powys District Boundary					
Unnamed Road	Brynllugan	2028	178	28	15%
A458	West of Llanfair Caereinion	2028	2816	99	4%
	Sylfaen Railway Station	2028	3355	145	4%
	Welshpool	2028	4093	140	3%
	Welshpool	2028	5560	140	3%
A483	North of Welshpool	2028	16742	1204	7%
	North of A485	2028	7626	712	9%
	Llandysilio	2028	8421	726	9%
	Llanymynech	2028	8421	726	9%
A490	North of Guilsfield	2028	1999	79	4%
	South of Guilsfield	2028	4107	130	3%
A495	North of Llanfair Caereinion	2028	786	51	6%

Road	Location	Year	Two-Way AADF		
			All Vehicles	HGVs	HGV Percentage
	Northeast of A490	2028	3151	208	7%
	West of Godor	2028	1626	118	7%
Shropshire District Boundary					
B5009	North of junction with Berghill Lane	2028	4455	165	4%
A5	South of junction with Shrewbury Road	2028	17057	1521	9%
A5	Shotatton	2028	17092	1737	10%
Maesbury Road	North of junction with Ball Lane	2028	2100	41	2%
Long Lane	North of Llynclys	2028	368	10	3%
B4396	East of junction with the A495 and A483	2028	1905	226	12%
	South of Llynclys	2028	9780	965	10%
	North of Llynclys	2028	11189	1179	11%
	North of B5069	2028	11825	954	8%
A483	Oswestry	2028	10587	1085	10%
A495	West of Porth-y-waen	2028	3026	233	8%



## 10.6 Construction Details

10.6.1 Environmental considerations have influenced the Project throughout the design development process, from early options assessment through to refinement of the Project design.

### Site Access

10.6.2 A number of proposed site access points have been identified, which will require the construction of temporary access bellmouths and temporary access lines. These are shown in Figure 10.1.

### Construction Access Routes

10.6.3 The Preliminary Construction Routes have been developed considering traffic related issues and constraints on the network including:

- Shortest available routes between Proposed draft Order Limits and the SRN.
- Weight restrictions.
- Road classification.
- Road layout.
- Traffic calming measures.
- Sensitive receptors (such as schools, areas of high pedestrian movements).
- Settlements.
- Visibility constraints.
- Restricted access.
- Speed limits and traffic speeds.
- Junctions at or near capacity during peak periods.
- Gradients.
- Public Rights of Way (PRoWs).

10.6.4 Due to the alignment of the Project, and the challenging environment where temporary access lines are proposed to connect with site accesses, more detailed mitigation measures will be required.

10.6.5 The Preliminary Construction Routes will be discussed with National Highways, NMWTRA and Local Highway Authorities. Feedback provided during this engagement regarding the suitability of the Preliminary Construction Routes, any potential alternative routes, and mitigation measures, will be reviewed and used to inform the Proposed Construction Routes in the ES and OCTMP.

## **Construction Traffic Programme and Movements**

### **Construction Programme**

- 10.6.6 The full construction programme for all anticipated construction activities associated with the Project is yet to be confirmed. However, for the traffic and transport assessment in this PEIR, the programme for the tower construction is shown in Plate 10-1 and the construction programme for the remaining civils-based activities shown in Plate 10-2. The full project description with the anticipated construction activities is contained in Chapter 2 of the PEIR.
- 10.6.7 Based on the current construction programme shown below, the earliest date on which we would expect construction to reasonably commence would be in 2027 starting with enabling works including, site clearance activities, and the installation of construction compounds and access roads. The peak construction activity likely to fall in 2028/2029. This is when the greatest construction traffic is expected due to overlapping activities.
- 10.6.8 As the project develops, the construction programme will be refined. However, for the traffic and transport assessment the future baseline year 2028 would be used to represent a worst-case scenario, thus providing a more robust assessment of likely traffic increase as a result of the Project.

Plate 10-1 – High Level Construction Programme based on the assumption of 4 towers per km totalling approx. 175 towers

Activities	Q4 2025	Q1 2026	Q2 2026	Q3 2026	Q4 2026	Q1 2027	Q2 2027	Q3 2027	Q4 2027	Q1 2028	Q2 2028	Q3 2028	Q4 2028	Q1 2029	Q2 2029	Q3 2029	Q4 2029	Q1 2030	Q2 2030	Q3 2030	Q4 2030	
Access and accommodation works																						
Tower foundations 4 teams of 6 ops																						
Tower erection 4 teams of 6 ops																						
Tower stringing 4 teams of 6 ops																						

Plate 10-2 – High Level Programme for Civils-based Activities Post Consent

Activities	Q4 2025	Q1 2026	Q2 2026	Q3 2026	Q4 2026	Q1 2027	Q2 2027	Q3 2027	Q4 2027	Q1 2028	Q2 2028	Q3 2028	Q4 2028	Q1 2029	Q2 2029	Q3 2029	Q4 2029	Q1 2030	Q2 2030	Q3 2030	Q4 2030	
Access and accommodation works																						
Underground cable works between Grug Y mynudd switching station and VNF 01																						
Cable pulling and jointing and commissioning																						
Reinstatements and joint bay backfill																						
Energised and available for commercial load																						
Collector substation civil works , Access road, drainage , control room build etc																						
Collector station electrical works																						
Commissioning																						
Energised and available for commercial load																						
Cable sealing end compound at VNF 01 tower location civil works , drainage etc																						
Cable install ,and CSE terminations.																						
Downlead installation testing and commissioning																						
Energised and available for commercial load																						
Lower Frankton switching station, Access works, Civil works ,drainage etc																						
Switch room ,electrical apparatus installation works.																						
Complete system testing and commissioning.																						
Energised and available for commercial load																						

## Construction Traffic Movements

- 10.6.9 Peak construction two-way daily vehicle movements generated as a result of the tower works are summarised in Plate 10.1 and civils-based activities for the Project shown on Plate 10.2.

For the Tower construction, this equates to a total of 32 two way-movements, of which 16 would be HGVs as shown on Table 10.11.

*Table 10-11 – Peak Construction Two-Way Daily Traffic Movements*

Construction Activity	Two-Way movements		
	Non-HGVs	HGVs	Total
Tower Construction	8	8	16
Civils-based Construction Activities	8	8	16
Total	16	16	32

- 10.6.10 Construction two-way daily vehicle flows for the remainder of the Project are still to be confirmed and will be assessed within ES to ensure all the peak construction two-way daily traffic movements are assessed.
- 10.6.11 Additionally, it is anticipated that a total of 120 AILs will be travelling to and from site, predominantly for the transportation of cable drums for the entire Project. Details on the measures which will be put in place for the AIL deliveries will be contained in the OCTMP.

## 10.7 Preliminary Assessment of Effects

- 10.7.1 A preliminary assessment of the anticipated traffic growth produced by the Project has been undertaken and shown in Table 10 12 below. This assessment has been undertaken for those roads with available DfT traffic count data along the Preliminary Construction Route. The Proposed Constriction Routes are yet to be finalised, and additional traffic surveys will be required therefore a more in-depth assessment of effects will be undertaken in the ES. This will highlight the likely magnitude and significance of effects along the Proposed Construction Routes, including identifying mitigation measures in the OCTMP to minimise disruption and impact.

Table 10-12 – Percentage increase in traffic flows, 12-hour AADF

Road	Location	Two-Way AADF without Proposed Development		Two-Way AADF with Proposed Development		% increase	
		All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
Powys District Boundary							
Unnamed Road	Brynllogan	178	28	210	44	18%	57%
A458	West of Llanfair Caereinion	2816	99	2848	115	1%	16%
	Sylfaen Railway Station	3355	145	3387	161	1%	11%
	Welshpool	4093	140	4125	156	1%	11%
	Welshpool	5560	140	5592	156	1%	11%
A483	North of Welshpool	16742	1204	16774	1220	0%	1%
	North of A485	7626	712	7658	728	0%	2%
	Llandysilio	8421	726	8453	742	0%	2%
	Llanymynech	8421	726	8453	742	0%	2%
A490	North of Guilsfield	1999	79	2031	95	2%	20%
	South of Guilsfield	4107	130	4139	146	1%	12%
A495	North of Llanfair Caereinion	786	51	818	67	4%	31%

Road	Location	Two-Way AADF without Proposed Development		Two-Way AADF with Proposed Development		% increase	
		All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
	Northeast of A490	3151	208	3183	224	1%	8%
	West of Godor	1626	118	1658	134	2%	14%
Shropshire District Boundary							
B5009	North of junction with Berghill Lane	4455	165	4487	181	0.7%	9.7%
A5	South of junction with Shrewbury Road	17057	1521	17089	1537	0.2%	1.1%
A5	Shotatton	17092	1737	17124	1753	0.2%	0.9%
Maesbury Road	North of junction with Ball Lane	2100	41	2132	57	1.5%	39.0%
Long Lane	North of Llynclys	368	10	400	26	8.7%	160.0%
B4396	East of junction with the A495 and A483	1905	226	1937	242	1.7%	7.1%
	South of Llynclys	9780	965	9812	981	0.3%	1.7%
	North of Llynclys	11189	1179	11221	1195	0.3%	1.4%
	North of B5069	11825	954	11857	970	0.3%	1.7%
A483	Oswestry	10587	1085	10619	1101	0.3%	1.5%
A495	West of Porth-y-waen	3026	233	3058	249	1.1%	6.9%

## 10.8 Preliminary Mitigation Measures

10.8.1 Subject to the outcome of the traffic and transport assessment which will be undertaken in the ES, mitigation measures will be implemented where appropriate.

10.8.2 Reflecting IEMA guidance on delivering proportionate EIA (IEMA 2023) (Ref 10.21), the scope and assessment assumes that relevant embedded and standard good practice applied measures are in place.

10.8.3 Examples of preliminary mitigation measures include:

- An Outline Construction Environmental Management Plan (OCEMP) will be developed and included alongside the ES. This will support the application development consent and will be implemented so that likely significant effects on the environment during the construction phase of the Project are avoided, minimised or mitigated.
- An OCTMP which will also form part of the mitigation for the Project. This will outline construction vehicle routing for access and egress the site to test and establish that the local infrastructure can absorb the construction traffic and minimise traffic congestion.
- Where possible the detailed design process would minimise the volume of material to be imported to site to help reduce HGV numbers;
- A site worker transport and travel arrangement plan, including transport modes to and from the worksite (including pick up and drop off times).
- Specific training and disciplinary measures to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway.
- Appropriate traffic management measures to avoid conflict with general traffic, subject to the agreement of Local Highways Authorities;
- Typical measures would include HGV turning and crossing signs and/or banksmen at the site access and warning signs.
- The provision of updates relating to traffic movements associated with vehicles accessing the site on the Project website/Twitter feed and or a newsletter.
- An Outline PRow Management Plan would be agreed and submitted with the application for a DCO to address the interactions between PRowS and the Project.

## 10.9 Preliminary Likely Significant Effects

10.9.1 This section outlines the preliminary assessment of impacts for the Project during construction and operation phases.

### Construction

10.9.2 The primary Traffic and Transportation impacts associated with the Project would be as a direct result of an increase in traffic flows on the surrounding roads used by construction vehicles. Discussions are yet to be held with the relevant National Highways, NMWTRA and Local Highway Authorities to agree on the Preferred Construction Routes and assessment methodology.

10.9.3 Once the Preferred Construction Routes associated with the Project have been discussed with the relevant Highway Authorities, and assignment of construction traffic to the network is confirmed based on material sources, a more detailed assessment of all roads will be undertaken. This assessment will assign sensitivity to each road as determined by the IEMA 2023 Guidance Document, (Ref 10.21) where a threshold increase to baseline traffic and HGV flows by 30% would be assigned to non-sensitive roads, and a 10% threshold assigned to sensitive roads. In instances where the 30% and 10% HGV threshold is exceeded, detailed assessment will be undertaken to determine the significance of the effect for all the criteria outlined in Table 10.5. Therefore, the likely magnitude and significance of effects will be subject to further assessment within the ES following route investigation and consultation with the relevant highway authorities to confirm sensitivity.

10.9.4 Mitigation measures which will be detailed within the ES and OCTMP to help address any likely significant effects. Consultation with the corresponding local highway authority will also be undertaken to agree these mitigation measures and the routing as outlined in the OCTMP.

10.9.5 Furthermore, as mentioned in section 10.4 in the assumptions and limitations section, a cumulative assessment will be undertaken if necessary. If there are any developments in the area which have been approved and are likely to coincide with the Project in terms of use of the same construction routes and peak construction activity being assessed, these will be identified through agreement with the relevant highway authorities and the impact to future baseline would be assessed within the ES.



## Summary of the Preliminary Assessment of Potential Significant Effects

- 10.9.6 Discussions with National Highways, NMWTRA and Local Highway Authorities will be undertaken to determine the Preferred Construction Routes which will be assessed in the ES, access point and locations, highway improvements and mitigation for the Project. Additionally, as the construction traffic flows are yet to be refined, and full details of the anticipated traffic flows are to be determined, the likely significant effects will be outlined and assessed in the ES. Table 10-13 below highlights the potential significant effects for each receptor in terms of traffic and transport. However, based on the available baseline traffic data and the construction traffic flows associated with the construction of one tower at a time, it is unlikely to result in any significant impact. It should be noted that even though in some instances, net percentage increases are higher than 10% and 30% it has to be seen in the context of the future traffic baseline on the roads which are very low.
- 10.9.7 Sensitivity is contingent on the sensitivity of the specific receptors situated within 150m of the Preliminary Construction Route (identified in Table 10-7) and the baseline review.
- 10.9.8 The potential impacts on receptors will be as a result of the proposed increase to baseline traffic and it's composition (e.g. increased HGV movements). This may result in adverse effects dependent upon the sensitivity of the road environment along the preliminary construction routes. Any planned changes to PRow through temporary closures or diversions would also have an impact on receptors.

Table 10-13 – Construction Phase – Preliminary Assessment of Potential Significant Effects

Resource / Receptor	Sensitivity of Resource / Receptor	Description of potential Impact / Change
Pedestrians	High	<ul style="list-style-type: none"> <li>• Severance through a reduced ability to cross the road</li> <li>• Reduction in road safety</li> <li>• Changed journey times and distances where temporary closures or diversion of footways or PRowS are proposed. Fear and intimidation due to increase in traffic and HGVs</li> <li>• Loss of amenity</li> </ul>
Cyclists	High	<ul style="list-style-type: none"> <li>• Severance through a reduced ability to cross the road</li> <li>• Reduction in road safety</li> <li>• Changed journey times and distances</li> <li>• Fear and intimidation</li> <li>• Loss of amenity</li> </ul>
Bus Passengers	Low	<ul style="list-style-type: none"> <li>• User delay through increased journey times</li> <li>• Reduction in road safety</li> </ul>
Car drivers / passengers	Low	<ul style="list-style-type: none"> <li>• Delay through increased journey times</li> <li>• Reduction in road safety</li> </ul>

## Operation

- 10.9.9 During the operation phase, the Project will be maintained by a limited number of operatives across the site, with additional infrequent trips associated with maintenance/inspections or repairs when required. Staff vehicles and those used for maintenance are primarily expected to be pickup trucks and vans, with HGVs rarely accessing the site. As such, an assessment of the impacts during the operational phase have been scoped out as they are unlikely to cause significant effects. Any operational traffic would be limited to routine maintenance and inspection activities, which would be an increase less than the 30% (or 10% in sensitive areas) baseline criteria.

## Decommissioning

If the Project is to be decommissioned in the future, its constituent parts would be decommissioned in accordance with the relevant legislation and would be removed or disposed or reused in an appropriate manner.

## 10.10 Preliminary Mitigation and Enhancement Measures

- 10.10.1 Essential mitigation comprises measures over and above any embedded and good practice mitigation measures, for which assessment within this PEIR has identified a requirement to further reduce significant environmental effects. The assessment undertaken within this PEIR has not identified any requirements for essential mitigation at this stage.

## 10.11 Next Steps

### Consultation

- 10.11.1 In the period between the PEIR and ES stage the assessments set out within this chapter will be further developed and refined based on the statutory consultation and ongoing stakeholder engagement outcomes.
- 10.11.2 Engagement will be undertaken with National Highways, NMWTRA and Local Highway Authorities to agree the assessment methodology and approach and will occur throughout the EIA process.

- 10.11.3 The affected PRowS and mitigation measures, including diversionary routes are yet to be confirmed. Once this information is available, the PRow and Highways officers for each Local Authority would be consulted.
- 10.11.4 It is expected that greater detail as the design develops will be known regarding the Project's construction and expected vehicle movements generated by construction traffic and worker commuting. Therefore, it is anticipated that some of the effects that have been set out within this document may be subject to change as the proposed access routes are confirmed.

### **Site visits and surveys**

- 10.11.5 Where available, baseline traffic flows have been obtained from existing DfT static traffic counters. In instances where the available traffic data is deemed no longer useable or where there are no existing traffic counts available, traffic ATC surveys will be commissioned. The surveys must be undertaken during 'neutral' operation periods avoiding holidays/local half-terms/abnormal conditions. Prior to commissioning traffic surveys, the location of any proposed surveys would be shared with the local highway authorities for review.
- 10.11.6 Site surveys will be undertaken to allow for a visual inspection of the potential construction vehicle routes, confirming findings of background data and identifying any unknown constraints or opportunities.

### **Assessment**

- 10.11.7 Further assessment of construction traffic impacts will be undertaken along the Proposed Construction Routes to establish road link sensitivity and identify where the flows generated by the Project increase baseline traffic and HGV flows by 30% or 10% in specifically sensitive areas. On links where these thresholds are exceeded, further environmental appraisal of traffic and transport effects on other road users will be undertaken. Potential cumulative effects on the local highway network from this Project and all other committed developments, including transport schemes, will be assessed, and taken into account of when generating the predicted future baseline vehicle flows. Relevant committed developments would be confirmed with local authorities.

## **10.12 References**

- Ref 10.1 Secretary of State (2013), Active Travel (Wales) Act 2013. Available at: <https://www.legislation.gov.uk/anaw/2013/7/contents> (Accessed 12th November 2024)

- Ref 10.2 Secretary of State (2015), Well-being of Future Generations (Wales) Act 2015. Available at: <https://www.legislation.gov.uk/anaw/2015/2/contents> (Accessed 12th November 2024)
- Ref 10.3 Secretary of State (2015), Planning (Wales) Act 2015. Available at: <https://www.legislation.gov.uk/anaw/2015/4/contents> (Accessed 12th November 2024)
- Ref 10.4 Secretary of State (2016), Environment (Wales) Act 2016. Available at: <https://www.legislation.gov.uk/anaw/2016/3/contents> (Accessed 12th November 2024)
- Ref 10.5 Secretary of State (2021), Environment Act 2021. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents> (Accessed 13th January 2025)
- Ref 10.6 Secretary of State (2008), Climate Change Act 2008. Available at: <https://www.legislation.gov.uk/ukpga/2008/27/contents> (Accessed 12th November 2024)
- Ref 10.7 Secretary of State (2008), Planning Act 2008. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents> (Accessed 12th November 2024)
- Ref 10.8 Secretary of State (2000), Transport Act 2000. Available at: <https://www.legislation.gov.uk/ukpga/2000/38/contents> (Accessed 3rd December 2024)
- Ref 10.9 Secretary of State (1980), Highways Act 1980. Available at: <https://www.legislation.gov.uk/ukpga/1980/66> (Accessed 3rd December 2024)
- Ref 10.10 Secretary of State (1991) New Roads and Street Works Act 1991 Available at: <https://www.legislation.gov.uk/ukpga/1991/22/contents> (Accessed 05 December 2024)
- Ref 10.11 Department of Energy and Climate Change (2024) Overarching National Policy Statement for Energy (EN-1). Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1/overarching-national-policy-statement-for-energy-en-1#generic-impacts> (Accessed 3rd December 2024)
- Ref 10.12 Ministry of Housing, Communities & Local Government (2024) National Planning Policy Framework Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> (Accessed 13th January 2025)
- Ref. 10.13 Welsh Government (2024). Planning Policy Wales. Available at: <https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf> (Accessed 13th January 2025)

- Ref 10.14 Powys Local Development Plan 2011-2026. Available at: <https://en.powys.gov.uk/article/4898/Adopted-LDP-2011---2026> (Accessed 12th November 2024)
- Ref 10.15 Mid Wales Joint Local Transport Plan 2015-2020. Available at: <https://www.ceredigion.gov.uk/your-council/strategies-plans-policies/mid-wales-joint-local-transport-plan/> (Accessed 12th November 2024)
- Ref 10.16 The Welsh Transport Strategy 2021. Available at: <https://www.gov.wales/llwybr-newydd-wales-transport-strategy-2021> (Accessed 12th November 2024)
- Ref 10.17 Shropshire Local Development Framework 2011-2026. Available at: <https://www.shropshire.gov.uk/planning-policy/local-planning/> (Accessed 12th November 2024)
- Ref 10.18 Draft Shropshire Local Plan 2016-2038. Available at: <https://www.shropshire.gov.uk/planning-policy/news/the-draft-shropshire-local-plan-2016-2038/> (Accessed 12th November 2024)
- Ref 10.19 Department for Communities and Local Government (DCLG), March 2015: Transport Evidence Bases in Plan Making and Decision Taking. Available at: <https://www.gov.uk/guidance/transport-evidence-bases-in-plan-making-and-decision-taking> (Accessed 12th November 2024)
- Ref 10.20 Standards for Highways (2020) The Design Manual for Roads and Bridges: LA 104 Environmental Assessment and Monitoring. Available at: <https://standardsforhighways.co.uk/dmrb/search/0f6e0b6a-d08e-4673-8691-cab564d4a60a> (Accessed 12th November 2024)
- Ref 10.21 Institution of Environmental Management and Assessment (2023) Guidelines for the Environmental Assessment of Road Traffic. Cambridgeshire, March: Institution of Environmental Management and Assessment (Accessed 12th November 2024)
- Ref 10.22 The Planning Policy Wales Technical Advice Note 18: Transport (2007). Available at <https://www.gov.wales/technical-advice-note-tan-18-transport> (Accessed 13th January 2025)
- Ref 10.23 Department for Transport, Road Traffic Statistics, Road Traffic Data, <https://roadtraffic.dft.gov.uk/#6/55.254/-6.053/basemap-regions-countpoints> (Accessed 3rd December 2024)
- Ref 10.24 Department for Transport (2024) TRA0307: Traffic distribution on all roads by time of day and day of the week in Great Britain. Available at: <https://www.gov.uk/government/statistical-data-sets/road-traffic-statistics-tra> (Accessed 3rd December 2024)
- Ref 10.25 Department for Transport (2024) Road Safety Data. Available at: Road Safety Data - [data.gov.uk](https://data.gov.uk) (Accessed 3rd December 2024)

- Ref 10.26 Sustrans (2024) <https://www.sustrans.org.uk/> (Accessed 3rd December 2024)
- Ref 10.27 Department for Transport, Trip End Model Presentation Program (TEMPro). Available at: <https://www.gov.uk/government/publications/tempo-downloads> (Accessed 3rd December 2024)

# 11 Noise and Vibration

## 11.1 Introduction

11.1.1 This Chapter provides the results of the preliminary assessment of the potential impacts and effects of the Project on Noise and Vibration, and describes:

- Legislation, Policy and Guidance.
- Consultation and Engagement.
- Assessment Methodology and Significance Criteria.
- Baseline Conditions.
- Preliminary Mitigation Measures.
- Preliminary Likely Significant Effects.
- Preliminary Mitigation and Enhancement Measures.
- Next Steps.

11.1.2 This chapter is also supported by the following figures and appendix:

- Figure 11.1: Noise and Vibration: Baseline Conditions, Study Areas and Identified Receptors.
- Appendix 11.1: Construction Noise and Vibration Base Data.

## 11.2 Legislation, Policy and Guidance

11.2.1 This section identifies the relevant legislation, national and local policy, and guidance which will inform the scope of the noise and vibration assessment.

### Legislation

**Environmental Protection Act 1990 (EPA), (particularly Section 79) (Ref. 11.1)**

11.2.2 The EPA sets out the definition of statutory nuisance due to noise; the duty on local authorities to investigate and abate noise nuisance; and defences against abatement through the employment of “best practicable means” to minimise noise (including vibration) for business premises. The EPA also sets out the means for a person affected by noise nuisance to seek abatement through the courts.

**The Planning Act 2008 (Ref. 11.2)**

11.2.3 The 2008 Act provides the consenting regime for granting planning and other consents for nationally significant infrastructure projects. These are large scale



developments, both onshore and offshore, such as new harbours, roads, railways, power stations and electricity transmission lines. The 2008 Act sets out the thresholds above which certain types of infrastructure development are considered to be nationally significant and in relation to which developers must seek development consent. Obtaining development consent under the 2008 Act involves a process where the developer consults on a proposed project before submitting an application. The application will then be examined by a single inspector or a panel of inspectors from the Planning Inspectorate, known as the Examining Authority. On completion of the examination, the Examining Authority will provide a recommendation report to the Secretary of State who will decide whether development consent should be granted.

### **The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref. 11.3)**

- 11.2.4 The aim of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 is to protect the environment by ensuring that a local planning authority when deciding whether to grant planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision-making process. The regulations set out a procedure for identifying those projects which should be subject to an Environmental Impact Assessment, and for assessing, consulting and coming to a decision on those projects which are likely to have significant environmental effects.
- 11.2.5 The aim of Environmental Impact Assessment is also to ensure that the public are given early and effective opportunities to participate in the decision-making procedures.

### **The Noise and Statutory Nuisance Act 1993 (Ref. 11.4)**

- 11.2.6 The Noise and Statutory Nuisance Act 1993 sets out an extension of powers to abate noise nuisance to a wider range of sources than covered by the EPA;

### **The Control of Pollution Act 1974 (particularly Sections 60 and 61) (CoPA) (Ref. 11.5)**

- 11.2.7 Sets out the option for Section 60 notice which local authorities can serve to impose requirements upon relevant construction activities with regard to the control of noise.

11.2.8 In addition, Section 61 sets out the mechanism by which the party that intends to carry out works to which Section 60 applies may apply to the local authority for consent and *'an application under this section shall contain particulars of –*

- The works, and method by which they are to be carried out; and
- The steps proposed to be taken to minimise noise resulting from the works.'

## Policy

### National Policy

#### Overarching National Policy Statement for Energy (EN-1) 2024 (Ref. 11.6)

11.2.9 EN-1 sets out the UK government's strategic framework for energy infrastructure development. The policy recognises that noise can have significant impacts on communities and aims to minimise and mitigate the significance of noise impacts associated with energy infrastructure projects and provides guidance to minimise and mitigate these impacts, ensuring a balance between energy development and the well-being of local communities.

11.2.10 Key aspects of the policy regarding noise pollution and decision making are presented in paragraph 5.12.17 which states 'The Secretary of State should not grant development consent unless they are satisfied that the proposals will meet the following aims, through the effective management and control of noise:

- *Avoid significant adverse impacts on health and quality of life from noise.*
- *Mitigate and minimise other adverse impacts on health and quality of life from noise.*
- *Where possible, contribute to improvements to health and quality of life through the effective management and control of noise'.*

#### National Policy Statement for Electricity Networks Infrastructure (EN-5) 2024 (Ref. 11.7)

11.2.11 NPS EN-5 sets out the Government's policy for nationally significant electricity transmission networks. Together with EN-1, it sets out the information that should be provided alongside any application for development consent to satisfy the requirements of the policy with regard to assessing noise and vibration impacts. Within EN-5 it notes *'For the assessment of noise from substations, standard methods of assessment and interpretation using the principles of the relevant British Standards are satisfactory'*

### **Noise Policy Statement for England (NPSE) (Ref. 11.8)**

- 11.2.12 The aims of the NPSE (Ref. 11.8) are to effectively manage and control environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development by avoiding significant adverse impacts, mitigating and minimising adverse impacts and contributing to the improvement of health and quality of life.
- 11.2.13 Paragraph 2.20 identifies ‘significant adverse’ and ‘adverse’ impacts in line with the aims of NPSE using established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organization:
- *‘No Observed Effect Level (NOEL): This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise*
  - *Lowest Observed Adverse Effect Level (LOAEL): This is the level above which adverse effects on health and quality of life can be detected. Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.*
  - *Significant Observed Adverse Effect Level (SOAEL). This is the level above which significant adverse effects on health and quality of life occur.’*
- 11.2.14 Paragraph 2.24 considers where an impact lies somewhere between LOAEL and SOAEL and states ‘that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur’.

### **National Planning Policy Framework (NPPF) 2024 (Ref. 11.9)**

- 11.2.15 Paragraph 198 notes that ‘Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:
- a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
  - b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason’;*

### **Planning Policy Wales (Edition 12) (Ref. 11.10)**

- 11.2.16 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales.
- 11.2.17 Relevant to the assessment of noise and vibration as a result of the Project Paragraph 6.7.24 considers ‘the potential impacts of noise pollution arising from existing development, be this commercial, industrial, transport related or cultural venues (such as music venues, theatres or arts centres), must be fully considered to ensure the effects on new development can be adequately controlled to safeguard amenity and any necessary measures and controls should be incorporated as part of the proposed new development. This will help to prevent the risk of restrictions or possible closure of existing premises or adverse impacts on transport infrastructure due to noise and other complaints from occupiers of new developments. It will be important that the most appropriate level of information is provided, and assessment undertaken’.

### **The Noise and Soundscape Plan 2023-2028 for Wales (2023 - 2028) (Ref. 11.11)**

- 11.2.18 The Noise and Soundscape Plan 2023-2028 for Wales is a comprehensive national strategy focused on managing and improving the overall sound environment as perceived by individuals within the region. It considers all forms of airborne sound that can be heard by the inhabitants of Wales. Additionally, the Welsh Government also includes the consideration of how airborne sound effects terrestrial wildlife, pets, and farmed animals, even though these are not technically part of the conventional definition of a soundscape. This approach aims to address and enhance the auditory experience and well-being of both people and animals in Wales.

### **Regional and Local Policy**

#### **Powys Local Development Plan (2011-2026) (Ref. 11.12)**

- 11.2.19 Policy DM13 – Design and Resources

*Development proposals must be able to demonstrate a good quality design and shall have regard to the qualities and amenity of the surrounding area, local infrastructure and resources.*

*Proposals will only be permitted where all of the following criteria, where relevant, are satisfied:*

*11. The amenities enjoyed by the occupants or users of nearby or proposed properties shall not be unacceptably affected by levels of noise, dust, air pollution, litter, odour, hours of operation, overlooking or any other planning matter.*

*4.2.84 Amenities. Development must respect the existence and amenities of neighbouring uses including approved development. These amenities include privacy (affected by overlooking), light (natural and man-made), noise (including that which arises from hours of operation), air quality (odour, fumes and dust), and pests (vermin and birds attracted by litter). Key determinants of impact are scale of development, proximity, proposed land use and the massing of buildings on site. Existing operations and installations should also be protected from incompatible sensitive development. For example, operations from mineral workings produce noise or dust, and whilst these effects are routinely mitigated, the operations would be prejudiced if noise sensitive uses were allowed nearby. The reference given to “nearby or proposed properties” in the policy means residential properties which lawfully exist or have planning permission.*

### **Shropshire Local Development Framework: Adopted Core Strategy (Ref. 11.13)**

- 11.2.20 A review of the Shropshire local development framework adopted core strategy indicates that there are no specific local policies with regard to environmental noise within the boundary of Shropshire County Council.

### **Guidance**

- 11.2.21 A summary of the technical guidance relevant to the assessment of noise and vibration is presented below:
- British Standard (BS) 5228-1:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites. Noise’ (BS 5228-1) (Ref. 11.14) - Provides guidance on the assessment and control of noise from construction sites, along with suggestions for the derivation of guideline levels for impact assessment.
  - BS 5228-2:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites. Vibration’ (BS 5228-2) (Ref. 11.15) - Provides guidance on the assessment and control of vibration from construction sites, along with suggestions for the derivation of guideline vibration levels.

- BS 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound (BS 4142) (Ref. 11.16) - The standard is used to rate and assess sound of an industrial nature including, but not limited to, assessing sound from proposed, new, modified or additional sources of industrial sound, and sound at proposed new dwellings. It contains guidance on the monitoring and assessment of industrial and commercial sound sources (including fixed installations comprising mechanical and electrical plant and equipment) affecting sensitive receptors.
- BS 7385-2:1993, 'Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration' (BS 7385-2) (Ref. 11.17) - Guidance on the levels of ground borne vibration which could have the potential to lead to the damage of building structures.
- Calculation of Road Traffic Noise (CRTN) 1988 (Ref. 11.18) - Describes procedures for calculating noise from road traffic.
- Design Manual for Roads and Bridges LA 111: Noise and Vibration (DMRB) (Ref. 11.19) - Guidance document provides methodology for the assessment of noise from road traffic, particularly from new and altered roads. Also provides modifications to CRTN and a methodology for the assessment of noise and vibration from construction traffic.
- Institute of Environmental Management and Assessment (IEMA), Guidelines for Environmental Noise Impact Assessment (Ref. 11.20) - Presents guidelines on how the assessment of noise effects should be presented within the Environmental Impact Assessment (EIA) process. The IEMA guidelines cover aspects such as; scoping, baseline, prediction and example definitions of significance criteria.
- ISO 9613-2:2024 Acoustics Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors (ISO 9613-2) (Ref. 11.21) - Defines a method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at distances from a source.
- National Planning Practice Guidance (NPPG) (Ref. 11.22) - Guidance relating to the processes and tools that can be used through the planning system in England. It includes guidance relating to how planning can manage potential noise effects in new development.
- Technical advice note (TAN) 11: Noise (Ref. 11.23) Technical Advice Note 11 (TAN 11) - Outlines overall expectations and criteria for developers, designers, consultants, and planning authorities concerning air pollution and sound environments. It is meant to be used alongside the range of planning policies and the latest standards and guidance applicable at the time of

conducting relevant assessments, ensuring that these align with the Welsh Government and local planning policies.

## **11.3 Consultation and Engagement**

- 11.3.1 Comments included in the EIA Scoping Opinion from the Planning Inspectorate (PINS) and subsequent responses to this EIA Scoping Opinion are outlined in Table 11-1 below.



Table 11-1 – Scoping Opinion from the Planning Inspectorate

ID	Matter	Inspectorate’s Comment	Project Response
3.7.1	Impacts from noise and vibration on commercial and industrial receptors – construction and operation	<p>The Scoping Report proposes to scope out commercial and industrial receptors, stating that these receptor types are of lower sensitivity to noise and vibration and are not referenced as noise-sensitive in NPS EN-1 or Technical Advice Note (TAN) 11: Noise. At this stage, it is not confirmed whether there are any commercial and industrial receptors within the noise and vibration study areas set out in paragraphs 12.2 to 12.5 of the Scoping Report and there is an absence of defined locations for the works and proposed structures. The Inspectorate considers there is insufficient information at present to scope this matter out from further assessment. Accordingly, the ES should include an assessment of impacts from noise and vibration on commercial and industrial receptors, or information to demonstrate agreement with the relevant consultation bodies and the absence of a LSE.</p>	<p>The Applicant agrees that certain commercial and industrial facilities can be sensitive to noise and vibration, specifically when office accommodation is associated with these types of premises.</p> <p>During the production of this PEIR consideration of noise sensitive receptors, including residential dwellings, schools/educational facilities and care/residential homes, has been given where identified in the OS Address Point data.</p> <p>Following into the Environmental Statement (ES), consultation with the relevant Local Authorities environmental health departments will be undertaken to identify and agree the potential for any other types of noise sensitive receptor along the route that would need consideration within the DCO.</p>



ID	Matter	Inspectorate's Comment	Project Response
3.7.2	Noise or vibration baseline surveys for ecological sites	Paragraph 12.19 of the Scoping Report states that no noise or vibration baseline surveys are proposed for any ecological sites and identifies this matter as scoped out. No supporting justification is provided. In the absence of defined locations for the works (including expected route(s) of construction traffic/ haul roads) and proposed structures, the Inspectorate is not in a position to scope this matter out. Accordingly, the ES should include an assessment of impacts from noise and vibration on ecological receptors, or information to demonstrate agreement with the relevant consultation bodies and the absence of a LSE.	The Applicant cannot foresee any reasonable likelihood of noise and vibration causing an LSE to any ecological receptors, whether in terms of tower construction and operation, or Preliminary Construction Routes for construction traffic. There is not at present a realistic expected pathway to impact for: bats; badger; otter; water vole; reptiles; GCN; hazel dormouse; invertebrates or any other protected or notable animal with a reasonable likelihood of being present in or around the corridor or in the vicinity of access routes. Should noise and vibration on ecological receptors be considered an issue as further evidence comes to light, then this issue will be covered in the ES and addressed in terms of ecological mitigation, but it is not considered that noise and vibration surveys are required for ecological purposes.
3.7.3	Vibration from traffic – construction	The Inspectorate notes some inconsistency between paragraphs 12.35, 12.38 and Table 12.1 of the Scoping Report, meaning it is unclear whether the Applicant proposes to scope in or out the effects of vibration from construction	There is currently no empirical method of predicting vibration from road vehicles as the resultant vibration is dependent upon imperfections in the road surface. It is envisaged the control of construction traffic generated vibration would be

ID	Matter	Inspectorate's Comment	Project Response
		<p>traffic. The Scoping Report indicates that occasional momentary noise and vibration can arise when heavy vehicles pass dwellings at very short separation distances. The Inspectorate considers that in the absence of details of the expected route(s) of construction traffic and the anticipated number of vehicle movements during the construction phase, there is insufficient information at present to scope this matter out from further assessment. Accordingly, the ES should include an assessment of impacts from vibration from construction traffic, or information to demonstrate agreement with the relevant consultation bodies and the absence of a LSE.</p>	<p>included within the Outline Construction and Environmental Management Plan (OCEMP) which could include road surface condition surveys and a maintenance regime and the Outline Construction Traffic Management Plan (OCTMP). Both of these control documents would be submitted and secured through the DCO application with a resultant maintenance regime and the construction traffic management plan. This approach will be discussed with relevant consultation bodies during the production of the ES.</p>
3.7.4	<p>Noise from OHLs and underground cables – operation and maintenance; Noise from</p>	<p>The Scoping Report states that the operation of underground cables would not produce any noise and that the predicted levels of noise from 132kV OHLs during worst-case conditions are very low (less than 20 dB(A)). The ES should explain how the design of the proposed OHL would ensure that exceedance of the predicted levels of noise would not occur and how this</p>	<p>The noise and vibration assessment contained within the ES will provide details on the design (through separating distance between OHL and receptor) of the overhead line element of the Project and technical data on the low noise levels produced by 132kV power lines.</p>

ID	Matter	Inspectorate's Comment	Project Response
	all sources – maintenance	would be secured. Subject to this, the Inspectorate agrees that operation of the OHL (including CSEC) and underground cables is unlikely to generate noise to a scale that would result in significant effects and agrees that this matter can be scoped out of the ES. In terms of maintenance, the Scoping Report states that noise from maintenance activities would be for very limited periods and unlikely to result in any significant effects. The Inspectorate agrees that noise from short term maintenance activities can be scoped out of the ES. However, the ES should consider the potential that more substantial activity is required as part of maintenance, eg replacement of components of the Proposed Development, which would be more akin to the impacts described during the construction stage. The ES should include an assessment of any LSE.	The Applicant notes and agrees to the response regarding short term maintenance activities and will review and include where necessary an assessment of OHL and substation maintenance activities within the ES.
3.7.5	Noise and vibration from traffic - operation	The Inspectorate agrees that noise and vibration from traffic generated by operation and maintenance of the Proposed Development is	The Applicant notes this response and agrees.

ID	Matter	Inspectorate's Comment	Project Response
	and maintenance	unlikely to result in significant effects. This matter can be scoped out.	
3.7.6	Vibration - operation and maintenance	<p>The Scoping Report proposes to scope out this matter on the basis that none of the infrastructure which forms part of the Proposed Development during operation is likely to generate anything other than negligible levels of vibration. The Scoping Report does not include any information to describe the vibration characteristics of the proposed collector substation during operation. In the absence of this information and without a defined location for this component (and therefore, confirmation of the distance to sensitive receptors), the Inspectorate is not in a position to scope this matter out. Accordingly, the ES should include an assessment of impacts from operational vibration from the collector substation, or information to demonstrate agreement with the relevant consultation bodies and the absence of a LSE. The Inspectorate is content that any vibration generated by maintenance of the</p>	<p>The proposed Grug y Mynydd Collector Substation is not expected to produce significant levels of vibration through the components proposed however this will be fully confirmed in the design works supporting the ES and in consultation with the LPA during that process. Any vibration generated by plant within the collector substation will be engineered out at the source through isolation from the ground using isolation mounts to avoid mechanical deterioration and failure of the proposed plant items and those adjacent; this is a key fundamental of the facility design.</p> <p>The ES will include specific details about potential operational vibration, distances to sensitive receptors, and any design features incorporated to mitigate vibration within the system. This approach will be agreed with the relevant environmental health departments within the ES production.</p>

ID	Matter	Inspectorate's Comment	Project Response
		<p>collector substation, or by operation and maintenance of the other Proposed Development components, is not likely to result in significant effects and can be scoped out.</p>	
3.7.7	Study areas and sensitive receptors	<p>The ES should confirm the final study areas for the assessment and justify how these have been selected, with reference to relevant industry guidance, the extent of the likely impacts and locations of sensitive receptors. Paragraph 12.15 of the Scoping Report states that the sensitive receptors will comprise residential dwellings, as well as schools and healthcare facilities (if relevant). As per the Inspectorate's comments above, commercial and industrial receptors should also be considered as receptors, as relevant. Reference is not made to other receptor types that may be sensitive to noise and vibration impacts, such as recreational, heritage or ecological receptors. The ES should assess noise and vibration impacts on recreational, heritage and ecological receptors where significant effects are likely to occur. Any such assessments should cross refer to findings</p>	<p>The ES will include details and figures presenting the final study areas, identified noise and vibration sensitive receptors and extent of the likely significant effects associated with the Project.</p> <p>The Applicant agrees that certain commercial and industrial facilities can be sensitive to noise and vibration, specifically when office accommodation is associated with these types of premises. During the production of the ES, consultation with the relevant Local Authorities environmental health departments would identify and agree any commercial and industrial noise sensitive receptors to be assessed and included within the ES.</p> <p>The assessment of noise and vibration impacts on recreational; heritage and ecological receptors will be undertaken and presented within the respective chapters of the ES.</p>

ID	Matter	Inspectorate's Comment	Project Response
		<p>of other relevant aspect chapters. Effort should be made to agree the study areas and sensitive receptors with relevant consultation bodies. The ES should include appropriate figures to illustrate the study areas and locations of sensitive receptors.</p>	
3.7.8	Assessment method	<p>Whilst the Inspectorate acknowledges that the methodology is proposed to follow relevant British Standards and guidance as listed in Scoping Report paragraphs 12.20 to 12.23, the Scoping Report does not explain how these methodologies will be applied and how significant effects will be determined. This should be addressed in the ES.</p>	<p>The ES will present a full methodology section outlining how relevant British Standards and guidance has been implemented within the noise and vibration assessment along with how they have been applied to determine if a significant effect has been deemed to have occurred. The approach will form part of the consultation with the relevant Local Authorities environmental health departments.</p>

## 11.4 Assessment Methodology and Significance Criteria

### Study Area

- 11.4.1 A number of specific study areas for the consideration of noise and vibration have been defined as part of the Noise and Vibration assessment, as presented on Figure 11.1 of the PEIR, Volume 2. These study areas are in accordance with appropriate guidance as set-out below and will be revised where necessary through consultation with relevant stakeholders.

### Construction Noise

- 11.4.2 For the assessment of construction noise, the study area would comprise the closest noise sensitive receptors (NSRs) within 300m from the proposed construction works associated with the Project. This is based on guidance contained within BS 5228-1 (Ref. 11.14).

### Construction Traffic

- 11.4.3 With regard to noise from construction traffic on the existing road network, DMRB LA 111 (Ref. 11.19) states, 'A construction traffic study area shall be defined to include a 50m width from the kerb line of public roads with the potential for an increase in baseline noise level (BNL) of 1 dB(A) or more as a result of the addition of construction traffic to existing traffic levels'.
- 11.4.4 As such, the study area for the construction traffic assessment will consider noise changes in the form of Basic Noise Levels (BNLs) along any road/route identified as experiencing temporary increases in road traffic noise level of 1dB(A) or greater as a result of the construction of the Project, in line with DMRB LA 111 (Ref. 11.19) requirements.

### Construction Vibration

- 11.4.5 The proposed study area for construction vibration comprises vibration sensitive receptors (VSRs) within 100m from the closest construction activity with the potential to generate vibration. This is based on guidance contained within BS 5228-2 (Ref. 11.15).

## **Operation**

- 11.4.6 The proposed study area for operational noise is limited to static facility noise which includes the Grug y Mynydd Collector Substation and the Switching Station near Lower Frankton.
- 11.4.7 The noise study area will consist of the closest NSRs within 1km to these facilities to enable assessment in accordance with BS 4142 (Ref. 11.16). Operational noise from the CSEC is not anticipated and is therefore excluded from the operational noise study area.
- 11.4.8 As previously stated, the issue of operational vibration would be controlled through design and agreed accordingly with the LPA during the production of the ES with evidence presented to the LPA where necessary to justify this standard approach.

## **Baseline Data Collection**

- 11.4.9 This section details the method of baseline data collection undertaken for this PEIR chapter.

## **Desk Study**

- 11.4.10 Baseline conditions for the Project area were established during a desk study referencing the following sources:
- Ordnance Survey (OS) Open Zoomstack (Ref. 11.24).
  - Aerial photography, Google Earth and Google Maps Street View.
  - Data Map Wales Environmental Noise Mapping 2022 (Ref. 11.25).
  - Defra's Extrinsic England Noise and Air Quality Viewer (Ref. 11.26).

## **Site Visits and Surveys**

- 11.4.11 No baseline noise surveys have been undertaken at the time of drafting this PEIR.
- 11.4.12 Existing background and ambient noise surveys will be undertaken as part of the ES covering the operational noise study areas, identified in the vicinity of the Grug y Mynydd Collector Substation and the Switching Station near Lower Frankton. For the assessment of construction noise a worst-case assumption has been made that existing ambient noise levels in the area would be low due to a lack of significant infrastructure and industry, and therefore would accord with the lowest threshold categories contained within BS 5228-2 (Ref. 11.15). As such no



noise surveys are proposed in general along the alignment of the OHL's for the construction noise and vibration assessment due to this worst-case assumption.

- 11.4.13 The locations and durations of the surveys will be agreed with the Environmental Health Departments of Powys County Council and Shropshire County Council.

## **Environmental Impact Assessment methodology**

### **Construction Noise**

- 11.4.14 The method of assessing and calculating construction noise impacts has been undertaken using the guidance contained in BS 5228-1 (Ref. 11.14).
- 11.4.15 Construction activities generate noise which can be experienced by nearby noise sensitive receptors. The noise levels experienced depend upon a number of variables, the most significant of which are:
- The noise generated by plant or equipment used on site, generally expressed as a sound power level (L<sub>w</sub>).
  - The periods of operation of the plant on the site, known as its 'on-time'.
  - The distance between the noise source and the receptor.
  - Operational times.
- 11.4.16 Predictions of the construction noise impacts from the Project have been undertaken in accordance with BS5228-1 (Ref. 11.14) within the construction noise study area, utilising the calculation methods and formulae contained within Annex F of BS5228-1 (Ref. 11.14).
- 11.4.17 Construction noise limit thresholds to determine any potential effects have been established using the ABC methodology described in Annex E of BS 5228-1 (Ref. 11.14). This methodology considers the existing ambient noise level, different times of day and whether the construction noise is generated on weekday or weekend to determine the appropriate construction noise limit threshold. The construction noise limit thresholds for the different ambient noise level, different times of day and whether the construction noise is generated on weekday or weekend is presented in Table 11.2.

Table 11-2 – Construction Noise Threshold Limit Levels for Noise sensitive Receptors

Assessment Category and Threshold Value Period	Threshold Value (dB)		
	Category A	Category B	Category C
Weekdays 7:00am to 7:00pm, and Saturdays 7:00am to 1:00pm	65dB LAeq, T	70dB LAeq, T	75dB LAeq, T
Weekdays 7:00pm to 11:00pm, Saturdays 1:00pm to 11:00pm, and Sundays 7:00am to 11:00pm	55dB LAeq, T	60dB LAeq, T	65dB LAeq, T
Night-time 11:00pm to 7:00am	45dB LAeq, T	50dB LAeq, T	55dB LAeq, T
<p>Notes:</p> <p>A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.</p> <p>B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.</p> <p>C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.</p>			

- 11.4.18 The predicted construction noise levels at NSRs have been compared against the lowest noise thresholds (Category A) as a result of low-level baseline assumptions in rural settings.
- 11.4.19 The Category A construction noise thresholds represent the lowest assessment criteria and are proposed to be used throughout the Project as a worst-case, unless there is a justification for a higher threshold to be set at specific locations. If this justification is required, it would be agreed with the Environmental Health Departments of Powys County Council and Shropshire County Council.
- 11.4.20 The Lowest Observed Adverse Effect Level (LOAEL) and the Significant Observed Adverse Effect Level (SOAEL) for construction noise would be set in accordance with Table 11.3.

Table 11-3 – Construction Noise LOAELs and SOAELs at Noise Sensitive Receptors

Time Period	LOAEL	SOAEL
Weekdays 7:00am to 7:00pm, and Saturdays 7:00am to 1:00pm	Baseline noise levels L <sub>Aeq, T</sub>	75dB L <sub>Aeq, T</sub> <sup>(1) (2)</sup>
Weekdays 7:00pm to 11:00pm, Saturdays 1:00pm to 11:00pm, and Sundays 7:00am to 11:00pm	Baseline noise levels L <sub>Aeq, T</sub>	65dB L <sub>Aeq, T</sub> <sup>(1) (2)</sup>
Night-time 11:00pm to 7:00am	Baseline noise levels L <sub>Aeq, T</sub>	55dB L <sub>Aeq, T</sub> <sup>(1) (2)</sup>
<p>Notes:</p> <p>(1) Based upon lowest eligibility for noise insulation as defined in Table E.2 of BS5228-1:2009 (+A1 2014) (Ref. 11.14). Additional note to noise insulation; in noisy environments an offer of insulation is made where a noise level 5 dB or more above the existing pre-construction ambient noise level for the corresponding times of day is measured; hence the threshold for SOAEL is set relative to the higher of these values and as such could increase in noisy environments with justification.</p> <p>(2) If the ambient noise level exceeds the SOAEL values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total L<sub>Aeq, T</sub> noise level for the period increases by more than 3 dB due to site noise.</p>		

11.4.21 Based on the criteria presented in Table 11.3, a semantic magnitude of impact scale has been defined relative to both environment, and health and quality of life impacts. The following impact magnitudes are applicable:

- Negligible: Below LOAEL.
- Minor: Above or equal to LOAEL but below appropriate BS 5228-1(Ref. 11.14) Category.
- Moderate: Above or equal to appropriate BS 5228-1 Category but below an SOAEL.
- Major: Above or equal to an SOAEL.

### Construction Traffic

11.4.22 Noise from construction traffic on the public highway would be calculated in accordance with CRTN (Ref. 11.18) and assessed against the criteria detailed in DMRB (Ref. 11.19).

11.4.23 The Lowest Observed Adverse Effect Level (LOAEL) and the Significant Observed Adverse Effect Level (SOAEL) would be established in accordance with DMRB (Ref. 11.19) as presented in Table 11.4.

*Table 11-4 – Construction Traffic Noise LOAELs and SOAELs*

Time Period	Adverse Effect Level	L <sub>night</sub> , Outside Noise Level (dB)	LA10 Noise Level (dB)
Daytime	LOAEL	n/a	55dB LA10, 18hr facade
	SOAEL	n/a	68dB LA10, 18hr facade
Night-time	LOAEL	40dB L <sub>night</sub> , outside (free field)	n/a
	SOAEL	55dB L <sub>night</sub> , outside (free field)	n/a

11.4.24 The Baseline noise levels from roads within the construction traffic study area would be calculated in accordance with CRTN (Ref. 11.18) for the ‘do-nothing’ (without the Project) and ‘do something’ (with the Project) scenarios in the construction year. The calculated construction traffic noise level values would be compared against the existing road traffic noise levels to determine the magnitude of the impact in line with the semantic scale below.

- Negligible: Less than 1.0dB change in road traffic noise.
- Minor: Greater than or equal to a 1.0dB, but less than a 3.0dB, change in road traffic noise.
- Moderate: Greater than or equal to a 3.0dB, but less than a 5.0dB, change in road traffic noise.
- Major: Greater than or equal to a 5.0dB change in road traffic noise.

### **Construction Vibration**

11.4.25 Construction vibration levels would be calculated and assessed in accordance with the methodologies described in BS5228-2 (Ref. 11.15) relating to piling and ground stabilisation. No vibration baseline study is proposed within the ES as construction vibration levels would be compared against fixed level assessment criteria detailed in BS5228-2 (Ref. 11.15).

11.4.26 Threshold vibration levels from piling and ground stabilisation, including applicable LOAEL and SOAEL values, are presented in Table 11.5.

Table 11-5 – Construction Vibration Effect Magnitudes at Identified Receptors

Vibration Level mm/s PPV (Peak Particle Velocity)	Effect	Observed Adverse Effect Level
<0.3mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	n/a
≥0.3 to <1.0mm/s	Vibration might be perceptible in residential environments.	
≥1.0 to <10mm/s	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.	LOAEL
≥10mm/s	Vibration is likely to be intolerable for any more than a brief exposure to this level in most building environments.	SOAEL

11.4.27 Based on the above a semantic magnitude of impact scale has been defined relative to environment, and health and quality of life impacts. As such, the following impact magnitudes are applicable with regard to piling and ground stabilisation ground-borne vibration:

- Negligible: <0.3mm/s.
- Minor: ≥0.3mm/s and <1.0mm/s.
- Moderate: ≥1.0mm/s and <10.0mm/s.
- Major: ≥10.0mm/s.

### Operation

11.4.28 BS 4142 (Ref. 11.16) provides a methodology and criteria for assessing new or existing industrial sound sources such as that proposed in the Grug y Mynydd

Collector Substation and the Switching Station near Lower Frankton. This is achieved by comparing the operational sound (rating level) at the location of a sensitive receptor, with the background sound levels that are currently experienced without the Project.

- 11.4.29 The rating level is defined as the specific sound level with the addition of character corrections to consider certain acoustic features that could potentially increase the significance of impact. A penalty can be applied to the specific sound level if a tone, impulsive or other characteristic occurs or is expected to be present for new or modified sound sources, with the methodology for this defined in the standard.
- 11.4.30 The assessment methodology outlined in BS 4142 (Ref. 11.16) indicates that the greater the difference of the rating level in comparison with the background sound level ( $L_{A90}$ ) the greater the significance of the impact, as set out in Table 11.6.

Table 11-6 – Operation Noise Magnitudes at Identified Receptors

Impact	Observed Adverse Effect Level
$\leq L_{A90} -0\text{dB}$ Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.	n/a
$> L_{A90} -0\text{dB}$ and $\leq L_{A90} +5\text{dB}$ The lower the rating level is, relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact.	LOAEL
$> L_{A90} +5\text{dB}$ and $\leq L_{A90} +10\text{dB}$ A difference of around + 5 dB is likely to be an indication of an adverse impact, depending on the context.	
$> L_{A90} +10\text{dB}$ A difference of +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.	SOAEL

- 11.4.31 Based on Table 11.6, a semantic magnitude of impact scale has been defined relative to environment, and health and quality of life impacts. As such, the

following impact magnitudes are applicable with regard to operational static plant noise:

- Negligible: < LA90 0dB.
- Minor: > LA90 0dB and ≤ LA90 +5dB.
- Moderate: > LA90 +5dB and ≤ LA90 +10dB.
- Major: > LA90 +10dB.

## **Significance Criteria**

### **Construction Noise and Construction Traffic**

- 11.4.32 Significant effects for construction are defined in accordance with DMRB LA 111 (Ref. 11.19) on the following grounds.

*‘Construction noise and construction traffic noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:*

- a) 10 or more days or nights in any 15 consecutive days or nights; or,*
- b) a total number of days exceeding 40 in any 6 consecutive months.’*

### **Construction Vibration**

- 11.4.33 Significant effects are defined in accordance with DMRB LA 111 (Ref. 11.19) on the following grounds:

*‘Construction vibration shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:*

- a) 10 or more days or nights in any 15 consecutive days or nights;*
- b) a total number of days exceeding 40 in any 6 consecutive months.’*

### **Operation**

- 11.4.34 With regard to significance from static plant, BS 4142 (Ref. 11.16) provides the following guidance:

*‘The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.’*

*'Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following:*

- *The absolute level of sound.*
- *The character and level of the residual sound compared to the character and level of the specific sound.*
- *The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.'*

11.4.35 Based upon the guidance contained within BS4142 (Ref. 11.16), a significant effect will be deemed to have occurred for impacts of a moderate or greater magnitude taking into account the context of the sound generated by the Project.

### **Assumptions and Limitations**

11.4.36 The following limitations and assumptions have been identified that will form the basis of the ES assessment:

#### **Construction**

11.4.37 The construction information used for the assessment of construction noise and vibration is subject to change as the EIA process progresses. The assessment has been based upon the core working hours and days for construction as presented within Chapter 2 and does not account for any construction works outside of these core working hours. If construction works outside of core working hours are deemed to be necessary as the Project design progresses, these construction works will be fully assessed with the ES.

11.4.38 Currently, there is no detailed construction programme for the Project, and as such the construction noise and vibration assessment has been undertaken based upon the following typical activities which would occur during construction.

- Site Clearance.
- Access Road Construction.
- Compound Areas.
- Tower, Substation and Switching Station Foundations works.
- Tower Erection.
- Under Ground Cable Works.
- Scaffold Works.
- OHL Stringing.
- Collector Substation and Switching Station Construction.



- 11.4.39 Construction plant data and associated noise data assumed for each of the above activities is provided in Appendix 11.1: Construction Noise and Vibration Data of the PEIR, Volume 3. These construction works have been assumed to occur within the draft order limits and at the indicative locations for the construction compounds, tower locations, collector substation and switching station construction areas as presented on Figure 11.1 of the PEIR, Volume 2.
- Assumptions have been made regarding the condition of the roads (including on site haul roads) when assessing the impact of construction traffic related vibration. Vibration is caused by irregularities in the road surface and for the purposes of the scope, there is an assumption that the roads used by construction traffic would be free from significant irregularities in close proximity to any vibration sensitive receptors, in excess of 20mm in the surface profile. Irregularities above which present the potential to produce perceptible vibration in buildings located within close proximity to the carriageway (TRL RR246 Traffic Induced Vibrations in Buildings (1990) (Ref. 11.27).
  - The assumption is made that, due to the rural setting of the Project, baseline noise monitoring will not be required for the construction phase with the assumption that the lowest threshold criteria from BS5228-1 (Ref. 11.14) would apply for construction noise unless local factors suggest otherwise. This ensures a robust evaluation, as limits below the lowest threshold will not be set, presenting a worst-case assessment regarding the potential for significant effects.
  - A review of the indicative construction plant compliment indicates that sheet piling may be required during the foundations works and ground compaction/ stabilisation works may require ground compaction/ stabilisation works during the construction on the temporary haul routes. These works have formed the basis of the construction vibration assessment. As the Projects design progresses and ground investigations are undertaken the requirement for any further activities which may generate vibration will be fully assessed and considered with the ES
  - At this stage of the Project design there is limited detail on construction traffic flows available, therefore the assessment of construction vehicle generated noise on Preliminary Construction Routes has not been possible and will be assessed in the ES.

### Operation

- 11.4.40 Based upon advice provided by National Grids technical noise advisors, and studies undertaken considering the issue of Corona noise, an assessment of operational OHL noise has not been undertaken within this assessment.

Currently National Grid advise that operational audible noise from electricity OHLs occurs at a conductor surface voltage gradient or electrical stress level of approximately 17 to 20 kilovolts per centimetre (kV/cm). The electrical stresses on a 132kV circuit are typically in the range 5 to 6kV/cm, which is such a low level that they would virtually never produce noise. Furthermore, empirical measurement studies undertaken by RPS (EirGrid Evidence Based Environmental Studies Study 8: Noise, May 2016) concluded that *'The results from the 110kV and 220kV overhead line surveys present strong evidence that these lines are not likely to result in a significant noise impact in their vicinity. On this basis, the planning of 110kV and 220kV lines should not be significantly constrained on the basis of potential noise issues.'* The document was produced with the intention *'for use by professionals working in the area if environmental impact assessment for transmission lines'* and was *"intended to inform best practice in future planning of this infrastructure.'* As the Project includes a 132kV OHL it is reasonable to conclude, in conjunction with the advice of NG, that this facet of the assessment can be scoped out, with no assessment being required to be undertaken of OHL generated noise. This approach is in agreement with the scoping response received from the Planning Inspectorate; and

- 11.4.41 The assessment does not account for any noise and vibration impacts from the Cable Sealing End Compound, which is situated at the transition point between the Underground Cable (UGC) and the OHL section of the Project as no noise generating equipment would be located within the compound. Furthermore, there are no noise-sensitive receptors identified within the 1km study area around the compound, with the closest one being Pen-y-Ffridd (isolated dwelling) approximately 1300m to the south of the planned site. This aspect of the Project has been excluded from the chapter.

## 11.5 Baseline Conditions

### Existing Baseline

#### Route Wide Baseline Noise and Vibration Conditions

- 11.5.1 The Project's draft Order Limits crosses over or is close to a number of main transport routes, including the following national roads, regional roads and rail lines:
- A Roads (main trunk roads): A458, A495, A490, A483 and A5.
  - B Roads (lower traffic densities than the main trunk roads): B4382, B4389, B4398, B4393, B4396, B500.
  - The Shrewsbury to Chester rail line.

- 11.5.2 Noise Important Areas (NIAs) are determined via strategic noise maps and highlight the residential areas experiencing the highest 1% of noise levels from road and rail sources in England.
- 11.5.3 Priority Areas in Wales are determined via strategic noise maps and are classified as areas where people's homes are exposed to a day-evening-night noise level exceeding 73dB. Within identified Priority areas, the situation where noise levels at all residential properties has been calculated within 7.5m of the road or rail noise source are referred to as Proximity Areas.
- 11.5.4 Within the noise and vibration study area, no NIAs or Priority areas have been identified and one Proximity Area has been identified, located along the A483 (ID: 393, Asset owner: Welsh Government) and presented on Figure 11.1 of the PEIR, Volume 2.
- 11.5.5 The Project's draft Order Limits encompass a predominantly rural landscape with isolated noise sensitive receptors but do pass just to the south of the town of Llansantffraidd-ym-Mechain.
- 11.5.6 Within the noise and vibration study area the following NSRs have been identified:
- 642 residential dwellings.
  - Vyrnwy Nursing Home.
  - Llansantffraidd Primary School.
- 11.5.7 The noise environment is expected to vary throughout the noise and vibration study area due to its geographic size. For instance, ambient noise levels are expected to be higher near noise sources such as roads and railways, as well as in urban areas. Conversely, areas further away from road and rail sources in rural areas, are expected to have lower ambient and background noise levels. Figure 11.1 of the PEIR, Volume 2 presents daytime noise level contours from existing road sources taken from environmental noise mapping conducted by the Welsh Government and Defra, illustrating the variation in existing noise levels across the noise and vibration study area. Generally, areas outside the contours (i.e., not shaded) are considered to have low ambient and background noise levels.
- 11.5.8 From the desk top review, it is assumed that the current levels of vibration within the study area are minimal compared to the construction vibration threshold values. This is expected to be the case even in proximity to railways or heavily trafficked main roads.

### **Baseline Noise Conditions in the Vicinity of the Grug y Mynydd Collector Substation**

- 11.5.9 The area surrounding the Grug y Mynydd Collector Substation is rural in nature with minimal sources of noise identified. The nearest noise source is a minor road which runs approximately 850m south of the proposed Grug y Mynydd Collector Substation.
- 11.5.10 An examination of the environmental noise mapping conducted by the Welsh Government, as presented in Figure 11.1 of the PEIR, Volume 2, indicates that noise levels within the vicinity of the Grug y Mynydd Collector Substation are predicted to be below 30dB(A).
- 11.5.11 There are three noise sensitive receptors identified within the study area which are as follows:
- Bryngwyn (isolated dwelling) approximately 25m south of the indicative proposed site location (Refer to Figure 11.1 of the PEIR, Volume 2).
  - Gwaenydd (isolated dwelling) approximately 700m west of the indicative proposed site location (Refer to Figure 11.1 of the PEIR, Volume 2).
  - Carreg-y-Big (isolated dwelling) approximately 850m northwest of the indicative proposed site location (Refer to Figure 11.1 of the PEIR, Volume 2).

### **Baseline Noise Conditions in the Vicinity of the Cors y Carreg Cable Sealing End Compound (CSEC)**

- 11.5.12 The area surrounding the Cors y Carreg CSEC is rural in nature with minimal sources of noise. The nearest noise source is a minor road which runs approximately 900m south of the proposed site.
- 11.5.13 An examination of the environmental noise mapping conducted by the Welsh Government, as presented in Figure 11.1 of the PEIR, Volume 2, indicates that noise levels within the study area are predicted to be below 30dB(A).
- 11.5.14 There are zero noise sensitive receptors identified within the 1km study area surrounding the Cors y Carreg CSEC, with the nearest NSR identified as Pen-y-Ffridd (isolated dwelling) approximately 1300m south of the proposed site.

### **Baseline Noise Conditions in Vicinity of the Switching Station near Lower Frankton**

- 11.5.15 The area surrounding the indicative proposed site location for Switching Station near Lower Frankton (Refer to Figure 11.1 of the PEIR, Volume 2) is rural in

nature with minimal sources of noise. The nearest noise source is the A495 which runs approximately 400m to the north.

- 11.5.16 An examination of the environmental noise mapping conducted by Defra, as presented in Figure 11.1 of the PEIR, Volume 2, indicates that noise levels within the study area are predicted to be below 30dB(A).
- 11.5.17 There are nine noise sensitive receptors identified within the study area which are as follows:
- Evenall Farm approximately 320m from the proposed site.
  - Maestermyn (isolated dwelling) approximately 600m from the proposed site.
  - Narrow Boat Inn (isolated dwelling) approximately 750m from the proposed site.
  - Maestermyn Marina (isolated dwelling) approximately 820m from the proposed site.
  - Kinsale Farm approximately 850m from the proposed site.
  - No 1 Berghill Cottages approximately 880m from the proposed site.
  - Berghill House (isolated dwelling) approximately 880m from the proposed site.
  - No 2 Berghill Cottage approximately 890m from the proposed site.
  - Berghill Farm approximately 900m from the proposed site.

### **Future Baseline**

- 11.5.18 In the absence of the Project, it is expected that road traffic noise will steadily increase due to the natural growth in road traffic flows over time.
- 11.5.19 With regards to the modelling of traffic, the future baseline will also take into account traffic growth as a result of committed new development within the area. Ongoing engagement with local planning authorities will also identify any potential developments which could also contribute to increases in future baseline ambient noise levels and these would be accounted for in the assessments where appropriate.
- 11.5.20 It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the Project. The potential for cumulative effects will be considered later in the EIA process according to the approach outlined within Chapter 20: Cumulative Effects.

## 11.6 Preliminary Mitigation Measures

- 11.6.1 The Applicant would include embedded mitigation measures into the design of the Project to avoid or reduce significant effects that may otherwise be experienced during the construction and operation phase of the Project.
- 11.6.2 Embedded mitigation measures are those that are intrinsic to and built into the design of the Project, those relevant to Noise and Vibration include:
- The route alignment and siting have been designed as far as practicable to avoid sensitive noise and vibration receptors. This included avoiding settlements and residential areas, passing predominantly through rural areas, with the majority of nearby NSRs being isolated dwellings.
  - Static Plant – noise control measures: The proposed new static plant would include any required noise mitigation measures by design. This may include, plant selection, siting, screening, and enclosures, as appropriate.
  - Static Plant – vibration control measures: Plant with moving parts, such as cooling equipment and transformers, would be expected to be mounted on suitable anti-vibration mounts to protect the plant from potential vibration deterioration and damage, which will also attenuate vibration transmission into the environment.
- 11.6.3 To manage noise and vibration during the construction of the Project, a OCEMP accompanying the ES will outline various Best Practice Means (BPM) mitigation measures related to noise and vibration control. These measures will encompass a wide range of actions, including but not limited to:
- Suitably experienced Environmental Manager(s) will be appointed for the duration of the construction phase. In addition, a qualified and experienced Environmental Clerk of Works will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls in the OCEMP.
  - Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project. Topics will include but not be limited to:
    - Location and protection of sensitive environmental sites and features.
    - Adherence to protected environmental areas around sensitive features.
    - Working hours, and noise and vibration reduction measures.
    - Agreed traffic routes, access points, etc.

- Any activity carried out or equipment located within a construction compound that may produce a noticeable noise will be located as far as practicable away from sensitive receptors.
- Plant and vehicles will conform to relevant applicable standards for the vehicle type. Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so.
- Materials and equipment will not be moved or handled unnecessarily.
- Contractors will be required to follow good construction practices (referred to as best practicable means (BPM)) as outlined in BS 5228-1 (Ref. 11.14) and BS 5228-2 (Ref. 11.15) to control noise and vibration respectively; and
- Best Practicable Means measures will be identified within the OCEMP and may include housing continuous noisy plant in acoustic enclosures, siting semi-static equipment as far as reasonably practicable away from occupied buildings and fitting equipment with suitable enclosures or screening.

11.6.4 In certain instances where construction noise or vibration may cause a significant adverse effect at nearby NSRs, applications for prior consent under Section 61 of the Control of Pollution Act 1974 (Ref. 11.5) may be submitted to the relevant local authority to ensure that BPM are applied to control noise and vibration. If required, this will be clearly stated in the ES and OCEMP.

## 11.7 Preliminary Likely Significant Effects

11.7.1 This section outlines the preliminary assessment of impacts for the Project during the construction and operational phases as outlined previously.

### Construction Noise

11.7.2 Construction plant data and associated noise data is provided in Appendix 11.1: Construction Noise and Vibration Data of the PEIR, Volume 3 along with an initial assessment of construction noise, without the inclusion of specific BPM mitigation measures.

11.7.3 The construction noise assessment undertaken within the scope of this PEIR is based upon the information available at the time and has calculated construction noise levels at a total of 654 NSRs located along the route as identified on Figure 11.1 of the PEIR, Volume 2. The potential numbers of significant adverse effects presented in Table 11.7 below is concluded at this point in the absence of any



mitigation measures, during working hours for construction time periods identified in Table 11.2.

Table 11-7 – Preliminary Likely Significant Effects from Construction Noise

Activity	Weekday daytime number of potential significant effects	Saturday daytime number of potential significant effects		Weekday daytime number of potential significant effects
	7:00am to 7:00pm	7:00am to 1:00pm	1:00pm to 11:00pm	7:00am to 11:00pm
Site Clearance	0 (Zero)	0 (Zero)	7	7
Access Road Construction	68	68	206	206
Compound Areas	3	3	16	16
Tower, Substation and Switching Station Foundations works	5	5	458	458
Tower Erection	0 (Zero)	0 (Zero)	165	165
Under Ground Cable Works	0 (Zero)	0 (Zero)	5	5
Scaffold Works	0 (Zero)	0 (Zero)	6	6
OHL Stringing	0 (Zero)	0 (Zero)	8	8
Collector Substation and Switching Station Construction	1	1	3	3

- 11.7.4 As can be seen from the conclusions presented in Table 11.7 and the information in Appendix 11.1 of the PEIR, Volume 3, the preliminary, unmitigated calculations conclude a potential for significant noise effects during both the weekday and weekend periods, with significantly more exceedances during the weekend periods as a result of a reduction in limit.



- 11.7.5 Generally, the activities demonstrating the potential for the most adverse effects remain consistent through the assessment periods and relate to the transient activities associated with Site Clearance, Access Road Construction, Tower/ Substation and Switching Station Foundations works, Tower Erection, Under Ground Cable Works Scaffold Works, OHL Stringing. These are predominantly more temporary and transient activities and as such will need the consideration of as yet to be defined programme issue to conclude the potential for these to be classified as significant effects. The programme will be developed and advance through the process of the EIA.
- 11.7.6 The more static activities such as the construction and operation of the Compound Areas and the construction of the Collector Substation and Switching Station, and whilst the programme is of relevance there are not transient activities.
- 11.7.7 The preliminary calculations also identify a prominence of potential significant effects occurring during the weekend period (Saturday afternoon and Sunday) where guidance dictates lower thresholds and as such mitigation during these periods would be paramount, including the potential for stand off distances, and restrictions to certain activities and plant items where mitigation investigations through the EIA process does not rectify the issue. This will be considered and developed through consultation with relevant parties as part of the EIA process.
- 11.7.8 Broad consideration of mitigation for construction activities could provide up to 20dB of attenuation to specific activities but is more likely to be in the region of 10dB once implemented. With this in mind application of the effect of mitigation and BPM is likely to reduce the number of these significant effects considerably, with more specific and comprehensive mitigation, including where necessary a change in methodology, implemented where necessary.
- 11.7.9 The issue of the potential for significant construction noise effects and the necessary mitigation will be developed through the EIA process in conjunction with both the LPA and the construction team to the project to allow significant effects to be concluded relative to programme and other considerations, and mitigation implemented through BPM and other mechanisms including the OCEMP.

### **Construction Vibration**

- 11.7.10 Construction plant data and associated vibration data is provided in Appendix 11.1: Construction Noise and Vibration Data of the PEIR, Volume 3, along with an

initial assessment of construction vibration, without specific BPM mitigation measures.

- 11.7.11 The construction vibration assessment undertaken within the scope of this PEIR, based upon the information available at the time, has calculated 19 VSRs where there is a potential for significant adverse effects out of the 654 identified VSR locations (as identified on Figure 11.1 of the PEIR, Volume 2) along the route. This is concluded at this point in the absence of specific BPM mitigation measures, during daytime periods as follows:
- **Sheet Piling Activities (during Foundation Works)** – Zero VSR's are predicted to experience any vibration impacts, without the inclusion of any mitigation measures, of greater than **Minor** and as such would not experience any potential for significant adverse effects.
  - **Ground Compaction Activities (during Haul Road Construction)** – 19 VSR's are predicted to experience vibration impacts, without the inclusion of any mitigation measures, of **Moderate** or greater and as such would experience the potential for significant adverse effects.
- 11.7.12 As can be seen from the conclusions presented above and the information in Appendix 11.1 of the PEIR, Volume 3, the preliminary calculations conclude a potential for significant vibration effects during Ground Compaction Activities.
- 11.7.13 These activities resulting in these potential significant effects occur during the Access Road Construction as a result of the proximity of the works to the VSR's, approaching as close as 25m. However, these activities would not be expected to occur for a significant duration of time (less than ten days in any 15 consecutive days) at any one location and as such would not be expected to present a significant adverse effect. This will be considered further in the ES.

## Operation

### Grug y Mynydd Collector Substation / Switching Station near Lower Frankton

- 11.7.14 At the current stage of the Project design, detailed layouts of the proposed static facilities and locations of any noise and/or vibration emitting plant have not been finalised and as such it is not possible to quantify the potential noise, and vibration impacts and any resultant significant effect. Mitigation options and design considerations would be considered further with emerging information as part of the ES.

## **11.8 Preliminary Mitigation and Enhancement Measures**

- 11.8.1 This section outlines the preliminary avoidance, mitigation and compensation measures which are likely to be required to address the potential impacts presented in Section 11.7. It is noted that as further information emerges through the EIA process these measures would be revisited and reconsidered.

### **Construction Noise**

- 11.8.2 Specific mitigation measures based on BPM to control construction noise would involve using different equipment or techniques, plant silencers, and barriers like acoustic screens or earth bunds, tailored to the specific construction activity.
- 11.8.3 The exact mitigation strategies will be identified through additional assessments detailed in the ES.
- 11.8.4 These updated BPM measures will be outlined in the OCEMP supporting the ES and secured through the application for development consent. In all instances, by implementing specific BPM, it is anticipated that any adverse effects from construction noise would be prevented and mitigated to a minimum, with no significant effects expected to occur due to construction noise.

### **Construction Vibration**

- 11.8.5 Specific mitigation measures based on BPM to control construction vibration would involve investigating re alignment of the access and Preliminary Construction Routes and using different non vibratory techniques where feasible, tailored to the specific construction activity.
- 11.8.6 The exact mitigation strategies will be identified through additional assessments detailed in the ES. These updated BPM measures will be outlined in the OCEMP supporting the ES and secured through the Development Consent Order if granted.
- 11.8.7 In all instances, by implementing specific BPM, the intention would be for any adverse effects from construction vibration to be prevented and mitigated to a minimum, aiming for no significant effects to occur due to construction vibration.

## Operation

- 11.8.8 Operational mitigation measures for the Project would be proportionate and may include one or more of the following measures:
- **Engineering** – containment of noise generated.
  - **Layout** – adequate distance between source and noise-sensitive receptors.
  - **Incorporating good design** – to minimise noise transmission through landscaping and screening by natural or purpose-built barriers including topographical changes.
  - **Administration** – specifying appropriate noise criteria or times of use.
- 11.8.9 The exact mitigation strategies will be identified through additional assessments detailed in the ES. By implementing specific mitigation measures, it is anticipated that any adverse effects from operational noise and vibration would be prevented and mitigated to a minimum.

## 11.9 Next Steps

- 11.9.1 The noise and vibration assessment will undergo further development through the EIA process, implementing Project design updates, statutory consultation requirements, and stakeholder engagement. It is anticipated that the following aspects will be updated and revised accordingly:
- Construction noise and vibration assessments will be refined and updated to reflect the proposed construction programme and any design changes.
  - Construction traffic assessment will be updated to incorporate baseline traffic flows and encapsulate specific Project construction flows for the construction period.
  - A full assessment will be undertaken for any static/fixed plant that has the potential to generate noise in accordance with BS4142 (Ref. 11.16) as the Project design evolves.

## Consultation

- 11.9.2 Consultation with Powys County Council and Shropshire Council environmental health departments will be undertaken through the EIA process to agree the scope of assessment, assessment and prediction methodologies and the approach to baseline surveys.

## Surveys

- 11.9.3 Baseline noise surveys are necessary to determine existing noise levels at NSR's in the vicinity of the Grug y Mynydd Collector Substation and the Switching Station near Lower Frankton. The survey data, along with surveyor observations, will form the basis of the operational noise assessments for static/fixed plant facilities. Monitoring methods will be consulted on with relevant council officers, concluded based on factors including land access permissions, representativeness and equipment safety. This will be concluded in discussion with the local planning authorities during the EIA process.
- 11.9.4 Baseline noise surveys would be conducted in accordance with the methodology described in BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures (BS 7445) (Ref. 11.28).
- 11.9.5 The measurement periods and durations would be consulted on with the local planning authorities, but would be delivered utilising methods including:
- Unattended long-term surveys for up to 7 days.
  - Attended surveys where equipment safety concerns arise for key weekday and weekend time periods.
- 11.9.6 Unattended surveys would be subject to the safety of equipment and land access provisions.
- 11.9.7 Weather conditions would be monitored concurrently with noise during the survey through the use of long-term meteorological stations linked to sound level meter equipment, along with subjective weather observations using handheld anemometers and subjective description.

## 11.10 References

- Ref. 11.1 Environmental Protection Act 1990 [online]. Available at Environmental Protection Act 1990 (legislation.gov.uk) [Accessed June 2024]
- Ref. 11.2 The Planning Act 2008 [online] Available at The Planning Act 2008 (legislation.gov.uk) [Accessed June 2024]
- Ref. 11.3 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 [online]. Available at The Infrastructure Planning Regulations 2017 (legislation.gov.uk) [Accessed June 2024]
- Ref. 11.4 The Noise and Statutory Nuisance Act 1993 [online]. Available at The Noise and Statutory Nuisance Act 1993 (legislation.gov.uk) [Accessed June 2024]

- Ref. 11.5 Control of Pollution Act 1974 [online]. Available at Control of Pollution Act 1974 (legislation.gov.uk). [Accessed June 2024]
- Ref. 11.6 Department for Energy Security and Net Zero (2024). National Policy Statement for Energy (EN-1).
- Ref. 11.7 Department for Energy Security and Net Zero (2024). Overarching National Policy Statement for Electricity Networks Infrastructure (EN-5).
- Ref. 11.8 Defra (2010) Noise Policy Statement for England (NPSE)
- Ref. 11.9 Department for Levelling Up, Housing and Communities (2024). National Planning Policy Framework.
- Ref. 11.10 Welsh Government (2024). Planning Policy Wales. Available at: [https://www.gov.wales/sites/default/files/publications/2024-02/planning-policy-wales-edition-12\\_1.pdf](https://www.gov.wales/sites/default/files/publications/2024-02/planning-policy-wales-edition-12_1.pdf) [Accessed June 2024]
- Ref. 11.11 Noise and soundscape plan for Wales 2023 to 2028 Available at: <https://www.gov.wales/noise-and-soundscape-plan-for-wales-2023-2028> [Accessed June 2024]
- Ref. 11.12 Powys County Council (2018). Powys Local Development Plan 2011-2026. Available at: <https://en.powys.gov.uk/article/4898/Adopted-LDP-2011---2026>
- Ref. 11.13 Shropshire Council (2020), Draft Shropshire Local Plan (2016-2038). Available at: <https://www.shropshire.gov.uk/media/21100/sd002-draft-shropshire-local-plan.pdf>
- Ref. 11.14 British Standards Institution (2014). BS 5228-1:2009 (+A1:2014): Code of practice for noise and vibration control on construction and open sites. Noise. London: British Standards Institution
- Ref. 11.15 British Standards Institution (2014). BS 5228-2:2009 (+A1:2014): Code of practice for noise and vibration control on construction and open sites. Vibration. London: British Standards Institution.
- Ref. 11.16 British Standards Institution (2019). BS 4142:2014+A1:2019: Methods for rating and assessing industrial and commercial sound. London: British Standards Institution.
- Ref. 11.17 British Standards Institution (1993). BS 7385-2:1993, Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration (BS 7385-2). London: British Standards Institution.
- Ref. 11.18 Department of Transport and Welsh Office (1988). Calculation of Road Traffic Noise (CRTN)
- Ref. 11.19 National Highways (2020a). Design Manual for Roads and Bridges (DMRB), LA 111 Noise and Vibration. Revision 2.
- Ref. 11.20 Institute of Environmental Management and Assessment (2014). Guidelines for Environmental Noise Impact Assessment [online]. Available 2014-Noise-and-EIA-IEMA.pdf

- Ref. 11.21 Internal Standards Organisation (2024) ISO 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation (ISO 9613)
- Ref. 11.22 Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019) Planning Practice Guidance for Noise (PPGN)
- Ref. 11.23 Welsh Government (1997) Planning Guidance (Wales), Technical Advice Note (Wales) 11, Noise
- Ref. 11.24 Ordnance Survey (OS), Open Zoomstack available here <https://www.ordnancesurvey.co.uk/products/os-open-zoomstack> [Access June 2024]
- Ref. 11.25 Welsh Government, Data Map Wales Environmental Noise Mapping 2022 available here [https://datamap.gov.wales/maps/new?layer=geonode:Environmental\\_Noise\\_Mapping\\_2022#/](https://datamap.gov.wales/maps/new?layer=geonode:Environmental_Noise_Mapping_2022#/) [Access June 2024]
- Ref. 11.26 Defra England Noise and Air Quality Viewer (2024) available here - <http://www.extrium.co.uk/noiseviewer.html> [Access June 2024]
- Ref. 11.27 Transport Research Laboratory (TRL) Limited (1990). RR246 Traffic induced vibrations in buildings.
- Ref. 11.28 British Standards Institution (2019). BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures (BS 7445). London: British Standards Institution.



## 12 Water Resources

### 12.1 Introduction

12.1.1 This Chapter provides the results of the preliminary assessment of the potential impacts and effects of the Project on Water Resources and describes:

- Legislation, Policy and Guidance.
- Consultation and Engagement.
- Assessment Methodology and Significance Criteria.
- Baseline Conditions.
- Preliminary Mitigation Measures.
- Preliminary Likely Significant Effects.
- Preliminary Mitigation and Enhancement Measures.
- Next Steps.

12.1.2 There are interrelationships related to the potential effects on Water Resources and other environmental topics. Therefore, please also refer to the following chapters:

- Chapter 7: Ecology.
- Chapter 9: Historic Environment.
- Chapter 13: Grounds Conditions, Geology and Hydrogeology.
- Chapter 15: Soils and Agriculture.
- Chapter 16: Health and Wellbeing.

12.1.3 This chapter is also supported by the following figures and appendices:

- Figure 12.1: Water Resources Study Area and Water Environment Features.
- Figure 12.2: Flood Risk Areas.
- Figure 12.3: Water Framework Directive Surface Waterbody Status.
- Appendix 12.1: Water Resources Significance Assessment Criteria Tables.
- Appendix 12.2: Water Resources Baseline Data.
- Appendix 12.3: Geomorphological Study Technical Note.

### 12.2 Legislation, Policy, and Guidance

#### Legislation

12.2.1 This preliminary assessment has been undertaken in accordance with, and with reference to, the national legislation summarised below. Legislation with respect



to groundwater is summarised in Chapter 13: Grounds Conditions, Geology and Hydrogeology.

- 12.2.2 The Water Environment (Water Framework Directive [WFD]) (England and Wales) Regulations 2017 (Ref 12.1) implements the WFD in England and Wales which aims to prevent deterioration in the status of waterbodies and achieve good status for rivers, lakes and groundwater. The purpose of the WFD is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and ground waters. The Directive aims to prevent further deterioration, enhance water quality, and promote sustainable water use. The 2017 Regulations require the 'appropriate agency' i.e., the Environment Agency (EA) for England and Natural Resources Wales (NRW) for Wales, to prepare River Basin Management Plans (RBMP) for each river basin district, for approval by the Secretary of State.
- 12.2.3 The RBMPs describe the current state of the water environment for each river basin district, the pressures affecting the water environment, the objectives for protecting and improving it, and the programme of measures needed to achieve the statutory environmental objectives of the WFD (i.e., to enable water bodies to achieve 'Good' status). The overarching requirement was that they should reach at least 'Good' status (or potential) by 2015. This date has been extended to 2027 for many waterbodies, where it was recognised that reaching the 2015 target would bring disproportionate burdens.
- 12.2.4 The Environment Act 2021 (Ref 12.2) aims to improve air and water quality, protect wildlife, increase recycling and reduce plastic waste. Part 5 of the Environment Act brings together measures to strengthen and update the existing regulatory and long-term planning framework for water, helping to reduce environmental risks, including to water quality and land drainage. It also strengthens the regulation of water and sewerage undertakers through the Office for Environmental Protection.
- 12.2.5 The Environmental Permitting (England and Wales) Regulations 2016 (Ref 12.3) streamlines the legislative system for waste and industrial installations into a single permitting structure for those activities which have the potential to cause harm to human health or the environment.
- 12.2.6 The Land Drainage Act 1991 (Ref 12.4) consolidates the functions of Internal Drainage Boards and of Local Authorities in relation to land drainage and imposes certain controls in relation to the placing of structures and the carrying out of works affecting watercourses.

- 12.2.7 The Floods and Water (Amendment etc) (EU Exit) Regulations 2019 (Ref 12.5) cover various aspects of flood and water management, including the transposition of EU directives into UK law, changes to regulatory processes, and the establishment of new regulatory frameworks. The Regulations amend four primary acts (the Water Act 1989, the Water Industry Act 1991, the Water Resources Act 1991 and the Water Act 2014).
- 12.2.8 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 12.6) provide the framework for conducting environmental impact assessments (EIAs) for certain types of infrastructure development projects in England and Wales. In accordance with these Regulations, an Environmental Statement (ES) submitted with an application for development consent must set out a description of the likely significant effects of the development on the environment, which includes the water environment (for example hydromorphological changes, water quantity and water quality).
- 12.2.9 The Planning Act 2008 (Ref 12.7) created a new development consent regime for major infrastructure projects in the fields of energy, transport, water, waste water, in England and Wales. National Policy Statements are designated under section 5 of the Planning Act. The Project is being appraised against the requirements of the relevant statements for energy infrastructure, as described below.

## **National Policy**

### **National Policy Statement (NPS)**

- 12.2.10 NPSs are produced by the Government through a parliamentary approval process and present the planning policy framework for all decision making for nationally significant infrastructure projects (NSIPs). They also include the Government's objectives for the development of NSIPs and are produced for different types of infrastructure development. The Overarching NPS for Energy (NPS EN-1 (Ref 12.8)) was designated in January 2024 and sets out national policy for energy infrastructure in combination with the relevant technology-specific NPS, in this case the NPS for Electricity Networks Infrastructure (NPS EN-5) (Ref 12.9).
- 12.2.11 NPS EN-5 was also designated in January 2024 and sets out the Government's policy for nationally significant electricity transmission networks. Together with EN-1, it sets out the information that should be provided alongside any application for development consent to satisfy the requirements of the policy with regard to assessing effects on the water environment, including flood risk.

- 12.2.12 NPS EN-5 covers resilience to climate change and the need to look to design for flood resilience. Paragraph 2.3.2 of EN-5 states that applicants should set out to what extent the proposed development is expected to be vulnerable, and, as appropriate, how it would be resilient to flooding, particularly for substations that are vital for the electricity transmission and distribution network.
- 12.2.13 Paragraph 2.3.3 of EN-5 advises that ‘the resilience of the project to the effects of climate change must be assessed in the Environmental Statement (ES) accompanying an application’, also stating that ‘future increased risk of flooding would be covered in any flood risk assessment.’

#### **Other National Policy**

- 12.2.14 Although the Project will be tested in line with NPSs described above, this preliminary assessment has also been undertaken in accordance with, and with reference to, the national policy summarised in Table 12.1.

Table 12-1 – Summary of Other National Policy

Policy	Overview
National Planning Policy Framework (NPPF) (Ref 12.10)	Along with its accompanying Planning Practice Guidance (PPG), the NPPF sets out the government’s planning policies for England and how these are expected to be applied. The principal aim of the NPPF is to achieve sustainable development.
Flood Risk and Coastal Change PPG (Ref 12.11)	This PPG relates to ensuring that flood risk is taken into account at all stages of the planning process, avoiding inappropriate development in areas at risk of flooding and directing development away from those areas where risks are highest.
Water Supply, Wastewater and Water Quality PPG (Ref 12.12)	PPG covers how planning can safeguard water quality and ensure the delivery of adequate water and wastewater infrastructure.
Planning Policy Wales (PPW) (Ref 12.13)	Sets out the land use planning policies of the Welsh Government and is further supplemented by a series of Technical Advice Notes (TANs). The primary objective of the PPW is to ensure that the planning system contributes towards the delivery of sustainable development, improving the social, economic, environmental and cultural wellbeing of Wales.
Technical Advice Note (TAN) 15 (Ref 12.14)	TAN15 provides guidance to local planning authorities in Wales in determining planning applications with regard to flood risk and provides an interpretation of how this guidance applies specifically to a site. It <i>‘provides a framework within which the flood risks arising from rivers, the sea and surface water, and the risk of coastal erosion can be assessed.’</i> TAN15 also advises on the consequences of flood risks and on adapting to and living with these risks.

## Regional and Local Policy

12.2.15 Key local strategies relevant to Water Resources, that have informed this PEIR and will inform the assessment within the ES, comprise:

- Powys County Council Local Flood Risk Management Strategy 2013-2017 (Ref 12.15).
- Shropshire Local Flood Risk Management Strategy (Ref 12.16).

12.2.16 These strategies set out policies to reduce the effects of flooding to local communities within the counties and outline the requirements of new development in terms of managing surface water runoff and drainage.

## Guidance

12.2.17 Relevant guidance, specific to Water Resources, that has informed this PEIR and will inform the assessment within the ES, comprises:

- Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (Ref 12.17).
- Construction Industry Research and Information Association C532: Control of water pollution from construction sites (Ref 12.18).
- Design Manual for Roads Bridges (DMRB) LA113: Road drainage and the water environment (Ref 12.19).
- Welsh national standards for sustainable drainage systems (Ref 12.20).
- Welsh national guidance and planning policy for green infrastructure (Ref 12.21).
- Shropshire Sustainable Drainage Systems (SuDS) Handbook (Ref 12.22).
- Shropshire Green Infrastructure Strategy (Ref 12.23).
- Canal & River Trust (CRT) Water Control, Management and Operation guidance (Ref 12.24).
- Guidebook of Applied Fluvial Geomorphology (Ref 12.25).
- River Hydromorphology Assessment Technique Training Manual (Ref 12.26).
- Institute of Environmental Management and Assessment (IEMA) New Perspective on Land and Soil in Environmental Impact Assessment (Ref 12.27).

## 12.3 Consultation and Engagement

### Scoping Opinion

- 12.3.1 The scope of the assessment has been informed by the Scoping Opinion provided by the Planning Inspectorate (PINS) in March 2024 on behalf of the Secretary of State, following the submission of the Scoping Report (Ref 12.28). The scope has also been informed through consultation and engagement with relevant stakeholders.
- 12.3.2 Comments included in the Environmental Impact Assessment (EIA) Scoping Opinion from PINS and subsequent responses to this EIA Scoping Opinion are outlined below in Table 12.2.

Table 12-2 – Scoping Opinion from the Planning Inspectorate

ID	Matter	Inspectorate’s Comment	Project Response
3.8.1	Effects on water quality including drainage - construction	<p>The Scoping Report proposes to scope out effects on water quality during construction, stating that standard mitigation measures within the Outline Construction Environmental Management Plan (OCEMP) and a construction phase Surface Water Management Plan (SWMP) would remove the pathway between the source and receptors for most of the working environment. The Scoping Report also states that trenchless techniques will be used to reduce the potential risk for watercourse crossings during construction. The Inspectorate notes that details of the working methods for the watercourse crossings by underground cable and/or ground-based infrastructure and their exact locations have yet to be determined. Therefore, there is insufficient information in the Scoping Report to determine the scale and the length of time that crossings or access tracks across watercourses would be in place. The Inspectorate does not consider that there is sufficient information available at this stage to scope out effects on water quality during construction. Accordingly, the ES should include an assessment of this matter or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of a Likely Significant Effects (LSE). The ES should include details of how any water is to be captured, treated and disposed during construction in terms of dewatering,</p>	<p>Further detail will be included within the ES with regard to how drainage and water quality effects will be managed during construction. The Project team will engage with key stakeholders to shape mitigation measures with the aim of agreeing there will be no LSEs.</p>

ID	Matter	Inspectorate's Comment	Project Response
		excavations and trenches, especially in proximity to the watercourse crossings.	
3.8.2	Effects on water quality including drainage - operation	The Scoping Report states that the design of the [Grug y Mynydd Collector] Substation and Cors y Carreg Cable Sealing End Compound (CSEC) will include a formal drainage strategy. The Scoping Report further states that there will be no operational discharges, and all maintenance activities will be undertaken in accordance with best practice and manufacturers requirements. Therefore, no LSE on water quality are anticipated during the operational phase. The Inspectorate agrees that, provided the measures to mitigate the risks of pollution of watercourses are clearly described in the ES and secured in the DCO, significant effects are not likely to occur, and this matter can be scoped out of further assessment. A draft/ outline version of the formal drainage strategy for the Grug y Mynydd Collector Substation and Cors y Carreg CSEC should be included with the DCO application.	Measures to mitigate the risks of pollution of watercourses during operation of the Project will be secured through the DCO and an outline drainage strategy for the Grug y Mynydd Collector Substation and Cors y Carreg CSEC will be included as part of the FRA that will be prepared.
3.8.3	Effects on hydrology (including main rivers, ordinary watercourses and private water supplies	The Scoping Report proposes to scope out effects on hydrology during construction and operation, on the basis that no LSE are anticipated on existing water interests including PWS, due to the nature of the Proposed Development. The Scoping Report states that the potential for physical disturbance to watercourses would be temporary and short-term in duration. The Inspectorate notes that details and exact locations of the construction works near	Further detail will be included within the ES with regard to effects on hydrology and water features, including PWSs during construction and operation. The Project will



ID	Matter	Inspectorate's Comment	Project Response
	(PWS)) - construction and operation	PWS, within watercourses and the construction of access tracks across watercourses have yet to be determined. There is insufficient information in the Scoping Report to determine the scale and the length of time that they would be in place. The Scoping Report does not describe what measures would be proposed for reinstatement of any affected watercourses following construction and therefore any on-going implications from construction activity during operation. The Inspectorate does not consider that there is sufficient information available at this stage to scope this matter out. Accordingly, the ES should include an assessment of these matters or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of a LSE.	engage with key stakeholders to shape mitigation measures with the aim of agreeing there will be no LSEs on these receptors.
3.8.4	Flood risk (groundwater, sewers and artificial sources) - construction and operation	The Scoping Report states that the potential flood risks from sources including groundwater, sewers and artificial sources e.g. reservoirs will be assessed within the Flood Risk Assessment (FRA) and it is considered unlikely, based on the nature of the Proposed Development that, that these flood sources would pose a potential risk. However, limited information is presented about the potential for flood risk from these sources. The Inspectorate considers that there is insufficient information at this stage to conclude that significant effects relating to flood risk from these sources during construction and operation are not likely. The Applicant's attention is also drawn to the comments from Canal	The ES will be informed by the FRA (which will address all potential flood risk sources), and the Project team will engage with relevant consultation bodies to agree measures to avoid or mitigate flood risks, to prevent the likelihood of significant effects occurring.

ID	Matter	Inspectorate's Comment	Project Response
		and River Trust (Appendix 2 of this Opinion). The ES should provide an assessment of flood risks where significant effects are likely to occur, or information demonstrating agreement with the relevant consultation bodies and the absence of a LSE.	
3.8.5	Flood risk (fluvial and pluvial) - operation	The Scoping Report states that during operation of the Project the majority of land required for the construction phase will be restored; the [Grug y Mynydd Collector] Substation and [Cors y Carreg] CSEC will be sited outside of Flood Zones 2 and 3 while the towers are considered to be water compatible (subject to mitigation to be identified in the FRA). Therefore, it states that potential impacts on rivers and their floodplains are likely to be limited. The Inspectorate agrees that operational impacts in respect of fluvial and pluvial flood risk are not likely to give rise to significant effects.	The Inspectorates agreement to the scoping out of operational impacts in respect to fluvial and pluvial flood risk is noted. The FRA will include figures to demonstrate that the collector substation and CSEC are sited outside of Flood Zones 2 and 3. The FRA will also describe any measures necessary to manage operational flood risk which will be secured by the DCO.
3.8.6	Potential effects on hydrogeology including PWS,	The Inspectorate notes that hydrogeology including PWS and GWDTEs will be covered in ES Chapter 14: Ground Conditions, Geology and Hydrogeology. The Inspectorate is content with this approach. The assessment in ES Chapter 14 should contain	Suitable cross referencing will be included in the ES.

ID	Matter	Inspectorate's Comment	Project Response
	Groundwater Dependant Terrestrial Ecosystems (GWDTE) and groundwater abstractions	appropriate cross reference to relevant aspect chapters of the ES including Water Resources and Ecology.	
3.8.7	Study area	The ES should provide justification for the use of a 250m buffer around the final infrastructure layout as the study area for the water resources assessment and describe any waterbodies located outside of the established study area that have also been included in the assessment, stating the distance from the Proposed Development, and explaining why the waterbody has been included. This should be supported by appropriate figures in the ES.	Justification for the study area is provided in Section 12.4 and the study area and all of the waterbodies included in the assessment are presented in Figure 12.1: Water Resources Study Area and Water Environment Receptors of this PEIR. This information will also be included in the ES.
3.8.8	Future baseline	The Applicant is directed to the Environment Agency's scoping consultation response (Appendix 2 of this Opinion) which provides advice on the source of model data and consideration of relevant guidance.	This advice is noted.

ID	Matter	Inspectorate's Comment	Project Response
3.8.9	Assessment of LSE	Where professional judgement is used to determine whether an identified effect is significant or not significant in the ES, this decision should be supported by clear reasons and evidence and make reference to any relevant guidance.	This evidence will be provided in the ES.
3.8.10	WFD Screening Assessment	Scoping Report paragraph 13.26 states that a WFD screening assessment will be undertaken for each hydraulic catchment through which the Scoping Corridor passes. The Applicant's attention is drawn to the Inspectorate's Advice Note Eighteen: The WFD in this regard. The ES should explain the relationship between the Proposed Development and any relevant water bodies in relation to the current relevant River Basin Management Plan.	Planning Inspectorate guidance (formerly Advice Note 18) will be referenced in preparation of the WFD Screening assessment and information to support the assessment will be drawn from the relevant RBMPs. Appropriate cross reference to the assessment findings will be included within the ES.
3.8.11	Impacts from the use of drilling muds	If directional drilling works are required, impacts on aquatic environment receptors and water resource receptors from the use of drilling muds should be assessed where significant effects are likely to occur.	This aspect will be assessed if/where applicable.

## Further Consultation and Engagement

- 12.3.3 A summary of discussions and how these have influenced the Project, scope and the approach to the assessment is provided in Table 12.3.

Table 12-3 – Stakeholder Engagement

Organisation and Date	Summary of Issues Raised	Project Response and Consideration in PEIR
<p>Email received from Molverley Internal Drainage Board (IDB), June 2024</p>	<p>It was raised that a section of the Project runs through the Molverley IDB area. It was highlighted that very extensive flooding affects the River Vyrnwy and parts of the River Morda therefore particular care will be needed when installing pylons in these flood prone areas.</p>	<p>An FRA will be prepared to support and inform the ES. A technical note has been produced and has been shared with stakeholders to agree the scope and methodology for the FRA, as detailed below in this table.</p>
<p>Flood Risk Assessment Technical Note shared with CRT, 18/10/2024</p>	<p>An FRA Technical Note was produced to provide additional detail and clarification in relation to flood risk matters, as well as responding to scoping responses received from statutory consultees.</p> <p>The document set out information on the sources of flood risk to be assessed, policy and guidance to be followed, baseline data sources, and the proposed approach to assessing flood risk to the Project and arising from the Project during its construction and operation.</p>	<p>CRT advised they have no initial concerns with the FRA scope and feel that it covers all relevant aspects. CRT advised on the data they can provide – this will be included in the ES.</p> <p>CRT advised on proposals for restoration of the Montgomery Canal within the study area. This is addressed in section 12.5 of this PEIR chapter (future baseline).</p>
<p>Flood Risk Assessment Technical Note shared with the EA, 15/10/2024</p>	<p>The intended approach to reporting was also outlined.</p>	<p>The EA advised that scoping out flood risk from reservoirs is acceptable, that the development lifetime of 75 years is acceptable and confirmed the climate change allowances to be applied.</p>

Organisation and Date	Summary of Issues Raised	Project Response and Consideration in PEIR
		<p>The EA advised level-for-level compensatory storage should be provided for all proposed structures in the 1 in 100-year plus climate change flood extent, for defended and undefended floodplains. This point will be the subject to further consultation and discussion with the EA.</p>

- 12.3.4 The Flood Risk Technical Note described in the table above was also shared with NRW, Powys County Council, Shropshire County Council and the Meverley IDB. No feedback has been received at the time of writing, however, any comments received will be used to shape the FRA that will be prepared alongside the ES.
- 12.3.5 A technical note was produced to provide additional detail and clarification in relation to Water Framework Directive matters, as well as to respond to scoping responses received from statutory consultees. The document presented information on intended Zones of Influence (Zoi), guidance to be followed, baseline data sources and the approach to assessing the Project activities on waterbodies without a WFD status. This note was shared with the EA and NRW in October 2024 and the feedback, which is currently awaited, will inform the WFD Assessment that will be prepared alongside the ES
- 12.3.6 Meetings with relevant stakeholders, including the EA, NRW and local authorities in their role as Lead Local Flood Authorities (LLFAs), will be undertaken as the Project progresses, to discuss and agree matters raised in response to the technical notes that have been shared and to agree mitigation principles and strategies. Consultation will also be ongoing with Meverley IDB and CRT. Communications received post-PEIR from stakeholders will be included within the ES.

## 12.4 Assessment Methodology and Significance Criteria

- 12.4.1 This section describes the methodology applied to establish the existing and future baseline together with the adopted approach to undertaking the preliminary assessment of effects on Water Resources. The overarching approach is described in Chapter 5: Environmental Assessment Methodology. This section also identifies further assessment needed to be undertaken as part of the ES.

### Study Area

- 12.4.2 As defined in the Scoping Report (Ref 12.28), the study area for the Water Resources assessment includes the area within the Project's draft Order Limits and extends to include a 250m buffer around the Project's draft Order Limits. This is considered an appropriate study area based on the nature of Project construction and operation (including maintenance) activities and technical



knowledge of similar schemes. The study area is shown in Figure 12.1: Water Resources Study Area and Water Environment Features of the PEIR, Volume 2.

- 12.4.3 The FRA that will be prepared to inform the ES will include a larger study area to ensure any potential relevant impacts of the Project are considered within a floodplain cell or at the local catchment scale, where this is appropriate.
- 12.4.4 The WFD Screening assessment will be prepared for a Zol that will be agreed with the EA and NRW.

### **Baseline Data Collection**

- 12.4.5 Baseline conditions within the study area have been established through a desk study, referencing the following sources of data and information:
- OS mapping, aerial mapping, and Multi-Agency Geographical Information for the Countryside (MAGIC) Maps (Ref 12.29).
  - Statutory Main River maps for England (Ref 12.30) and Wales (Ref 12.31).
  - Catchment data explorer database of Cycle 2 and Cycle 3 WFD information (Ref 12.32).
  - Water Watch Wales database of Cycle 2 and Cycle 3 WFD information (Ref 12.33).
  - Severn River Basin Management Plan (Ref 12.34).
  - EA Water quality data archive (Ref 12.35).
  - Records of licenced surface water abstractions and consented discharges, supplied by the EA and NRW.
  - Flood Map for Planning for England (Ref 12.36).
  - Flood Map for Planning / Development Advice Map for Wales (Ref 12.37).
  - Long term flood risk map for England (Ref 12.38).
  - Flood Risk Assessment Wales Map (Ref 12.39).
  - Spatial flood defences database for England (Ref 12.40).
  - Flood Defence Structures for Wales (Ref 12.41).
  - The Historic Flood Map and Recorded Flood Outlines datasets for England (Ref 12.42).
  - Recorded Flood Extents for Wales (Ref 12.43).
  - Flood Estimation Handbook webservice (Ref 12.44) defining surface water catchment areas and hydrological properties (e.g., rainfall, slopes, soil permeability).

- 12.4.6 EA / NRW modelled flood water level and flood extent data for key watercourses within the study area has been received. This includes data from the following models:
- Severn & Vyrnwy Confluence Model, 2011.
  - Meifod Model, 2011.
  - Vyrnwy Model, 2015.
- 12.4.7 The flood model data received will be reviewed for its suitability to inform the FRA and ES.
- 12.4.8 In addition to the data collected so far, the ES will be informed by the following additional third-party data and data obtained through survey. This will include:
- EA / NRW / LLFA / IDB information on historical flood events and flood defences.
  - Field notes and photographs collected during, for example, ecology surveys, to characterise attributes such as the hydro morphology of watercourses to be crossed.
  - Data obtained from a geomorphological survey.
  - Asset information, network schematics/flow paths and historical Supervisory Control and Data Acquisition (SCADA) data from CRT.
- 12.4.9 All the further information received from stakeholders will be incorporated into future stages of the assessment as appropriate.

#### **Site Visits and Surveys**

- 12.4.10 No Water Resources surveys have been undertaken to date but the need for any site visits and surveys to inform the ES, for example, a geomorphological survey of the River Vyrnwy (Afon Vyrnwy) as detailed in Appendix 12.3 of the PEIR, Volume 3, will be agreed with stakeholders.

#### **Environmental Impact Assessment Methodology**

- 12.4.11 The preliminary Water Resources assessment determines if effects due to the construction and operation of the Project, following the implementation of mitigation, are likely to be positive, negative, or neutral, together with predicting if effects are likely to be significant. All conclusions and assessments made in this chapter are by their nature preliminary. All assessment work has applied, and continues to apply, a precautionary approach, in that where limited information is available, a realistic worst-case scenario is assessed.

- 12.4.12 The preliminary impact assessment methodology for the PEIR and the impact assessment methodology that will be used for the ES is drawn from LA113 of the DMRB (Ref 12.19). Whilst primarily intended for use in assessing the effects of highways projects on the water environment, the methodology is widely accepted as suitable for assessing the effects of other types of linear infrastructure projects on water environment receptors. The method promotes assessment that is proportionate to the scale and nature of the proposals and that considers the sensitivity of the local water environment to change.
- 12.4.13 The ES will present a detailed assessment in accordance with this guidance. The significance of the effects on water environment receptors will be presented for construction and operational phases of the Project (where relevant), in consideration of the sensitivity (or value) of the receptor and the magnitude of the potential impact (change).
- 12.4.14 The ES will be informed by the FRA and WFD screening assessment which will be prepared in parallel to the impact assessment.

#### **Significance Criteria**

- 12.4.15 In line with the LA113 methodology, the significance of an effect is derived by comparing the value (sensitivity) of a receptor with the magnitude of impact (change). The criteria for determining value and magnitude of impact for Water Resources are included in Appendix 12.1: Water Resources Assessment Significance Criteria Tables of the PEIR, Volume 3.
- 12.4.16 LA113 does not provide a prescriptive assessment methodology for hydromorphology. The criteria within Appendix 12.1 of the PEIR, Volume 3 and the assessment of effects relating to hydromorphology and in the ES, is and will therefore be informed by published literature, namely the 'Guidebook of Applied Fluvial Geomorphology' (Ref 12.25) and the 'River Hydromorphology Assessment Technique Training Manual' (Ref 12.26).
- 12.4.17 The preliminary significance of effect has been assigned using the matrix in Chapter 5: Environmental Assessment Methodology.
- 12.4.18 The preliminary assessment has been undertaken based on preliminary Project design information. This information is iterative and will be updated for the ES as the design evolves and relevant changes are accounted for in the assessment.

## Assumptions and Limitations

- 12.4.19 General assumptions and limitations are summarised in Chapter 2: Project Description. The following limitations and assumptions specific to Water Resources are relevant to this preliminary assessment.
- 12.4.20 The assessment is based on the Proposed Order Limits and the maximum/minimum parameters for the infrastructure-based elements of the Project, as described in Chapter 2: Project Description.
- 12.4.21 In addition to the Rochdale Envelope assumption that has been applied in this preliminary assessment, it is assumed that the water supply for the Project will normally be delivered to construction sites by tankers and stored locally in temporary storage tanks. By exception, a temporary connection to an established water supply network may be requested through coordination with the local authority, subject to additional agreements.
- 12.4.22 With regards to grey water generated from construction welfare facilities, it is assumed that this would be discharged to the public sewer, or where this is not practicable, be collected and tankered off site to a licenced disposal facility. With the exception of foul drainage (for the Grug y Mynydd Collector Substation and the Switching Station near Lower Frankton) which would drain to a suitably located cesspit, currently it is assumed that no discharges (other than treated surface water runoff) to surface waters are required for the Project during its operation. It is also assumed that there would be no new temporary or permanent abstractions.
- 12.4.23 It is anticipated that the choice of watercourse crossing technique is dependent on several factors, for example, watercourse size, flood risk sensitivity, ecological sensitivity, and location. Where there is currently uncertainty on crossing technique due to the design still evolving, open cut has been assessed as it is the worst-case in the underground cable sections (UGC) (with no requirement for this technique in the overhead line sections). Crossings techniques proposed at each watercourse will be confirmed and described in the ES once the design has evolved, and ground conditions are better understood following ground investigation works. With respect to watercourse crossings for access, it is assumed that larger watercourses with higher sensitivity would be crossed using

clear-span bridges whereas ordinary watercourses would be crossed using culverts.

- 12.4.24 It has been assumed that temporary discharges generated from dewatering activities, for example, around tower bases and in UGC sections, would be made to ground, rather than to watercourses. Where this is not practicable in localised areas, any discharge to surface water would be made in compliance with relevant consents.
- 12.4.25 With regard to the assessment methodology, it is assumed there is sufficient data from the EA, NRW, LLFAs and Molverley IDB to inform a site-specific FRA and that no new flood risk models will need to be developed. This will be confirmed following review of the modelling data that has been received.
- 12.4.26 It is assumed there is sufficient data from the EA / NRW to define the current condition and standards of protection provided by existing flood defences, and that no baseline condition surveys will be required.
- 12.4.27 No water quality sampling and analysis is proposed as it is considered that sufficient baseline data is available to generally characterise the water quality of surface water receptors.

## 12.5 Baseline Conditions

### Existing Baseline

#### Sites Designated for Nature Conservation Interest

- 12.5.1 There are numerous ponds and lakes within the study area, some of which are part of sites designated for nature conservation. Sites designated for nature conservation interest within the study area include Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs) and Local Nature Reserves (LNRs). Details of sites designated for nature conservation are provided in Chapter 7: Ecology. Where surface waters play a key role in sustaining the designated interest features, these sites will be included as Water Resources receptors in the ES. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) will be addressed separately in Chapter 7: Ecology.

### **Existing Water Interests (Surface Water Abstractions and Discharges)**

- 12.5.2 Data to characterise existing water interests has been requested from the EA and NRW and the data received to date shows that watercourses in the study area support abstractions and receive, transport and dilute consented and informal discharges.
- 12.5.3 Further details of these water interests are provided in Appendix 12.2: Water Resources Baseline Data of the PEIR, Volume 3 and on Figure 12.1: Water Resources Study Area and Water Environment Features of the PEIR, Volume 2.
- 12.5.4 Information on private water supplies and groundwater abstractions is provided in Chapter 13: Ground Conditions, Geology and Hydrogeology.

### **Watercourses, their Water Quality and Hydromorphology**

- 12.5.5 Watercourses in the study area are shown in Figure 12.1: Water Resources Study Area and Water Environment Features of the PEIR, Volume 2.
- 12.5.6 There are seven main rivers (River Vyrnwy (Afon Efyrynwy), Hen Afon, Pentre Brook, Afon Cain, River Morda, Oswestry Brook, and River Perry) that flow through land within the Project's draft Order Limits and a further three main rivers (Afon Tanat, Wern Ddu Brook and Plas Cerrig) that flow through the wider study area. There are also numerous tributaries of these rivers, classified as ordinary watercourses. On the whole, these watercourses generally flow in an easterly or southerly direction towards the River Severn. Many of the watercourses within the study area discharge to the River Vyrnwy which itself originates at Lake Vyrnwy (over 20km upstream of the study area) and discharges to the River Severn near Crewgreen (over 6km southeast of the study area).
- 12.5.7 A large proportion of the study area lies within the floodplain of the River Vyrnwy and its tributaries. Whilst these parts of the study area are typified by flat topography, the terrain is steeper in other parts of the study area, including in the vicinity of Bryngwyn at the south-western end of the Project's draft Order Limits.
- 12.5.8 In addition to the catchments associated with the main rivers noted above, the study area also covers the catchments of several other WFD waterbodies. These are listed in Table 12.4, which summarises baseline WFD status data for the study area (Ref 12.32, Ref 12.33), and illustrated in Figure 12.3: Water

Framework Directive Surface Waterbody Status of the PEIR, Volume 2. All of these WFD waterbodies are river waterbodies except for the Montgomery Canal.

- 12.5.9 The Montgomery Canal lies within the study area and is spanned by the Project's draft Order Limits. The WFD waterbody covers the reach of the canal in the northeast of the study area, but the canal extends beyond this into Wales. The canal is partially restored and much of the English reach is designated as a SSSI whilst the Welsh reach is designated as a SAC (see Chapter 7: Ecology for more detail). It is noted that the reach of the canal proposed to be spanned by the Project is not designated.
- 12.5.10 The Llangollen Canal also lies within the study area but is not crossed by the Project. This canal starts at the Shropshire Union Canal north of Nantwich in Cheshire and ends west of Llangollen in Denbigshire. The WFD waterbody for the Llangollen Canal covers the full length.

Table 12-4 – Summary of WFD Status Data, Cycle 3 (NRW data dated 2021, EA ecological status 2022, EA chemical status 2019)

Waterbody Name (ID)	Ecological Status	Chemical Status	Hydromorphological Designation
Afon Cwm-llwyd - source to conf Afon Carno (GB109054049370)	Good	High	Natural
Afon Rhiw (N Arm) - Llyn y Bugail to Dwyrhiew (GB109054049470)	Good	High	Natural
Afon Rhiw (S arm) - Ty-newydd to Dwyrhiew (GB109054049410)	Good	High	Natural
Afon Einion - source to conf Afon Banwy (GB109054049840)	Good	High	Natural
Afon Banwy (GB109054049851)	Poor	High	Natural
Yr Hafesb - source to conf Afon Banwy (GB109054049620)	Moderate	High	Natural
Afon Vyrnwy - conf Afon Cownwy to conf Afon Banwy (GB109054049720)	Good	High	Heavily Modified
Afon Vyrnwy DS of Banwy confluence (GB109054049852)	Good	High	Natural
Afon Cain - conf The Brogan to conf Afon Vyrnwy (GB109054049790)	Moderate	High	Natural
Afon Vyrnwy - conf Afon Tanat to conf R Severn (GB109054049800)	Moderate	High	Heavily Modified



Waterbody Name (ID)	Ecological Status	Chemical Status	Hydromorphological Designation
Morda - conf unnamed trib to conf Afon Vyrn (GB109054049930)	Moderate	Fail	Heavily modified
Morda - source to conf unnamed trib (GB109054055070)	Poor	Fail	Not designated artificial or heavily modified
Oswestry Bk (GB109054050010)	Moderate	Fail	Not designated artificial or heavily modified
Perry - conf Common Bk to conf Tetchill Bk (GB109054054970)	Moderate	Fail	Not designated artificial or heavily modified
Montgomery Canal, northern section (GB70910540)	Good	Fail	Artificial
Llangollen Canal (GB70910082)	Good	Fail	Artificial

- 12.5.11 The WFD classifications for the waterbodies shown in Table 12.5 are informed by monitoring of a range of parameters that are indicators of water quality at EA and NRW monitoring sites. As Table 12.5 shows, the majority of the river WFD waterbodies share similar quality characteristics with the majority sharing a good or moderate ecological status. Eight of the river WFD waterbodies have an ecological status of good.
- 12.5.12 For the river waterbodies where the data is provided by the EA (the bottom six rows of Table 12.4), they share a chemical status of fail. Multiple reasons for not achieving good status are reported for these waterbodies, with polybrominated diphenyl ethers (PBDE) being common to all. For the waterbodies where the data is provided by NRW (top ten rows of Table 12.5) they share a chemical status of high. Both the Montgomery Canal and Llangollen Canal WFD waterbodies have an ecological status of good and a chemical status of fail due to PBDE, perfluorooctane sulphonate (PFOS) and mercury and its compounds.
- 12.5.13 There are no surface water Drinking Water Protected Areas or Drinking Water Safeguard Zones within the study area. A Zone III Total Catchment Source Protection Zone (SPZ) is located within the northeastern end of the study area. The West Shropshire groundwater Nitrate Vulnerable Zone (NVZ) is located within the study area too. Information relating to groundwater is included in Chapter 13: Grounds Conditions, Geology and Hydrogeology.
- 12.5.14 In terms of their physical form, the majority of the river WFD waterbodies within the study area are designated as 'natural' (NRW) or as 'not designated artificial or heavily modified' (EA). There are three exceptions which are designated as 'heavily modified', as shown in Table 12.4. Two of the waterbodies have an 'artificial' designation. For the WFD waterbodies where the data is provided by the EA (the bottom six rows of Table 12.4), in terms of both their hydrological regime and morphology, they are all designated as 'supports good' with the exception of Oswestry Brook which is designated 'high' for its hydrological regime.
- 12.5.15 The River Vyrnwy, which is crossed multiple times by the Project, is sinuous throughout the study area with a wide, expansive floodplain. It is understood this watercourse is active and that it has exhibited notable geomorphological change in the past. Further details are provided in Appendix 12.3 of the PEIR, Volume 3.

## Flood Risk and Land Drainage

- 12.5.16 The mapped Flood Zones for England (Ref 12.36) and Wales (Ref 12.37) show that the majority of the Project's draft Order Limits, including the indicative locations for the collector substation and CSEC, are located within Flood Zone 1 (low risk), equivalent to an annual chance of flooding from rivers of less than 1 in 1,000 (0.1%). However, the Project does pass through notable areas of Flood Zones 2 (medium risk, equivalent to an annual chance of between 1 in 1,000 (0.1%) and 1 in 100 (1%)) and 3 (high risk, equivalent to an annual chance of flooding from rivers of 1 in 100 (1%) or greater) primarily associated with the River Vyrnwy, Afon Cain, Afon Tanat, River Morda and River Perry.
- 12.5.17 Other mapped data sources for flood risk from rivers (see section 12.4) are broadly coincident with the risk represented by the Flood Zones.
- 12.5.18 According to the flood defence datasets for Wales (Ref 12.41) and England (Ref 12.40) and the majority of the flood defences within the study area are natural high ground, for example along the banks of the River Vyrnwy, Oswestry Brook, River Morda and River Perry. According to the datasets there are also defences classified as embankments along the Vyrnwy.
- 12.5.19 The Recorded Flood Extents dataset for Wales (Ref 12.43) shows previously flooded areas along the River Vyrnwy in the years 1960, 1998, 2000, 2002, and 2004. Within the study area, this dataset also shows recorded flood extents along the Afon Cain and Afon Tanat. In England, the datasets (Ref 12.42) show recorded flood extents along the River Vyrnwy and River Morda within the study area.
- 12.5.20 Figure 12.2: Flood Risk Areas shows surface water flood risk across the study area of the PEIR, Volume 2. The Welsh 'flood risk from surface water and small watercourses' dataset shows that the majority of the land where the Grug y Mynydd Collector Substation is proposed is at very low risk (annual chance of flooding from this source less than 1 in 1,000 (0.1%)). Small areas shown to be at higher risk of flooding from this source are associated with existing flow pathways towards local watercourses. The majority of the land where the proposed construction compound by the Grug y Mynydd Collector Substation would be located is shown to be at very low risk of flooding from surface water and small watercourses. There is a small area of land along the northern edge of the proposed construction compound that is shown to be at 'low' risk (annual chance between 1 in 1,000 (0.1%) and 1 in 100 (1%)) of flooding from this source. The

proposed Cors y Carreg CSEC is partially located in an area shown to be at 'high' risk of flooding (annual chance of flooding greater than 1 in 30 (3.3%)) from surface water and small watercourses. It is noted that this is based on the current design which is subject to change as the proposals evolve. According to the English 'risk of flooding from surface water' mapping the majority of the land at the indicative location of the Switching Station near Lower Frankton is also at very low risk (annual chance of flooding from this source less than 1 in 1,000 (0.1%)). The mapping shows some small areas of ponding which are not extensive.

- 12.5.21 A summary of the superficial and bedrock geology within the study area is provided in Chapter 13: Ground Conditions, Geology and Hydrogeology, along with information on groundwater flow and levels. Flood risk from groundwater is understood to be variable throughout the study area. As described in Chapter 13: Ground Conditions, Geology and Hydrogeology, potential for flood risk from groundwater has been identified where there is likely hydraulic connection between the gravel superficial deposits and nearby watercourses. This will be further characterised in the Flood Risk Assessment.

### **Future Baseline**

- 12.5.22 The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed in the ES.
- 12.5.23 With regard to flood risk and drainage, future baseline conditions within the ES will be forecast, drawing on current best practice guidelines from the EA and NRW about the predicted effects of climate change on rainfall intensities and peak river flows (Ref 12.45). These future conditions will be considered to factor in climate change resilience into the Project design.
- 12.5.24 When assigning value to water environment resources and receptors, the implementation of future cycles of WFD management plans, driving future improvements in the ecological and chemical quality of water bodies, will be considered; and the potential effects of other planned development on the quality of the water environment within the study area will also be considered.
- 12.5.25 CRT advised that the Montgomery Canal is in the process of being restored with several large projects underway on currently derelict/disused sections. These improvements will be considered in assigning receptor value within the ES.

## 12.6 Preliminary Mitigation Measures

12.6.1 Mitigation measures detailed in this section have been considered as an inherent part of the Project and therefore have been considered when preliminarily assessing the likely significance of effects. The effects reported below are therefore the residual the effects of the Project, assuming implementation of embedded preliminary mitigation measures.

### Embedded Mitigation

12.6.2 The overriding design principle for the Project is to seek to avoid or minimise impacts on sensitive Water Resources receptors. Environmental appraisal has been an integral part of the Project design from the outset, which has meant that the Project has been able to avoid environmentally sensitive features as far as reasonably practicable. Examples of the primary mitigation measures specific to Water Resources are described below.

12.6.3 For access roads and haul roads, the Project requires the crossing of multiple ditches, drains and watercourses. Large or sensitive watercourses, for example those designated as main river, and those with WFD status, will be crossed using clear span bridges.

12.6.4 Buffers from main rivers and ordinary watercourses would be set based on local conditions and infrastructure associated with the Project would be located outside of these zones. The Grug y Mynydd Collector Substation and indicative site for the Switching Station near Lower Frankton would be located within Flood Zone 1.

### Good Practice Mitigation

12.6.5 Good practice measures, comprising management activities and techniques, will be implemented during construction of the Project to limit effects through adherence to good site practices and achieving legal compliance.

12.6.6 An Outline Construction Environmental Management Plan (OCEMP) will be submitted as part of the application for development consent, with the final document secured through the DCO.

- 12.6.7 Chapter 2: Project Description provides a high-level description of relevant standard practice measures. Those specific to Water Resources include but are not limited to:
- Fuels, oils and chemicals will be stored responsibly, away from sensitive water receptors. All refuelling, oiling, and greasing of construction plant and equipment will take place above drip trays and away from drains as far as is reasonably practicable. Vehicles and plant will not be left unattended during refuelling.
  - Surface water runoff would be appropriately managed during construction with respect to quantity and quality.
  - Once the Project has been constructed, the working areas will be removed, and the sites reinstated. Temporary construction haul roads (including temporary bridges and culverts) are likely to be removed unless identified as offering a long-term improvement to the environment and land usage during the design (and agreed with the land owner). Any stripped topsoil will be reinstated, and the site will be returned to its former use, subject to any planting restrictions or agreements with landowners.
- 12.6.8 A FRA will be carried out to assess risks to the Project from a range of flooding sources and will identify appropriate mitigation measures, which will be set out in a commitments registered and secured through a requirement of the DCO. Where required, this will include a surface water drainage strategy to meet the requirements of statutory standards for sustainable drainage systems.
- 12.6.9 Works within or in close proximity to watercourses will be undertaken in accordance with relevant consents/permits including Ordinary Watercourse Consent/Flood Risk Activity Permits.
- 12.6.10 The mechanisms by which mitigation measures will be secured and delivered will be set out in the ES.

## 12.7 Preliminary Likely Significant Effects

- 12.7.1 The preliminary likely significant effects of the Project have been assessed using currently available data relating to both the construction and operation phases of the Project. The preliminary potential residual effects are outlined below. It assumes that embedded mitigation measures are in place before assessing the effects. This is in accordance with guidance from the IEMA as part of preparing a proportional assessment (Ref 12.27).

- 12.7.2 It should be noted that this assessment is ongoing and is subject to change through ongoing development of the Project proposals. A full detailed assessment will be presented within the ES.
- 12.7.3 In the Scoping Report, effects on water quality were scoped out for the construction phase and effects on hydrology were scoped out for both construction and operation phases. However, in line with the Planning Inspectorate's comments in the Scoping Opinion (see Table 12.2), these matters are scoped in with further assessment and justification for no likely significant effects to be provided in ES. Effects on water quality during the operation phase were scoped out in the Scoping Report and the Planning Inspectorate agreed with this (see Table 12.2).
- 12.7.4 Effects on flooding from fluvial and pluvial (surface water) sources during operation were scoped out and the Planning Inspectorate agreed that operational impacts in respect to fluvial and pluvial flood risk are not likely to give rise to significant effects (see Table 12.2). Effects on flooding from these sources during construction are scoped in.
- 12.7.5 In the Scoping Report flood risk from other sources (groundwater, sewers and artificial sources) was scoped out for both construction and operation phases. However, in line with the Planning Inspectorate's comments in the Scoping Opinion (see Table 12.2), this matter is scoped in, subject to more detailed assessment within the FRA, with justification for no likely significant effects to be provided, as applicable, in ES.
- 12.7.6 At this stage, no impacts on the ponds and lakes within the study area are anticipated during construction or operation. This will be confirmed in the ES once sites designated for nature conservation with a hydrological link have been identified.
- 12.7.7 The preliminary assessment of effects relating to hydrogeology and groundwater is presented in Chapter 13: Grounds Conditions, Geology and Hydrogeology and in Chapter 7: Ecology for effects relating to biodiversity.

### **Construction**

- 12.7.8 At this stage sites designated for nature conservation with a hydrological link have not been confirmed. An assessment of effects on these sites with a hydrological link would be presented in the ES, informed by further data and ecology surveys.

12.7.9 The potential impacts for Water Resources associated with the construction phase are described in Table 12.5.



Table 12-5 – Construction Phase – Preliminary Assessment of Potential Impacts on Water Resources

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
All watercourses crossed by the cable or for access using open cut techniques and culverts: hydromorphology	High – there are natural watercourses within the study area, with a range of morphological features and limited signs of artificial modifications.	Where open cut crossing methods are proposed, an impact pathway may be created, with potential for temporary physical disturbance and changes to channel planform and temporary changes to watercourse flow regimes. Adverse impacts would range in duration. Maintaining downstream flow at crossings and reinstating watercourses following construction would mitigate these potential impacts such that no likely significant effects are anticipated.
	Medium – some watercourses in the study area are classified as heavily modified but exhibit some morphological features.	
Main rivers: water quality	Very High/High – have WFD classifications, with Q95 flows ranging from > 1m <sup>3</sup> /s to < 1m <sup>3</sup> /s	Temporary adverse impacts at watercourse crossings for the cables and for access, and at construction works sites, for example, arising from generation of silted runoff and associated with over-pumping and dewatering activities (dewatering effects assessed in Chapter 13: Grounds Conditions, Geology and Hydrogeology).

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
		Mitigation included in the OCEMP and following standard practices would reduce the potential for significant effects such that no likely significant effects are expected.
Ordinary watercourses: water quality	High/Medium – watercourses not having a WFD classification shown in an RBMP and generally with Q95 flows of >0.001m <sup>3</sup> /s	
Montgomery Canal: water quality	High – reaches of the canal are sites designated for nature conservation within the study area and the canal is noted for the aquatic plant diversity it supports.	
Montgomery Canal: water conveyance	High – reaches of the canal are used for recreation (e.g. fishing, walking trails) and the canal is locally significant	No direct impacts on the canal are expected and no likely significant effects on its water conveyance attributes are anticipated. The potential for loss of the amenity value of this receptor is assessed in Chapter 16: Health and Wellbeing.

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
Main rivers: flood flow storage and conveyance	Very High/High – project classification of Essential infrastructure in the context of the NPPF flood risk vulnerability categories	<p>Parts of the construction working width and temporary construction compounds/laydown areas would be located within Flood Zone 3. This could result in temporary changes in floodplain storage or flow routes, and consequently adverse changes to baseline fluvial flood risk.</p> <p>Potential flood risk impacts on people and existing development/infrastructure within the floodplain could be associated with works that cause temporary loss of floodplain storage or disruption to flow conveyance, for example soil storage.</p> <p>The impacts of the Project will be subject to detailed assessment as part of the FRA which would identify any measures necessary to manage flood risk to existing development within the floodplain and prevent likely significant effects.</p>
Ordinary watercourses and canals with mapped areas of Flood Zone 2/3: flood flow storage and conveyance	Medium – watercourses of value for this attribute at the local scale, water level control systems for the canals limit the risk of overtopping.	

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
People and existing development within the floodplain: flood risk	High/Medium – existing development within the study area of a range of flood vulnerability categories	
Existing or proposed flood risk management infrastructure	High – infrastructure providing reduced flood risk to existing development within the study area	<p>No flood risk management infrastructure has been identified in the vicinity of the proposed cable reach so adverse impacts on the structural integrity of flood defences during construction are not anticipated.</p> <p>Construction works could conflict with planned flood risk management projects and capital works. However no likely significant effects are expected.</p>
Land drainage regime (ditches, land drains etc): flow storage and conveyance	Medium – receptors are of value for this attribute at the local scale	<p>The existing land drainage regime could be adversely impacted directly by construction activities causing severance of drainage routes or by damage caused to the soil structure, changing its infiltration and runoff properties. The Project would be constructed on greenfield land, so changes to existing rainfall infiltration and runoff patterns would be induced by introduction of less permeable land cover.</p> <p>Temporary increases in impermeable land cover (e.g., construction compounds) could cause localised changes to</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
		<p>the land drainage regime, resulting in ponding of water or waterlogging of soils. Areas with a sloping topography where topsoil has been stripped would be particularly vulnerable to these changes.</p> <p>Potential effects would be mitigated by reinstating land drains following construction and incorporating suitable drainage measures into the Project design. No likely significant effects are anticipated.</p>
Flood risk from other sources - groundwater	High/Medium – existing development within the study area of a range of flood vulnerability categories	<p>Excavations for the cable installation would be limited in depth, minimising interaction with groundwater resources and foundations suitable to local ground conditions would be constructed, limiting the potential for adverse impacts on groundwater flow paths and levels and consequently flood risk from this source.</p> <p>The impacts and effects of the Project will be subject to detailed assessment as part of the FRA which will identify any measures necessary to manage groundwater flood risk and prevent likely significant effects.</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
<p>Sites designated for nature conservation interest where surface water plays a key role: water quality, flow and level</p>	<p>High to Medium – depending on designation at national or regional/local scale</p>	<p>Potential adverse impacts on sites designated for nature conservation interest due to potential temporary impacts on water quality, flow and water levels caused by construction works. Construction activities that could be impactful include generation of silted or otherwise polluted runoff and temporary changes to flow regime of supporting watercourses caused by crossings. It is anticipated these potential impacts and their consequent effects could be mitigated through the previously described mitigation measures such that likely significant effects are not anticipated.</p>
<p>Watercourses – water resource availability</p>	<p>High to Medium – depending on water availability status and number of existing abstractions that are supported.</p>	<p>No large scale consumptive water usage is proposed during construction and hence no adverse impacts on water resource availability are anticipated. No likely significant effects are expected.</p>

## Operation

- 12.7.10 The potential impacts for Water Resources associated with the operation phase of the Project are provided in Table 12.6.
- 12.7.11 The Planning Inspectorate agreed that effects on water quality during operation could be scoped out providing that the measures to mitigate the risks of pollution of watercourses are clearly described in the ES and secured in the application for development consent. An outline drainage strategy would be provided to support the ES to indicate how surface water runoff would be managed. This would incorporate appropriate drainage measures to ensure compliance with national and local standards.
- 12.7.12 As indicated in Table 12.6, effects during operation are anticipated to be limited. The impact on flood risk would be fully assessed in the FRA.

Table 12-6 – Operation Phase – Preliminary Assessment of Potential Impacts

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
<p>All watercourses affected by permeant Project infrastructure: hydromorphology.</p>	<p>High – for watercourses within the study area classified as natural, with a range of morphological features and limited signs of artificial modifications.</p> <p>Medium – some watercourses in the study area are classified as heavily modified but exhibit some morphological features.</p>	<p>Following construction, culverts/bridges used for construction access would be removed and watercourses reinstated. Based on the current Project design, a number of towers would be located on the floodplains of watercourses, however these have limited potential to interrupt floodplain flow paths or reduce river-floodplain connectivity. In the current Project design, the Cors y Carreg CSEC is shown to partially block a overland flow path associated with an ordinary watercourse. The design is subject to change as the Project evolves. Further assessment of these effects would be presented in the ES. At this stage, no likely significant effects are anticipated.</p>
<p>Main rivers: flood flow storage and conveyance</p>	<p>Very High/High – project classification of Essential infrastructure in the context of the NPPF flood risk vulnerability categories.</p>	<p>Potential adverse impacts on rivers and their floodplains are likely to be limited given that the majority of land required for the construction phase would be restored; the Grug y Mynydd Collector Substation and the indicative site of the Switching Station near Lower Frankton would be sited outside of Flood Zones 2 and 3 and the pylons are considered to be water compatible. The Cors y Carreg</p>
<p>Ordinary watercourses with mapped areas of Flood Zone</p>	<p>Medium – watercourses of value for this attribute at the local scale.</p>	



Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Impact / Change
2/3: flood flow storage and conveyance		CSEC is partially located within a flood extent/high risk flood zone associated with an ordinary watercourse.
People and existing development within the floodplain: flood risk	High/Medium – existing development within the study area of a range of flood vulnerability categories.	The impacts of the Project will be subject to detailed assessment as part of the FRA which would identify any measures necessary to manage operational flood risk and prevent likely significant effects.
Existing or proposed flood risk management infrastructure.	High – infrastructure providing reduced flood risk to existing development within the study area.	The Project is not anticipated to impact flood risk management infrastructure during the operation phase. No likely significant effects are expected.
Land drainage regime (ditches, land drains etc): flow storage and conveyance.	Medium – receptors are of value for this attribute at the local scale.	Permanent increases in impermeable area could result in increased surface water runoff, increased surface water flood risk and adverse changes to the existing land drainage regime. Appropriate drainage measures would be incorporated to ensure compliance with national and local standards. No likely significant effects are expected.

## 12.8 Preliminary Mitigation and Enhancement Measures

- 12.8.1 This section outlines the preliminary mitigation and compensation measures which are likely to be required to address the potential impacts assessed, further to the measures described in section 12.6.
- 12.8.2 As the floodplain of the River Vyrnwy is extensive it has not been possible for the Project to completely avoid construction and placement of operational infrastructure in the floodplain. It is proposed that mitigation measures and commitments would be put in place to ensure no detrimental effects on flood risk to the Project and arising from the Project during its construction and operation. For example, such measures may include floodplain storage compensation and avoidance of blocking floodplain flows. These measures would be informed by further discussion with the EA and NRW.
- 12.8.3 As noted previously, it is understood the River Vyrnwy is active and it is therefore proposed to undertake a geomorphological study as outlined in Appendix 12.3: Geomorphological Study Technical Note of the PEIR, Volume 3. The findings of the proposed study would inform the identification of any necessary measures in addition to embedded and good practice mitigation measures. These would be reported in the ES.
- 12.8.4 The preliminary assessment suggests that, subject to implementation of mitigation measures and completion of the FRA, significant Water Resources effects during construction and operation are unlikely.

## 12.9 Next Steps

- 12.9.1 The next steps are developing the FRA and WFD screening assessment. The findings of these will inform the full assessment undertaken for the ES.
- 12.9.2 The assessment undertaken in the ES will take into account any design changes (e.g., as a result of stakeholder engagement or development of the design) since completion of the PEIR.

## Consultation

- 12.9.3 Due to the iterative design process, stakeholder engagement will continue after the statutory consultation period. Further engagement will be undertaken with CRT, Meverley IDB, the EA, NRW and LLFAs regarding a range of topics, including watercourse crossings, land drainage and principles for floodplain compensation.
- 12.9.4 Targeted consultations will be held with the EA and NRW focussed on flood risk. It is planned that these discussions will facilitate agreement on the flood data to be used in the FRA. Any specific requirements arising from these consultations, regarding the assessment to be undertaken, would be addressed in the FRA which will inform the ES.

## Surveys

- 12.9.5 A geomorphological survey of the River Vyrnwy (Afon Vyrnwy) is proposed to inform the ES as detailed in Appendix 12.3 of the PEIR, Volume 3.

## 12.10 References

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  - Ref 12.13 Welsh Government (2018, updated 2024) Planning Policy Wales. Available at: <https://www.gov.wales/planning-policy-wales> (accessed October 2024)
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  - Ref 12.15 Powys County Council (2014) Powys Local Flood Risk Management Strategy. Available at: <https://en.powys.gov.uk/article/5435/Powys-and-Regional-Documents> (accessed October 2024)
  - Ref 12.16 Shropshire Council (2015) Shropshire Local Flood Risk Management Strategy. Available at: <https://www.shropshire.gov.uk/drainage-and-flooding/policies-plans-reports-and-schemes/local-flood-risk-management-strategy/> (accessed October 2024)
  - Ref 12.17 Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive. Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-the-water-framework-directive> (accessed October 2024)
  - Ref 12.18 Construction Industry Research and Information Association (CIRIA) Control of water pollution from linear construction projects (C649)

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## 13 Ground Conditions, Geology and Hydrogeology

### 13.1 Introduction

13.1.1 This Chapter presents the results of the preliminary environmental information for the assessment of the potential impacts and effects of the Project on ground conditions, geology and hydrogeology and describes:

- Legislation, Policy and Guidance.
- Consultation and Engagement.
- Assessment Methodology and Significance Criteria.
- Baseline Conditions.
- Preliminary Mitigation Measures.
- Preliminary Likely Significant Effects.
- Preliminary Mitigation and Enhancement Measures.
- Next Steps.

### 13.2 Legislation, Policy and Guidance

#### Legislation

13.2.1 A summary of the key legislation considered in the scope of effects on ground conditions, geology and hydrogeology is outlined below.

13.2.2 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 13.50), as amended by the Floods and Water (Amendment etc) (EU Exit) Regulations 2019/558, states the following:

13.2.3 Schedule 4, paragraph 4 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 states that the Environmental Statement (ES) should include: *‘A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.’*



- 13.2.4 Schedule 4, paragraph 5 (part) states 'A description of the likely significant effects of the development on the environment resulting from, inter alia —
- *(a) the construction and existence of the development, including, where relevant, demolition works.*
  - *(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources.*
  - *(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste.*
  - *(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters).*
- 13.2.5 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD Regulations) (Ref 13.02), as amended by the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019/558, provides for the protection of surface (fresh) water, estuaries, coastal waters, and groundwater. The objectives of the Directive (and WFD Regulations) are to enhance the status, and prevent further deterioration of aquatic ecosystem, promote the sustainable use of water, reduce pollution of water and ensure progressive reduction of groundwater pollution.
- 13.2.6 Groundwater Directive (2006/118/EC) (Ref 13.03), as amended by the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019/558, lays down measures to prevent and control groundwater pollution, including: (a) criteria for the assessment of good groundwater chemical status; and (b) criteria for the identification and reversal of significant and sustained upward trends and for the definition of starting points for trend reversals. Moreover, the Directive complements the provisions preventing or limiting inputs of pollutants into groundwater contained in The Water Framework Directive 2000/60/EC and aims to prevent the deterioration of the status of all bodies of groundwater.
- 13.2.7 Groundwater (England and Wales) Regulations 2009 (Ref 13.04), as amended by the UK Statutory Instrument: The Groundwater (England and Wales) Regulations 2009 No. 2902, implement in England and Wales Community legislation on pollution of groundwater. They provide rules for the granting by the Environment Agency of a permit under these Regulations, consent under section 91(8) of the Water Resources Act 1991 and (with exceptions) an environmental permit under the Environmental Permitting (England and Wales) Regulations. In addition, the regulations create an offence of discharge of a hazardous substance or non-hazardous pollutant without a permit, provide for powers of enforcement of the

Environment Agency and prescribe penalties for offences committed under these Regulations.

- 13.2.8 The Water Act 2003 (Ref 13.66) and Water Act 2014 as amended by the Floods and Water (Amendment etc.) (Ref 14.67). They govern the control of water abstraction, discharge to water bodies, water impoundment, conservation, and drought provision.
- 13.2.9 Environment Act 2021 (Ref 13.52). The Environment Act has two main functions:
- To give a legal framework for environmental governance in the UK.
  - To bring in measures for improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity, and conservation.
- 13.2.10 The majority of the Act does not make any immediate changes for organisations other than regulators. The Environment Act does not currently present specific relevant legislative requirements. Further requirements may be implemented through secondary legislation to be made under this Act in the future, and the Project will respond as required.
- 13.2.11 Environmental Protection Act 1990 (Ref 13.05), including Part 2A (Contaminated Land):
- The Environmental Protection Act 1990 (EPA) defines, within England, Wales and Scotland, the fundamental structure and authority for waste management and control of emissions into the environment. The Act was intended to strengthen pollution controls and support enforcement with heavier penalties. Before the Act there had been separate environmental regulation of air, water and land pollution and the Act brought in an integrated scheme that would seek the ‘best practicable environmental option’.
  - Part 2A of the EPA (which was inserted into that Act by section 57 of the Environment Act 1995) contains a regulatory regime for the identification and remediation of contaminated land. In addition to the requirements contained in the primary legislation, operation of the regime is subject to regulations and statutory guidance.
  - The main objective underlying the introduction of the Part 2A contaminated land regime was to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment, assessed in the context of the current use and circumstances of the land.

- The identification of contaminated land, as defined in Part 2A of the EPA, comprises a risk-based approach. For harm to the non-aquatic environment or pollution of controlled waters to occur, there must be a 'pollutant linkage'. This linkage is based on the following being present:
  - A source of contamination (hazard);
  - A pathway for the contaminant to move from source to receptor; and
  - A receptor (target), which is affected by the contaminant. This includes humans, ecosystems, controlled waters, physical systems and built structures, which could be affected by the hazard.

## Policy

- 13.2.12 The PEIR has included a preliminary assessment of the likely effects from the Project taking into account the requirements of the following relevant paragraphs of the policy documents set out herein. A more detailed assessment, along with the provision of mitigation measures if required, will be provided in the ES.

### **Overarching National Policy Statement (NPS) for Energy (EN-1), 2023 (Ref 13.12)**

- 13.2.13 The National Policy Statement sets out the overarching policy for energy infrastructure. It has effect for the decisions by the Secretary of State on applications for energy developments that are nationally significant under the Planning Act 2008. This NPS provides regulations concerning contaminated sites, sites designated for their geological conservation importance, mineral resources, and Groundwater Source Protection Zones (SPZ).
- 13.2.14 Paragraph 5.4.17 (part) states 'Where the development is subject to EIA, the applicant should ensure that the ES clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance...'
- 13.2.15 Paragraph 5.4.19 states that 'The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests.'
- 13.2.16 Paragraph 5.4.38 states 'To further minimise any adverse impacts on geodiversity, where appropriate applicants are encouraged to produce and implement a Geodiversity Management Strategy to preserve and enhance access to geological interest features, as part of relevant development proposals.'

- 13.2.17 Paragraph 5.4.42 states ‘As a general principle, and subject to the specific policies below, development should, in line with the mitigation hierarchy, aim to avoid significant harm to biodiversity and geological conservation interests, including through consideration of reasonable alternatives (as set out in Section 4.3 above). Where significant harm cannot be avoided, impacts should be mitigated and as a last resort, appropriate compensation measures should be sought.’
- 13.2.18 Paragraph 5.11.8 states ‘The ES (see Section 4.3) should identify existing and proposed land uses near the project, any effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing. Applicants should also assess any effects of precluding a new development or use proposed in the development plan. The assessment should be proportionate to the scale of the preferred scheme and its likely impacts on such receptors. For developments on previously developed land, the applicant should ensure that they have considered the risk posed by land contamination and how it is proposed to address this.’
- 13.2.19 Paragraph 5.11.17 states ‘Applicants should ensure that a site is suitable for its proposed use, taking account of ground conditions and any risks arising from land instability and contamination.’
- 13.2.20 Paragraph 5.11.18 states that ‘For developments on previously developed land, applicants should ensure that they have considered the risk posed by land contamination, and where contamination is present, applicants should consider opportunities for remediation where possible. It is important to do this as early as possible as part of engagement with the relevant bodies before the official pre-application stage.’
- 13.2.21 Paragraph 5.11.19 states ‘Applicants should safeguard any mineral resources on the proposed site as far as possible, taking into account the long-term potential of the land use after any future decommissioning has taken place.’
- 13.2.22 Paragraph 5.16.2 (part) states that ‘... There may ... be an increased risk of spills and leaks of pollutants to the water environment. These effects could... result in... groundwaters... failing to meet environment objectives established under the Water Environment Regulations 2017’.
- 13.2.23 Paragraph 5.16.6 states that ‘Applicants are encouraged to consider protective measures to control the risk of pollution to groundwater beyond those outlined in

River Basin Management Plans and Groundwater Protection Zones – this could include, for example, the use of protective barriers.’

- 13.2.24 Paragraph 5.16.7 (part) states ‘The ES should in particular describe...any impacts of the proposed project on water bodies .... source protection zones (SPZs) around potable groundwater abstractions.’

**National Policy Statement for Electricity Networks Infrastructure (EN-5), 2023 (Ref 13.13)**

- 13.2.25 EN-5 covers above ground electricity lines and also applies to other kinds of electricity networks infrastructure including underground cables and associated infrastructure.
- 13.2.26 Paragraph 2.2.10 (part) states ‘... applicants must take into account Schedule 9 to the Electricity Act 1989, which places a duty on all transmission and distribution licence holders, in formulating proposals for new electricity networks infrastructure, to “have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and ...do what [they] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.’
- 13.2.27 Paragraph 2.3.2 (part) states ‘As climate change is likely to increase risks to the resilience of some of this infrastructure, from flooding for example, or in situations where it is located near the coast or an estuary or is underground, applicants should in particular set out to what extent the proposed development is expected to be vulnerable, and, as appropriate, how it has been designed to be resilient to:... flooding, particularly for substations that are vital to the network; and especially in light of changes to groundwater levels resulting from climate change; ... earth movement or subsidence caused by flooding or drought (for underground cables)’.
- 13.2.28 Paragraph 2.9.19 (part) states ‘... the Horlock Rules state that applicants should ... protect as far as reasonably practicable areas of local amenity value, important existing habitats and landscape features ..., surface and ground water sources and nature conservation areas’.
- 13.2.29 Paragraph 2.9.25 (part) states ‘In such cases the Secretary of State should only grant development consent for underground or subsea sections of a proposed

line over an overhead alternative if they are satisfied that the benefits accruing from the former proposal clearly outweigh any extra economic, social, or environmental impacts that it presents, the mitigation hierarchy has been followed, and that any technical obstacles associated with it are surmountable. In this context it should consider:...the potentially very disruptive effects of undergrounding on local communities, habitats, archaeological and heritage assets, marine environments, soil (including peat soils), hydrology, geology, and, for a substantial time after construction, landscape and visual amenity. (Undergrounding an overhead line will mean digging a trench along the length of the route, and so such works will often be disruptive – albeit temporarily – to the receptors listed above than would an overhead line of equivalent rating);’.

**Planning Policy Wales (PPW), 2024 (Ref 13.15)**

- 13.2.30 The PPW sets out the Welsh Government’s planning policies and how these should be applied. The PPW report states that previously developed land (also referred to as brownfield land) should, wherever possible, be used in preference to greenfield sites where it is suitable for development. In settlements, such land should generally be considered suitable for appropriate development where its use will promote sustainability principles and any constraints can be overcome.
- 13.2.31 With regards to land contamination, the following paragraphs are relevant to the Project.
- 13.2.32 Paragraph 6.9.10 (part) states that ‘Development plans should include policies and proposals for the rehabilitation and development of existing derelict sites where development is the preferred response. They may also include specific proposals for allocated sites known as being subject to land contamination or where the site history suggests a potential risk of land contamination as well as the action which may need to be undertaken.’
- 13.2.33 Paragraph 6.9.11 states ‘Policies for areas of land contamination or instability must be accompanied by the warning that they have been defined on the basis of the best information available to the planning authority, are not necessarily exhaustive and that responsibility for determining the extent and effects of such constraints remains that of the developer. Development plans may indicate that the planning authority will need to be satisfied that any actual or potential contamination can reasonably be overcome.’
- 13.2.34 Paragraph 6.9.12 states ‘The planning system should guide development to reduce the risk from natural or human-made hazards affecting the land surface or

sub-surface. The aim is not to prevent the development of such land, though in some cases that may be the appropriate response. Rather it is to ensure that development is suitable and that the physical, geo-technical, chemical and other relevant constraints on the land, including the anticipated impacts which climate change may have, are taken into account at all stages of the planning process.'

13.2.35 Paragraph 6.9.13 (part) states 'When considering development proposals planning authorities should take into account the nature, scale and extent of surface and subsurface hazards which may pose risks to health and environment, to ensure that:

- *New development is not undertaken without an understanding of the risks, including those associated with the previous land use, pollution, groundwater, flood risk, subsidence, landslips, rock falls, mine and landfill gas emissions and rising groundwater from abandoned mines.*
- *Development does not take place without appropriate remediation or precautions.*
- *Consideration is given to the potential impacts which remediation of land, including land contamination, might have upon the natural and historic environment;'*
- *Development is not allowed if expensive engineering projects, which have implications for the public purse, will be required to serve it, for example, to prevent erosion, or in the case of receding cliffs, if a site is likely to be affected by loss of land to the sea during its lifetime or if it could contribute to pollution at a later date.'*

13.2.36 Paragraph 6.9.14 (part) states 'Responsibility for determining the extent and effects of surface and subsurface hazards remains with the developer. It is for the developer to ensure that the land is suitable for the development proposed, as a planning authority does not have a duty of care to landowners.'

13.2.37 Paragraph 6.9.17 states 'There are two areas of interface between the planning system and the contaminated land regime. The first is where land is already designated as contaminated land under Part IIA and the owner wishes subsequently to develop the land. The second will be where a development proposal may introduce changes to a site which may result in land potentially meeting the definition of contaminated under Part IIA, where such land would not be considered contaminated in its existing state under the provision of the regime. In both circumstances, the onus will remain with the developer to ensure that the development of the site will remove any unacceptable risks and the



planning authority in making development management decisions will need to ensure that the land is suitable for its proposed use and would not meet the legal definition of contaminated land under Part IIA.'

- 13.2.38 Paragraph 6.9.18 states that 'Planning authorities should take into account the nature, scale and extent of land contamination which may pose risks to health and the environment so as to ensure the site is capable of effective remediation and is suitable for its intended use. In doing so, development management decisions need to take into account:
- *The potential hazard that contamination presents to the development itself, its occupants and the local environment.*
  - *The results of a specialist investigation and assessment by the developer to determine the contamination of the ground and to identify any remedial measures required to deal with any contamination.'*
- 13.2.39 Paragraph 6.9.19 states that 'Where land contamination issues arise, the planning authority will require evidence of a detailed investigation and risk assessment prior to the determination of the application to enable beneficial use of land, unless it can already be established that remedial measures can be employed. Where it is known that acceptable remedial measures can overcome contamination, planning permission may be granted subject to conditions specifying the necessary measures and the need for their implementation, including provision for remediating any unexpected contamination which may arise during construction. If contamination cannot be overcome satisfactorily, the authority may refuse planning permission.'
- 13.2.40 Paragraph 6.9.20 goes on to state that 'Ensuring that remediation measures are implemented to required standards is essential and planning authorities will require proof, in the form of a validation/ verification report or equivalent, that this has occurred. For example, if a property is at risk from the migration of underground gases then a validation/ verification report should contain a test certificate demonstrating that it has been constructed with gas membranes which have been correctly installed, and the risks adequately mitigated.'
- 13.2.41 With specific regards to physical ground conditions and land instability, the PPW sets out the following paragraphs of relevance to the Project.
- 13.2.42 Paragraph 6.9.23 (part) states 'When considering development proposals planning authorities should take into account the nature, scale and extent of ground instability which may pose direct risks to life and health, buildings and



structures, or present indirect hazards associated with ground movement, including mine entry collapse, which provide potential pathways for the migration to the surface of landfill or mine gases... land stability should be addressed and appropriate mitigation measures secured to protect both existing assets and proposed development itself.'

- 13.2.43 Paragraph 6.9.24 states 'Made ground, the presence of tips and shallow coal workings are extensive in some parts of Wales and their proximity to the surface could present potential instability risk to future development. Information on shallow working has been published by the Coal Authority, alongside data on mine entries, adits and surface hazards.'
- 13.2.44 Paragraph 6.9.25 states 'Planning decisions will need to take into account:
- *The potential hazard that instability could create to the development itself, to its occupants and to the local environment.*
  - *The results of a specialist investigation and assessment by the developer to determine the stability of the ground and to identify any remedial measures required to deal with any instability.'*
- 13.2.45 Paragraph 6.9.26 states that 'Any planning application in coal mining consultation areas may need to be accompanied by a coal mining risk assessment report, or equivalent. Any works which may intersect coal mine workings, mine entries or coal seams may have implications for mine gas, spontaneous combustion and surface collapse and liaison with the Coal Authority must take place.'
- 13.2.46 Paragraph 6.9.27 states that 'Where acceptable measures can overcome instability, planning permission may be granted subject to conditions specifying the necessary measures. If instability cannot be overcome satisfactorily, the authority may refuse planning permission.'
- 13.2.47 With regards to hydrogeology, the following paragraphs of the PPW are relevant to the Project.
- 13.2.48 Paragraph 6.6.7 states that 'Water resources and quality must be taken into account from an early stage in the process of identifying land for development and redevelopment. The protection of water resources should be based on ensuring sustainable use in the future. Meeting short term needs should be balanced against ability to protect water resources over the long term. This may mean that the location of new development, and its type, requires careful consideration.'

- 13.2.49 With regards to geology, the following paragraphs of the PPW are relevant to the Project.
- 13.2.50 Paragraph 3.38 (part) states ‘The countryside is a dynamic and multi-purpose resource. In line with sustainable development and the national planning principles and in contributing towards placemaking outcomes, it must be conserved and, where possible, enhanced for the sake of its ecological, geological, physiographic, historical, archaeological, cultural and agricultural value and for its landscape and natural resources. The need to conserve these attributes should be balanced against the economic, social and recreational needs of local communities and visitors.’
- 13.2.51 Paragraph 6.3.14 states ‘Geological features are a key part of our natural environment, and protecting geodiversity underpins the wider protection and management of our natural resources, including land availability, renewable energy potential, groundwater supply and flood risk.’
- 13.2.52 Paragraph 6.3.15 states that ‘UNESCO Global Geoparks and Biospheres are areas of international geological significance, managed with a holistic concept of protection, education and sustainable development. Regionally Important Geodiversity Sites (RIGS) are non-statutory site designations that recognise locally or regionally important geological and geomorphological landscape features. RIGS are selected for their educational, scientific, historic and aesthetic qualities, to and designated through development plans.’
- 13.2.53 Paragraph 6.3.17 states ‘Planning authorities should protect the features and qualities for which Geoparks and RIGS have been designated, and are encouraged to promote opportunities for the incorporation of geological features within the design of development, particularly where relevant evidence is provided by Green Infrastructure Assessments.’
- 13.2.54 Paragraph 6.3.16 states ‘Some statutory Sites of Special Scientific Interest (SSSIs) are also designated for their nationally important geological or geomorphological features, and planning authorities have a duty to further the conservation and enhancement of those features.’

#### **National Planning Policy Framework (NPPF), 2024 (Ref 13.14)**

- 13.2.55 The NPPF sets out government planning policy for England and provides a framework to which developments must follow. It describes ways in which developments must care for the environment in a sustainable manner, whereby

planning policies and decisions should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils.

- 13.2.56 Paragraph 124 states that ‘Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or ‘brownfield’ land’.
- 13.2.57 Paragraph 125 (part) states ‘Planning policies and decisions should...
- *Give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, proposals for which should be approved unless substantial harm would be caused, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land.’*
- 13.2.58 Paragraph 162 states (in part) ‘Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes.’
- 13.2.59 Paragraph 187 states (in part) ‘Planning policies and decisions should contribute to and enhance the natural and local environment by:
- *Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan).*
  - *Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.*
  - *Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.’*

- 13.2.60 Paragraph 196 states 'Planning policies and decision should ensure that:
- *A site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation).*
  - *After remediation, as a minimum, land should be capable of not being determined as contaminated land under Part IIA of the Environmental Protection Act 1990.*
  - *Adequate site investigation information, prepared by a competent person, is available to inform these assessments.'*

- 13.2.61 Paragraph 197 states 'Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.'

**Environment Agency's approach to Groundwater Protection, 2018 (Ref 13.16)**

- 13.2.62 This policy provides an update on the principles and practices for managing and protecting groundwater by adopting a risk-based approach where legislation allows. It presents position statements on many aspects including protection of water intended for human consumption, infrastructure, landfill, discharge of liquid effluents, land contamination, groundwater resources, river augmentation and flooding from groundwater. The Environment Agency's approach to groundwater protection is currently under review and updates may be made as a result.

**Regional and Local Policies for Geology and Soils**

- 13.2.63 The Local Planning Authorities (LPA) relevant to the Project are Powys County Council and Shropshire Council. A summary of the regional and local policy relevant to the Project considered in the scope of effects on geology and hydrogeology is outlined below.

**Powys County Council Adopted Local Development Plan (LDP) (2011-2026), 2018. (Ref 13.17)**

- 13.2.64 The Powys Local Development Plan sets out the Council's policies for the development and use of land in Powys. Together with national planning policy, it will guide decisions on planning applications on all future development and land use planning within the Plan area during the Plan period.

- 13.2.65 This LDP is applicable to all of Powys except the area of the Brecon Beacons National Park.
- 13.2.66 Policy DM2 - The Natural Environment states 'Development proposals shall demonstrate how they protect, positively manage and enhance biodiversity and geodiversity interests including improving the resilience of biodiversity through the enhanced connectivity of habitats within, and beyond the site.'
- 13.2.67 Policy DM2 at paragraph 3 states: 'The locally important site designations, habitats and species including:
- *Local Nature Reserves.*
  - *Local Biodiversity Action Plan Habitats and Species.*
  - *Regionally Important Geodiversity Sites and Geological Conservation Review Sites.*

Development proposals likely to have an adverse impact upon these sites, habitats or species will only be permitted where it can be demonstrated that:

- *They conserve and where possible enhance the natural heritage importance of the site, habitat or species.*
- *The development could not reasonably be located elsewhere.*
- *The benefits of the development outweigh the natural heritage importance of the site, habitat or species.*
- *Mitigation and/or compensation measures are provided where adverse effects are unavoidable.'*

- 13.2.68 Policy DM8 - Minerals Safeguarding states 'Non-mineral development proposals within Mineral Safeguarding Areas will only be permitted where it can be demonstrated by the developer that:
- *The mineral resource is not of potential future value.*
  - *The development is of a temporary nature and can be completed and the site restored to a condition that would allow for future extraction.*
  - *The mineral can be extracted satisfactorily prior to the incompatible development taking place.*
  - *Extraction would not meet the tests of environmental acceptability or community benefit as set out in National Policy.*
  - *There is an over-riding need in the public interest for the development.*

- *The development is householder development and / or of a very minor nature such as extensions to existing dwellings, and associated development within the curtilage of the property.'*

13.2.69 Policy DM10 – Contaminated and Unstable Land states 'Development proposals on contaminated or unstable land will be permitted where they do not:

- *Result in any additional problems of ground instability or contamination either on or off site and shall remediate the contamination / instability.*
- *Unacceptably adversely affect public health and safety, nature conservation, historic or archaeological interests.'*

13.2.70 Policy DM10 at paragraph 4.2.55 states 'Contamination and land instability can present risks to human health, property and the environment, and long term limitations on the use of soils. For further information and advice refer to PPW Chapter 13. Development proposals will be assessed to ensure that any risks from hazards such as subsidence, mine and landfill gas and leachate emissions, landslips or rockfalls are acceptable and addressed.'

13.2.71 Policy DM10 at paragraph 4.2.56 states 'Similarly development should not harm the environment through pollution or contamination. For instance, petrol interceptors may have to be fitted to storm water drains in new estates. Development may offer the opportunity to remediate land that is already contaminated.'

13.2.72 Policy DM10 at paragraph 4.2.57 states 'Ground instability is often associated with sites that have been the subject of waste disposal operations or areas where past mineral workings have taken place. Consultation will be undertaken with the Mineral Valuer / Coal Authority on appropriate applications to assess the extent of risk to the development from former mineral workings. In accordance with MTAN 2, Para. 2281, development proposals within areas of coal mining legacy will be required to give full consideration to coal mining information and, where necessary, implement mitigation measures to the satisfaction of the Local Planning Authority to ensure the safety and stability of new development. Any intrusive activities which intersect, disturb or enter any coal seams, coal mine workings or coal mine entries require the prior written permission of the Coal Authority'

13.2.73 Policy DM10 at paragraph 4.2.58 states 'Responsibility for determining the extent and effects of instability, contamination and other risks lies with the developer, who must ensure that land is suitable for the development proposed. Once

contaminated land has been remediated the developer must submit a validation report to the Council confirming that the land is no longer contaminated; this will allow the Council's records to be updated.'

**Draft Shropshire Local Plan (2016-2038), 2020 (Ref 13.18):**

- 13.2.74 The role of the Shropshire Local Plan is to translate the high-level objective of *'meeting the needs of the present without compromising the ability of future generations to meet their own needs'* into a meaningful and positive framework at the local level to inform decision making for the benefit of the County.
- 13.2.75 This relates to both strategic issues, such as the amount of growth proposed and how it is distributed, and how the County moves towards a net zero carbon economy; through to more detailed issues, such as the design and layout of new development and how environmental assets are to be protected.
- 13.2.76 Policy DP12 - The Natural Environment states 'The avoidance of harm to Shropshire's natural assets and their conservation, enhancement and restoration will be achieved by... Ensuring that proposals which are likely to have an adverse effect on...the following natural assets: Locally designated geological sites and Geological assets... are accompanied by an Ecological or Geological Impact Assessment as appropriate. This should be carried out by a suitably qualified professional in accordance with industry standards and be proportionate to the scale of the impact and the importance of the asset.'
- 13.2.77 'Ensuring that proposals which are shown to have an adverse effect, directly, indirectly or cumulatively, to those natural assets listed above will only be permitted if it can be clearly demonstrated that:
- *There is no satisfactory alternative means of avoiding the adverse effect through redesign or by re-locating on an alternative site.*
  - *The social or economic benefits of the proposal outweigh the adverse effect.'*
- 13.2.78 Policy DP18 - Pollution and Public Amenity states 'Proposals should be designed from the outset to; safeguard environmental quality and public amenity; minimise pollution; mitigate adverse effects; and maximise opportunities for improvements where practicable.'
- 13.2.79 'The re-use of previously developed (brownfield) land is encouraged. Proposals on despoiled, degraded, derelict or unstable land or on land affected by contamination will be supported, subject to other plan policies, where it can be established by the applicant that the site can be safely and viably developed with



no significant impact either during the construction or operational stages of development on:

- *Ground and surface water quality in accordance with Policy DP19.*
- *Soil quality.'*

- 13.2.80 'Proposals on sites with a known or high likelihood of instability or contamination should be accompanied by proportionate and adequate site investigation prepared by a competent person. This should determine:
- *The existence or otherwise of contamination or instability.*
  - *The nature, extent and source of the instability or contamination and (for contamination), the potential pathways.*
  - *The risks associated with the instability or contamination and who these are likely to affect.*
  - *A strategy which sets out measures to remediate any instability or contamination.'*
- 13.2.81 Policy DP19 - Water Resources and Water Quality states 'Development must not adversely affect the quality, quantity and flow of both ground and surface water and must ensure that there is adequate water infrastructure in place to meet its own needs.'
- 13.2.82 'Development proposals which would lead to deterioration or compromise the ability of those water bodies covered by the Water Framework Directive to meet good status standards, both during construction and when operational, will not be supported.'
- 13.2.83 'Development proposals in a groundwater Source Protection Zones (SPZ) must show how they have:
- *Considered the potential to encounter shallow groundwater. If shallow groundwater is likely, the Council will expect the development to restrict the use of soakaways.*
  - *Avoided direct discharge of hazardous substances to groundwater; and*
  - *Considered the potential for historic contamination to be encountered. Where historic contamination is likely, the Council will expect development to restrict deep penetrative foundation methods.'*
- 13.2.84 'Proposals in Source Protection Zone 1 are not encouraged.'



- 13.2.85 Policy DP29 - Mineral Safeguarding states ‘Applications for non-mineral development which fall within a MSA [Mineral Safeguarding Area] and which could have the effect of sterilising mineral resources will not be granted unless:
- *The applicant can demonstrate that the mineral resource concerned is not of economic value; or*
  - *The mineral can be extracted to prevent the unnecessary sterilisation of the resource prior to the development taking place without causing unacceptable adverse impacts on the environment and local community; or*
  - *The development is exempt as set out in the Explanation’ table.’*
- 13.2.86 ‘Applications for non-mineral development within the buffer zones surrounding the safeguarded mineral transport and processing facilities will not be granted unless the applicant can demonstrate that:
- *The development proposed would not prevent or unduly restrict the continued operation of the protected infrastructure; or,*
  - *That the identified facilities are no longer required or that viable alternative facilities are available.’*
- 13.2.87 ‘Applications for permission for non-mineral development in a MSA must include an assessment of the effect of the proposed development on the mineral resource beneath or adjacent to the site of the development or the protected mineral handling facility (termed a Mineral Assessment).’

**Shropshire Local Development Framework: Adopted Core Strategy, 2011 (Ref 13.19)**

- 13.2.88 The Core Strategy Development Plan Document (DPD) is the principal document of the Shropshire Local Development Framework (LDF), which set out policies relating to the use and development of land in Shropshire.
- 13.2.89 The Core Strategy sets out the Council’s vision, strategic objectives and the broad spatial strategy to guide future development and growth in Shropshire during the period to 2026.
- 13.2.90 The Core Strategy embodies an innovative approach to development in Shropshire and aims to deliver more sustainable places at all levels and in both urban and rural settings.

13.2.91 Policy CS6 - Sustainable Design and Development Principles states *‘Ensuring that all development:*

- *Protects, restores, conserves and enhances the natural, built and historic environment and is appropriate in scale, density, pattern and design taking into account the local context and character, and those features which contribute to local character, having regard to national and local design guidance, landscape character assessments and ecological strategies where appropriate.*
- *Makes the most effective use of land and safeguards natural resources including high quality agricultural land, geology, minerals, air, soil and water.’*

13.2.92 Policy CS17 - Environmental Networks states ‘Development will identify, protect, enhance, expand and connect Shropshire’s environmental assets, to create a multifunctional network of natural and historic resources. This will be achieved by ensuring that all development:

- *Does not adversely affect the visual, ecological, geological, heritage or recreational values and functions of these assets, their immediate surroundings or their connecting corridors’.*

13.2.93 Policy CS20 - Strategic Planning for Minerals states ‘Shropshire’s important and finite mineral resources will be safeguarded to avoid unnecessary sterilisation and there will be a sustainable approach to mineral working which balances environmental considerations against the need to maintain an adequate and steady supply of minerals to meet the justifiable needs of the economy and society. This will be achieved by:

- *Protecting Mineral Safeguarding Areas (MSA’s) and rail freight facilities which could contribute to the sustainable transport of minerals.*
- *Maintaining landbanks of permitted reserves for aggregates consistent with the requirements of national policy guidance.*
- *Only supporting proposals for sand and gravel working outside these broad locations and existing permitted reserves, where this would prevent the sterilisation of resources, or where significant environmental benefits would be obtained, or where the proposed site would be significantly more acceptable overall than the allocated sites.*
- *Supporting environmentally acceptable development which facilitates the production of other mineral resources.*

- *Priority will be given to environmentally acceptable restoration and aftercare proposals which can deliver targeted environmental or community benefits consistent with Policies CS8, CS17 and CS18.'*

## Guidance

- 13.2.94 The assessments to inform the PEIR and ES will be undertaken with due regard to the following relevant guidance:
- Environment Agency (2023) Land Contamination: Risk Management (LCRM) (Ref 13.22).
  - Environment Agency (2010) Guiding Principles for Managing and Reducing Land Contamination (GPLC) (Ref 13.23).
  - British Standards Institution (2017) BS10175:2001+A2:2017 Investigation of Potentially Contaminated Sites. Code of Practice. (Ref 13.24);
  - CIRIA (2023) C811 Environmental Good Practice Good Practice On Site (Ref 13.25).
  - CIRIA (2001) Report C532 – Control of Water Pollution from Construction Sites (Ref 13.27).
  - CIRIA (2001) C552 Contaminated Land Risk Assessment, A guide to Good Practice (Ref 13.28).
  - Highways England, Transport Scotland, Welsh Government and Department for Infrastructure (2023) Design Manual for Roads and Bridges (DMRB) LA 109 Geology and Soils (Ref 13.29).
  - Highways England, Transport Scotland, Welsh Government and Department for Infrastructure (2019) Design Manual for Roads and Bridges (DMRB) LA 110 Material assets and waste (Ref 13.30).
  - National Highways (2020) DMRB LA 113: Road Drainage and the Water Environment (Ref 13.31).
  - Natural Resources Wales (20124) Water management and quality (Ref 13.52).
  - IEMA Guidance (Ref 13.20 and 13.21).

## 13.3 Consultation and Engagement

- 13.3.1 The comments from the Scoping Opinion from the Planning Inspectorate (PINS) and subsequent responses to this Scoping Opinion are outlined below. Furthermore, all engagement undertaken to date is outlined in this Section.

- 13.3.2 Engagement with relevant stakeholders will be ongoing up to the submission of the application for development consent with the aim to agree the outcomes of the assessment, as well as key design parameters and mitigation measures.

### **Scoping Opinion**

- 13.3.3 The decision of the Planning Inspectorate in their Scoping Opinion for the Project with respect to ground conditions, geology and hydrogeology is outlined in Table 13-1, which will be considered accordingly and addressed as necessary in the ES.

Table 13-1 – Scoping Opinion from the Planning Inspectorate

ID	Matter	Inspectorate’s Comments	Project Response
3.9.1	Land instability and mining - construction and operation	The Scoping Report proposes to scope out this matter on the basis that the Proposed Development is outside of Coal Mining Development High Risk Areas and ground stability would be considered within the engineering design of the Proposed Development, with standard/ embedded mitigation to be provided where necessary. The Inspectorate notes from paragraph 14.12 of the Scoping Report that this will include consideration of changes to the future baseline, particularly how climate change could affect the integrity of soil and peat deposits. The Inspectorate is content that this matter can be scoped out on this basis. The ES should however identify any standard/ embedded mitigation measures relied upon to exclude LSE and explain how they would be secured and implemented as part of the dDCO.	Whilst this matter is scoped out, further detail will be included within the ES with regard to how ground stability will be managed via good practice / embedded mitigation and how the mitigation will be secured and implemented.
3.9.2	Regionally Important Geo conservation Sites (RIGS)/ Geological	The Scoping Report indicates that there are five sites of geological importance within or in close proximity to the Scoping Corridor and the Afon Vyrnwy GCR is sensitive to any infrastructure that alters the landscape	Preliminary baseline conditions have been assessed in the PEIR. Further to the Inspectorate’s comments, RIGS/GCR effects will be scoped in for both construction and

ID	Matter	Inspectorate's Comments	Project Response
	Conservation Review (GCR) sites - operation	surface. Insufficient information regarding potential impact pathways to RIGS and GCR during operation has been provided to exclude the possibility of LSEs to these receptors. The Inspectorate does not agree to scope this matter out. Accordingly the ES should include an assessment of this matter or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of a LSE.	operation. This matter will be assessed within the ES.
3.9.3	Contaminated land including landfills - construction and operation	The Scoping Report proposes to scope this matter out of the ES on the basis that standard mitigation, designing out of any risk or remediation (if required) will mean significant effects are unlikely to occur. The Scoping Report states that there is the potential for existing contamination/ landfills to be encountered within the Scoping Corridor, however the Preliminary Risk Assessment (PRA) has not yet been undertaken. Until the results and recommendations of a PRA are known, there is insufficient evidence to support scoping out an assessment of contaminated land for the construction phase. The ES should be supported by the findings of a PRA and where potential sources of contamination and/ or potential source-pathway-	Preliminary baseline conditions have been assessed in the PEIR. This matter will be assessed within the ES with regard to how land contamination effects will be managed during construction, which will include the findings of a Preliminary Risk Assessment. This matter is scoped out for operation.

ID	Matter	Inspectorate's Comments	Project Response
		receptor linkages are identified in relation to the construction phase, the ES should assess significant effects where they are likely to occur. The Inspectorate is content that this matter can be scoped out for the operational phase.	
3.9.4	Study area	The Scoping Report states that the study area will comprise a 250m buffer around the final infrastructure layout. No justification is presented for the selection of this area. The ES should explain the basis on which the final study area has been selected. This should be informed by an understanding of the predicted Zol of the Proposed Development rather than a generic geographical distance.	Justification for the study area is provided in Section 13.4 and this will be further detailed in the ES.
3.8.6	Potential effects on hydrogeology including PWS, Groundwater Dependant Terrestrial Ecosystems (GWDTE) and	The Inspectorate notes that hydrogeology including PWS and GWDTEs will be covered in ES Chapter 14: Ground Conditions, Geology and Hydrogeology. The Inspectorate is content with this approach. The assessment in ES Chapter 14 should contain appropriate cross reference to relevant aspect chapters of the ES including Water Resources and Ecology.	No further Project response necessary at this stage.

ID	Matter	Inspectorate's Comments	Project Response
	groundwater abstractions		



## Consultation for Baseline

13.3.4 Further to the receipt of the Scoping Opinion, requests for pertinent information and clarifications to support the development of the baseline conditions were made to Natural Resources Wales; the Environment Agency; Powys County Council and Shropshire Council. At the time of writing, responses have been received from the Environment Agency and Powys County Council and they are summarised herein.

### Environment Agency

13.3.5 Information was requested with regards to a number of GWDTEs; available groundwater level data and water quality data, particularly in the area of the Ramsar site - Midland Meres & Mosses Phase 2 (Morton Pool & Pasture (SSSI)); details of available groundwater and surface water abstractions; details of the Shropshire Groundwater Scheme that was detailed within the Scoping Opinion and in particular the proposed Phase 7; details of the three historic landfill sites 'Oswestry Bypass / Field to North Of Queens Head', 'Rednal Landfill', and 'Field At Inglewood, Aston' that were detailed within the Scoping Opinion, and available information regarding other historic or authorised landfill sites.

13.3.6 The EA provided the following information, which has been reviewed and used in determining the baseline conditions.

- Referred to the Natural England website for details of the GWDTE SSSIs and their condition.
- Provided a list of surface and groundwater sampling sites within the scoping corridors in the West Midlands area.
- Referred to water quality information via the Defra Data Services Platform App.
- Referred to the hydrology data explorer for records of groundwater level at observation boreholes.
- Was not able to provide groundwater level data within the area defined as it is not held by the EA.
- Provided a spreadsheet regarding abstractions, which also included the Shropshire Groundwater Scheme Phase 7.
- Referred to EA open source data with respect to historical landfills; and
- Confirmed there are no active landfill sites within the study area.

## **Powys County Council**

- 13.3.7 Information was requested for any information held relating to private water supplies; historical landfill sites; records of contaminated land sites; details of sites of geological importance (RIGs, GCR); and confirmation of any mineral safeguarding areas.
- 13.3.8 Powys County Council provided a link to DataMapWales for information regarding RIGs and GCR sites; referred to Minerals UK / British Geological Survey for information regarding mineral safeguarding. A response from the environmental protection service with regards to the remaining information requested is awaited.

## **13.4 Assessment Methodology and Significance Criteria**

### **Study Area**

- 13.4.1 The study area for the assessment includes the land within the Project's draft Order Limits, plus a buffer zone of 250m. The study area includes all the temporary laydown and construction areas, and permanent land take required for the Project.
- 13.4.2 The study area has been determined in line with likely effects from the reasonable worst-case scenario for the Project, as defined in Chapter 5: Environmental Assessment Methodology. It has been defined to reflect the surrounding geological and environmental features (e.g., landfill sites) and the distance over which significant effects can reasonably be thought to have the potential to occur. Given the scale and nature of the Project, this is considered a robust yet proportionate approach. This additional buffer is based on knowledge of similar linear projects and the DMRB LA109: Geology and Soil (National Highways, 2020) (Ref 13.29). In addition, although not directly relevant for this project type, the proposed study area accords with the study area recommended in Guidance for the Safe Development of Housing on Land Affected by Contamination (National House Building Council and Environment Agency, 2008) (Ref 13.69). Established industry guidance states that off-site features within an area up to 250m from the site boundary should typically be considered within the hazard identification stage. Features at greater distance should only be described

if they are particularly large or have the potential to affect the land quality at the site or the wider environmental quality.

- 13.4.3 The study area for hydrogeology (groundwater related receptors and related impacts) has been based on the Zone of Influence (Zol) by comparison with similar types of schemes which include below ground activities (e.g. groundwater control for excavations including pumping of groundwater, also known as dewatering) or below ground structures. The Project, described in Chapter 2: Project Description, would have a proportionally small extent of below ground activities or structures, compared to the total length of the Project. Importantly, deep excavations would not be expected at the Underground Cable Route (UGC), tower foundations, temporary access roads and permanent access roads. Therefore, any dewatering is expected to be limited. The small-scale dewatering exemption regulation requirements of England and Wales (Ref 13.53) are relevant for consideration. These require, amongst other things, reduced temporary dewatering rates within 250m of a spring, well or borehole used to supply water. This distance is similar to the study area proposed. However, the same small scale dewatering exemptions (Ref 13.54) also place the same restrictions within 500m of a conservation site. Therefore, the Project study area, in relation to conservation sites that could be groundwater related, has been locally increased to 500m beyond the Project's draft Order Limits for where dewatering might occur, such as at tower locations. Comparison may also be made with the Scottish Environment Protection Agency (SEPA) guidance (Ref 13.54). This is commonly used for onshore wind turbine developments in relation to the assessment of impacts to groundwater, but is relevant for other developments with shallow excavations. The SEPA guidance uses a 250m search buffer for excavations below a depth of 1m, which is comparable to tower foundations. Therefore, the general use of a 250m buffer from the Project's draft Order Limits for hydrogeology is supported by the above guidance. The hydrogeology study area is proposed to be reviewed as the Project design progresses, and locally adjusted as necessary. However, it would be kept to a minimum of 250m beyond the Project's draft Order Limits.

### **Baseline Data Collection**

- 13.4.4 The baseline assessment that has informed this PEIR has drawn upon the following information sources:
- British Geological Survey (BGS). Geo Index Onshore Interactive Map [online] (Ref 13.32);.

- DEFRA. Multi-Agency Geographic Information for the Countryside (MAGIC) Interactive Map [online] (Ref 13.33);
- Powys County Council, Local Development Plan 2011 – 2026 (Ref 13.34).
- Shropshire Council, Local Plan 2016-2038 Minerals Safeguarding Interactive Map [online] (Ref 13.35).
- The Coal Authority, Interactive Map [online] (Ref 13.36).
- National Library of Scotland (NLS), Georeferenced historical maps [online] (Ref 13.37).
- Environment Agency. Authorised Landfill Site Boundaries and Historic Landfill Sites (England), Landfill Sites (Ref 13.38);
- Google Aerial Maps, [online] (Ref 13.43);
- Shropshire Geological Society, Geological Important Sites [online] (Ref 13.49).
- DataMap Wales, [online] (Ref 13.47).
- Stantec Geotechnical Desk Study Report (331201487-STN-96-XX-RP-GE-001), (Ref 13.48).
- Wales Water Watch [online] (Ref 13.40).
- Environment Agency Catchment Explorer [online] (Ref 13.39).
- Allen et al. The physical properties of major aquifers in England and Wales (ref 13.42).

### **Site Visits and Surveys**

- 13.4.5 At the time of writing no site visits have been conducted within the study area. Necessary targeted site visits and surveys required for the ES will be planned and executed in the period between Statutory Consultation and DCO submission.

### **Environment Impact Assessment methodology**

- 13.4.6 This assessment methodology includes the collection of available baseline information to gather data to characterise the underlying ground conditions across the Project. The approach is consistent with the methodology drawn from DMRB LA 113: Road Drainage and the Water Environment (National Highways, 2020, Ref 13.31), DMRB LA 109: Geology and Soils (National Highways, 2019, Ref 13.29), DMRB LA 110 Material Assets and Waste (National Highways, 2019, Ref 13.30), Environment Agency LCRM (Ref 13.22) and CIRIA C552 (Ref 13.28). This should also be read in conjunction with Chapter 5: Methodology.
- 13.4.7 The proposed assessment methodology approach to define receptor sensitivity, magnitude of impact and significance of effect are presented in Table 13-2 and

Table 13-3 below. This criterion is derived from Table 3.70 of DMRB LA 113 (Ref 13.31): Road drainage and the water environment, Table 3.11 of DMRB LA 109 (13.29): Geology and soils, DMRB LA 110 Material assets and waste (Ref 13.30), Environment Agency LCRM (Ref 13.22), and CIRIA C552 (13.28). Additional criteria have been added for unlicensed private supply sources and associated SPZ1s.

Table 13-2 – Criteria for Determining Value / Sensitivity

Sensitivity / Value	General Criteria
Very High	<p><b>Geology</b>            Very rare and of international importance with no potential for replacement (e.g. UNESCO World Heritage Sites, UNESCO Global Geoparks, SSSIs and Geological Conservation Review (GCR) where citations indicate features of international importance). Geology meeting international designation citation criteria which is not designated as such.</p> <p><b>Minerals</b>            Existing minerals sites.</p> <p><b>Contamination</b>  <i>Human Health:</i> Very high sensitivity land use such as residential or allotments.</p> <p>Surface water and water related nature conservation sites  <i>Surface Water:</i> Watercourse having a Water Framework Directive (WFD) classification shown in a River Basin Management Plan (RBMP) and Q95 <math>\geq 1.0\text{m}^3/\text{s}</math>.</p> <p>Site protected/ designated under European Commission (EC) or UK legislation (Special Areas of Conservation (SAC), Special Protection Areas (SPA), Sites of Special Scientific Interest (SSSI), Ramsar site). Species protected by EC legislation.</p>

Sensitivity / Value	General Criteria
	<p>Hydrogeology</p> <p><i>Groundwater:</i> Principal Aquifer providing a regionally important resource and/ or supporting a site protected under EC and UK legislation.</p> <p>Groundwater that locally supports Groundwater Dependent Terrestrial Ecosystems (GWDTE).</p> <p>Groundwater Source Protection Zone (SPZ) 1 for public water supply.</p> <p>SPZ1 for a private water supply (groundwater abstraction or spring).</p>
High	<p>Geology</p> <p>Rare and of national importance with little potential for replacement (e.g. geological SSSI, ASSI, National Nature Reserves (NNR)). Geology meeting national designation citation criteria which is not designated as such.</p> <p>Minerals</p> <p>Mineral Preferred (Allocated) Areas.</p> <p>Contamination</p> <p><i>Human Health:</i> High sensitivity land use such as public open space and construction workers.</p> <p>Surface water and water related nature conservation sites</p> <p><i>Surface water:</i> Watercourse having a WFD classification shown in an RBMP and Q95 &lt; 1.0m<sup>3</sup>/s.</p>

Sensitivity / Value	General Criteria
	<p>Hydrogeology</p> <p>Principal Aquifer providing locally important resource or supporting a river ecosystem;</p> <p>Groundwater supports a GWDTE; and</p> <p>SPZ2 for a public water supply.</p>
Medium	<p>Geology</p> <p>Regional importance with limited potential for replacement (e.g. Regionally Important Geological Sites - RIGS). Geology meeting regional designation citation criteria which is not designated as such.</p> <p>Minerals</p> <p>Mineral Safeguarded Areas and Mineral Consultation Area.</p> <p>Contamination</p> <p><i>Human Health:</i> Medium sensitivity land use such as commercial or industrial.</p> <p>Surface water</p> <p>Watercourses not having a WFD classification shown in an RBMP and Q95 &gt; 0.001m<sup>3</sup>/s.</p> <p>Hydrogeology</p>



Sensitivity / Value	General Criteria
	<p>Secondary A aquifers;            Aquifer providing water for agricultural or industrial use with limited connection to surface water;            SPZ3 for a public water supply; and            Unlicensed groundwater abstraction.</p>
Low	<p><b>Geology</b>            Local importance / interest with potential for replacement (e.g. non designated geological exposures, former quarry's / mining sites).</p> <p><b>Minerals</b>            Mineral present but outside of any Mineral Preferred Areas, Mineral Safeguarded Areas and Mineral Consultation Areas.</p> <p><b>Contamination</b>  <i>Human Health:</i> Low sensitivity land use such as highways and rail.</p> <p><b>Surface Water</b>            Watercourses not having a WFD classification shown in an RBMP and <math>Q95 \leq 0.001\text{m}^3/\text{s}</math>.</p> <p><b>Hydrogeology</b></p>

Sensitivity / Value	General Criteria
	<i>Groundwater:</i> Secondary undifferentiated aquifer.
Negligible	<p>Geology No geological exposures, little / no local interest.</p> <p>Minerals No mineral identified.</p> <p>Contamination <i>Human Health:</i> Undeveloped surplus land/ no sensitive land use proposed.</p> <p>Hydrogeology <i>Groundwater:</i> Unproductive strata.</p>

## Significance Criteria

- 13.4.8 The criteria used to determine the magnitude of change for geology and hydrogeology are set out in Table 13-3 below. These values are based on Table 3.71 of DMRB LA 113, Table 3.12 of DMRB LA 109 and Section 10.3 of IEMA Guide (Ref 13.21). No beneficial changes are expected for geology receptors and therefore no such criteria is provided.

Table13-3 – Criteria for Determining Magnitude of Change

Magnitude	Description
Major adverse	<p><b>Geology</b> Loss of geological feature/designation and/or quality and integrity, severe damage to key characteristics, features or elements.</p> <p><b>Minerals</b> More than one allocated mineral site is substantially sterilised by the development rendering it inaccessible for future use.</p> <p><b>Contamination</b> <i>Human health:</i> significant contamination identified. Contamination levels significantly exceed background levels and relevant screening criteria (e.g. C4SLs) SP1010 (CL:AIRE 2014) with potential for significant harm to human health. Contamination heavily restricts future use of land.</p> <p><b>Hydrogeology</b> <i>Groundwater:</i></p> <ul style="list-style-type: none"> <li>• Loss of, or extensive change to, an aquifer;</li> <li>• Loss of regionally important water supply;</li> <li>• Loss of, or extensive change to, GWDTE or baseflow contribution to protected surface water bodies;</li> <li>• Reduction in water body WFD classification; and</li> </ul>

Magnitude	Description
Moderate adverse	<ul style="list-style-type: none"> <li>Loss of, or significant damage to, major structures through subsidence or similar effects.</li> </ul> <p><b>Geology</b> Partial loss of geological feature/designation, potentially adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.</p> <p><b>Minerals</b> One allocated mineral site is substantially sterilised by the development rendering it inaccessible for future use.</p> <p><b>Contamination</b> <i>Human health:</i></p> <ul style="list-style-type: none"> <li>Contaminant concentrations exceed background levels and are in line with limits of relevant screening criteria (e.g. C4SLs) SP1010;</li> <li>Significant contamination can be present; and</li> <li>Control/remediation measures are required to reduce risks to human health/make land suitable for intended use.</li> </ul> <p><b>Hydrogeology</b> <i>Groundwater:</i></p> <ul style="list-style-type: none"> <li>Partial loss or change to an aquifer;</li> <li>Degradation of regionally important public water supply or loss of significant commercial/industrial/agricultural supplies;</li> <li>Partial loss of the integrity of GWDTE;</li> </ul>

Magnitude	Description
	<ul style="list-style-type: none"> <li>• Contribution to reduction in water body WFD classification; and</li> <li>• Damage to major structures through subsidence or similar effects or loss of minor structures.</li> </ul>
Minor adverse	<p><b>Geology</b> Minor measurable change in geological feature/designation attributes, quality or vulnerability; minor loss of, or alteration to, one or more key characteristics, features or elements.</p> <p><b>Minerals</b> The development has the potential to adversely and substantially impact access to one or more allocated mineral site (in their entirety) placing their future use at risk.</p> <p><b>Contamination</b> <i>Human health:</i></p> <ul style="list-style-type: none"> <li>• Contaminant concentrations are below relevant screening criteria (e.g. C4SLs) SP1010. Significant contamination is unlikely with a low risk to human health. Best practice measures can be required to minimise risks to human health.</li> </ul> <p><b>Hydrogeology</b> <i>Groundwater:</i> Minor effects on an aquifer, GWDTEs, abstractions and structures.</p>
Negligible	<p><b>Geology</b> Very minor loss or detrimental alteration to one or more characteristics, features or elements of geological feature/designation. Overall integrity of resource not affected.</p>

Magnitude	Description
	<p><b>Minerals</b> Limited mineral sterilisation.</p> <p><b>Contamination</b> <i>Human health:</i></p> <ul style="list-style-type: none"> <li>• Contaminant concentrations substantially below levels outlined in relevant screening criteria (e.g. C4SLs) SP1010; and</li> <li>• No requirement for control measures to reduce risks to human health/make land suitable for intended use.</li> </ul> <p><b>Hydrogeology</b> No measurable impact upon an aquifer and/or groundwater receptors</p>
No Change	<p><b>Geology</b> No temporary or permanent loss or disturbance of characteristics, features or elements</p> <p><b>Minerals</b> No mineral sterilisation</p> <p><b>Contamination</b> <i>Human health:</i> reported contaminant concentrations below background levels</p>

Magnitude	Description
	<p><b>Hydrogeology</b></p> <p><i>Groundwater:</i> no loss or alteration of characteristics, features or elements; no observable impact in either direction.</p>
Minor beneficial	<p><b>Hydrogeology</b></p> <p><i>Groundwater:</i></p> <ul style="list-style-type: none"> <li>• Reduction of groundwater hazards to existing structures; and</li> <li>• Reductions in waterlogging and/or groundwater flooding.</li> </ul>
Moderate beneficial	<p><b>Hydrogeology</b></p> <p><i>Groundwater:</i></p> <ul style="list-style-type: none"> <li>• Contribution to improvement in a waterbody's: <ul style="list-style-type: none"> <li>– WFD classification.</li> <li>– Abstraction Management Strategy (or equivalent classification); and</li> </ul> </li> <li>• Support to significant improvements in a damaged GWDTE.</li> </ul>
Major beneficial	<p><b>Hydrogeology</b></p> <p><i>Groundwater:</i></p> <ul style="list-style-type: none"> <li>• Removal of existing polluting discharge to an aquifer or removing the likelihood of polluting discharges occurring;</li> <li>• Recharge of an aquifer (that suffers from a poor water balance); and</li> <li>• Improvement of a waterbody WFD classification.</li> </ul>



13.4.9 The matrix to determine significance of effect is shown in Table 13.4 and is based on DMRB LA 104 (Ref 13.55).

Table 13-4 – Criteria for Determining Significance of Effect

		Magnitude of impact x environmental value = Significance of effect				
		Magnitude of impact				
		No change	Negligible	Minor	Moderate	Major
Sensitivity / Value	Very high	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

13.4.10 In addition, a separate matrix to determine significance of effects for GWDTE is shown in Table 13.5 and is based on DMRB LA 113 (Ref 13.31).

Table 13.5 - Matrix to Determine Significance of Effect for GWDTE

		Magnitude of impact x environmental value = Significance of effect				
		Magnitude of impact				
		No change	Negligible	Minor	Moderate	Major
Sensitivity / Value	Very high	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

- 13.4.11 Overall, effects of moderate, large and very large significance are considered to be significant in the context of the EIA Regulations.

### **Assumptions and Limitations**

- 13.4.12 The detailed construction methodology for the Project has yet to be defined. This would be subject to further development during the process of iterative design and environmental assessment of the Project. The methodology of construction could change the types and/or severity of the potential effects assessed herein.
- 13.4.13 This assessment has been prepared based on the environmental baseline available at the time of writing, and the extent of the study area and is considered to be appropriate to assess adequately the potential impacts at this stage of the Project taking into account the proposed works as detailed in Chapter 2: Project Description. The collection of baseline information and subsequent assessment is an iterative process and subsequent targeted walkovers and surveys will be undertaken to support the development of the baseline and associated risk assessment, to be outlined within the Environmental Statement. Where the potential risk of contamination or presence of pollutant linkages cannot be ruled out based on the current information, they are assumed present. A reasonable worst-case scenario has been adopted by the assessment assuming the presence of pollutant linkages.

## **13.5 Baseline Conditions**

### **Existing Baseline Conditions**

- 13.5.1 For this chapter, reference has been made to the study area with cross-reference to figures for more detail. The study area is defined as the Project's draft Order Limits plus a 250m buffer. Locally, the buffer has been increased to 500m for designated and non-designated sites for nature conservation. Where reference is made to the locations of the overhead towers, these are those shown on the Consultation Plans and are subject to change as the Project progresses. Subsequent changes to the location will be considered in the ES. For ease, the tower locations are also shown on the Figures associated with this Chapter.

## Geology

- 13.5.2 The superficial geology across the Project comprises the following (Ref 13.32) (see Figure 13.1 for more detail). The lithologies are shown in brackets.
- Peat.
  - Till, Diamiction.
  - Glaciofluvial Deposits (sand and gravel).
  - Head (clay, silt, sand and gravel).
  - River Terrace Deposits (sand and gravel).
  - Alluvium (Clay, silt, sand and gravel).
  - Alluvial Fan Deposits (sand and gravel).
  - Hummocky Glacial Deposits (diamiction and gravel).
  - Glaciofluvial Sheet Deposits (sand and gravel).
  - Glaciolacustrine Deposits (clay & silt).
- 13.5.3 The bedrock geology across the Project comprises the following formations (Ref 13.32). The lithologies are shown in brackets. Their distribution is shown Figure 13.2.
- Penstrowed Grits Formation (sandstone and mudstone).
  - Nantglyn Flags Formation (mudstone, siltstone and sandstone).
  - Nant-Ysgollon Mudstone Formation (mudstone).
  - Dolgau Mudstones Formation (mudstone).
  - Laundry Mudstone Formation (mudstone, siltstone and sandstone).
  - Laundry Mudstone Formation (mudstone and siltstone).
  - Graig-wen Sandstone Formation (sandstone).
  - Dolhir Formation (mudstone, siltstone and sandstone).
  - Dolhir Formation (mudstone and limestone interbedded).
  - Banwy Member (mudstone).
  - Tarannion Mudstone Formation (mudstone).
  - Gaerfawr Formation (sandstone and siltstone interbedded).
  - Allt-Tair-Fynnon Formation (siltstone and mudstone interbedded).
  - Kinnerton Sandstone Formation (sandstone).
  - Chester Formation (sandstone, pebbly).
- 13.5.4 The bedrock geology varies across the site with numerous inferred faults displacing much of the geology. The majority of the inferred faults run in an approximately east – west orientation, with a smaller number orientated in a north – south direction. Most faults within the study area are located within the southern

section of the study area between roughly the villages of Bwlch-y-cibau and Rhyd. Several faults are observed at Oswestry, but these are outside of the study area.

### **Geological Important Sites**

- 13.5.5 There are a number of important geology sites (Ref 13.33 and Ref 13.49) located within the study area as summarised in Table 13-6 below and presented in Figure 13.3.

Table 13-5 – Geology Sites

Designation	Number and Location with respect to Project's draft Order Limits and Study Area	Location (Easting, Northing)	Description and approximate location with respect to Project's draft Order Limits and Study Area	Remarks
Geological Conservation Review (GCR)	2 Within Project's draft Order Limits	324957, 320851	Afon Vyrnwy, fluvial geomorphology. Located to the west of Llanymynech. Southwestern boundary of GCR falls just inside Project's draft Order Limits.	NA
		327884, 320753	Afon Vyrnwy, fluvial geomorphology. Located to the east of Llanymynech. GCR falls within Project's draft Order Limits.	Tower 119 within GCR and Tower 118 adjacent to GCR.
Regionally Important Geodiversity Sites (RIGS)	1 Within 250m buffer of study area	311283, 310058	Tan-y-Ffridd Quarry. Located approximately 2.7km south of Pontrobert. RIGS falls on 250m buffer of study area.	NA
		301295, 301487	Tan-y-foel Quarry, Educational and Scientific (Silurian (Wenlock) Strata. Located outside of	NA

Designation	Number and Location with respect to Project's draft Order Limits and Study Area	Location (Easting, Northing)	Description and approximate location with respect to Project's draft Order Limits and Study Area	Remarks
	50m to the east - outside the study area		the southern end of the Project's draft Order Limits. Quarry covers 17 hectares and whilst just outside of the study area is being considered at this stage for completeness.	
Site of Special Scientific Interest (SSSI)	1 Within 250m buffer of study area	311349, 310102	Ffridd Mathrafal Track Section. Located approximately 2.65km south of Pontrobert. SSSI falls with 250m buffer of study area.  This site is also listed as a GCR site; Meifod.	NA

## **Minerals / Mineral Safeguarding Areas**

13.5.6 Extractable economic minerals are present within parts of the study area which are required to be protected from development needlessly preventing future extraction of the mineral resources, these areas are known as Mineral Safeguarded Areas. Relevant information is provided here and presented on Figure 13.4. Information has been obtained from Powys County Council and Shropshire Council.

### **Powys County Council**

13.5.7 Information related to minerals is available within Powys County Council (PCC) Local Development Plan (LDP) (Ref 13.34).

13.5.8 The following mineral safeguarding areas have been identified from the PCC LDP within the study area (falling within both the Project's draft Order Limits and the 250m buffer).

- Sand and gravel.
- Slate.
- Sandstone.

### **Shropshire Council**

13.5.9 Information related to minerals is available within Shropshire Council Local Plan (Ref 13.35).

13.5.10 The following safeguarded minerals are present within the study area (falling within both the Project's draft Order Limits and the 250m buffer).

- Sand and gravel.

13.5.11 Further consultation with both local authorities will be required to assess whether a mineral assessment report is required for inclusion in the DCO application.

## **Mining**

13.5.12 The study area is not within a reporting area of The Coal Authority (Ref 13.36). Land instability and coal mining has been scoped out of the ES.

## **Potential Sources of Contamination – Current and Historical**

13.5.13 For the purposes of the PEIR, the following sources of information have been reviewed to identify potential sources of contamination that will be considered in



the development of the Conceptual Site Model (CSM) for the Project to be presented in the ES. The CSM will be developed in line with the Environment Agency LCRM guidance (Ref 13.22). It describes the environmental setting and identify contaminant sources (potential areas of concern and associated contaminants), modes of contaminant movement (migration pathways), the person/ecosystem and components/environmental values potentially affected by the contamination (potential receptors) and how exposure may occur (exposure routes).

- 13.5.14 The following publicly available mapping sources have been utilised:
- National Library of Scotland (NLS), Georeferenced historical maps (Ref 13.37);
  - Google Maps, 2024 (Ref 13.43).
  - Grid Reference Finder (Ref 13.44).
  - Goggle Earth Pro, 2024 (Ref 13.45).
- 13.5.15 Potential sources of contamination within the study area have been identified from the review of contemporary and historical online mapping. These are presented in Table 13-7 below and shown on Figure 13.5. Each have been given a unique reference (e.g. PSC05), with PSC defined as Potential Source of Contamination.
- 13.5.16 To date no current or historical potential contaminated sources have been identified at the location of the overhead line tower locations, Collector Substation, Underground Cable and Switching Station. Within the Project's draft Order Limits, the following current and historical features are present:
- Possible chicken farm (1 location).
  - Historical water features (7 locations).
  - Quarries (1 location).
  - Current railway line (1 location).
  - Disused railway (2 locations).
  - Historical landfill (2 locations).
- 13.5.17 There are no permitted landfill sites currently authorised by the EA recorded within the study area (Ref 13.38). The EA in their email correspondence dated 14 May 2024 confirmed that there are no active landfill sites within the study area.
- 13.5.18 There are two historical landfill sites recorded within the study area (Ref 13.38 and Ref 13.47). PSC169 is an historical landfill at Llansant Ffraid, reference

EAHLD14301. The first input is recorded as 31/12/1960 and the last input 31/12/1970. The input types are recorded as industrial and household waste, the authority was Llanyflin Rural District Council. PSC170 is an historical landfill at Lletty Lane, reference EAHLD34445. No further information is recorded.

Table 13-6 – Summary of Potential Sources of Contamination within the Study Area

Potential Source and Reference	Location, centred on (Easting, Northing)	Location with respect to Project's draft Order Limits and Study Area <sup>1</sup>
Numerous agriculture farms (PSC11 – PSC39, PSC113 – PSC116; PSC118 – PSC124; PSC127; PSC129; PSC130; PSC132 – PSC137; PSC139; PSC140; PSC144; PSC146 – PSC149; PSC151; PSC152; PSC154; PSC155)	Numerous	Within the study area.
Agriculture industrial warehouses (Wynnstay Group) (PSC111)	322177, 320221	Within the study area.
Chicken farms (PSC06 – PSC08; PSC117; PSC138; PSC141; PSC153) Possible chicken farms PSC131 and PSC143	Numerous	Within the study area. PSC131 in Project's draft Order Limits.
Equestrian centre (PSC03 – PSC04)	327819, 320968 and 326929, 319831	Within the study area.
Petrol filling station (PSC02)	322576, 320428	Within the study area.

Potential Source and Reference	Location, centred on (Easting, Northing)	Location with respect to Project's draft Order Limits and Study Area <sup>1</sup>
Portable toilet supplier (PSC09)	314271, 312231	Within the study area.
Vehicle repair garage (PSC10; PSC125; PSC126; PSC145; PSC150)	Numerous	Within the study area.
Historical water features (i.e. ponds/pools/reservoirs/undefined, which may have subsequently been infilled) (PSC65 – PSC110)	Numerous. Within Project's draft Order Limits: PSC65 (335450, 330297), PSC74 (333067; 327830); PSC76 (332760, 326703); PSC89 (325535,320081); PSC96 (321786,319760); PSC98 (320456,317655); PSC100 (319154,316293)	Within the study area. Seven located within the Project's draft Order Limits. None are located at any of the tower locations, Collector Substation, Underground Cable and Switching Station.
Gravel pits / historical gravel pit which may have been subsequently infilled (PSC48; PSC49; PSC162)	Numerous	Within the study area. PSC162 within Project's draft Order Limits.

Potential Source and Reference	Location, centred on (Easting, Northing)	Location with respect to Project's draft Order Limits and Study Area <sup>1</sup>
Sand pits (which may have been subsequently infilled) (PSC60)	322119, 319882	Within the study area.
Quarries (which may have been subsequently infilled) (PSC50 – PSC55; PSC112; PSC164 - PSC168)	Numerous. Within Project's draft Order Limits: PSC164 (316705, 314640)	Within the study area. One located within the Project's draft Order Limits. None are located at any of the tower locations, Collector Substation, Underground Cable and Switching Station.
Tunnels (private tunnels connected to Aston Hall, possibly related to private boat house access, which may have been subsequently infilled) (PSC56)	332730, 327321	Within the study area.
Refuse and slag heaps (PSC62 – PSC64)	327419, 320230	Within the study area.

Potential Source and Reference	Location, centred on (Easting, Northing)	Location with respect to Project's draft Order Limits and Study Area <sup>1</sup>
Railway line (current) (PSC01)	334042, 328898	Within both Project's draft Order Limits and within the study area.
Railway line (disused) (PSC57 – PSC59)	327041, 320062, 328129, 321154 and 322239, 320294	Two within the Project's draft Order Limits (PSC57, PSC58); one within the study area.
Mills (corn and Unknown mills) (PSC45 – PSC47 and PSC61)	Numerous	Within the study area.
Cemetery (PSC128)	315521, 313207	Within the study area.
Smithy (historical) (PSC156 – PSC161)	Numerous	Within the study area.
Historical landfill (PSC169 and PSC170)	PSC169 (322620, 320193); PSC170 (322681, 320180)	Within both Project's draft Order Limits and the study area.  None are located at any of the tower locations, Collector Substation,

Potential Source and Reference	Location, centred on (Easting, Northing)	Location with respect to Project's draft Order Limits and Study Area <sup>1</sup>
		Underground Cable and Switching Station.
Shropshire Sculpture Park/British Ironwork Centre (PSC05)	333217, 327832	Within the study area.

Note: <sup>1</sup> Study area is as defined in Section 13.4 and in summary comprises the area within the Project's draft Order Limits plus a 250m wide buffer beyond.

- 13.5.19 There is general uncertainty of the ground conditions around the current and historical features and a possibility of some features having been historically infilled (especially the noted historical water features); the nature of the fill material is unknown and may have included contaminated material.
- 13.5.20 Agricultural sites such as farmyards may be associated with contamination arising from agricultural activities such as vehicle and plant maintenance, storage of fuels and agrichemicals, and historical waste disposal practices such as onsite burial and burning. Many agricultural pollutants, in particular nutrients such as nitrogen and phosphorous compounds, are diffuse and not considered significant in the context of the Project. Any potential risk, however, would be addressed via the measures implemented through the Outline Construction Environmental Management Plan (OCEMP) secured through a requirement of the DCO. Historical and recent mapping and aerial photographs were reviewed, and potential point sources of agricultural contamination such as farmyards were identified.

## Hydrogeology

### Aquifer Status

- 13.5.21 Using information obtained from the DEFRA MAGIC Maps viewer (Ref 13.33), the status of aquifers are listed in Table 13-8 below.

*Table 13-7 – Aquifer Status*

Geology	Aquifer Status
<b>Superficial aquifers</b>	
Peat	Unproductive
Till	Secondary undifferentiated
Glaciofluvial deposits	Secondary A
Head deposits	Secondary undifferentiated
River Terrace deposits	Secondary A



Geology	Aquifer Status
Alluvium	Secondary A *
Alluvial Fan deposits	No designation
Hummocky Glacial deposits	No designation
<b>Bedrock aquifers</b>	
Penstrowed Grits Formation	Secondary (undifferentiated)
Nantglyn Flags Formation	Secondary B
Nant-Ysgollon Mudstone Formation	Secondary B
Dolgau Mudstones Formation	Secondary B
Laundry Mudstone Formation (Mudstone, siltstone and sandstone);	Secondary B
Laundry Mudstone Formation (Mudstone and siltstone);	Secondary B
Graig-wen Sandstone Formation	Secondary B
Dolhir Formation (Mudstone, siltstone and sandstone);	Secondary B
Dolhir Formation (Mudstone and limestone interbedded);	Secondary B
Banwy Member	Secondary B
Tarannion Mudstone Formation	Secondary B
Gaerfawr Formation	Secondary B
Allt-Tair-Fynnon Formation	Secondary B
Kinnerton Sandstone Formation	Principal Aquifer
Chester Formation	Principal Aquifer

Note: \* the aquifer designation of Alluvium would be expected to be Secondary B or unproductive were the Alluvium is thin or of clay or silt lithology.

### **Aquifer Vulnerability**

- 13.5.22 Aquifer vulnerability describes the vulnerability of an aquifer to be polluted from sources of contamination, such as spillages or diffuse release of contaminants. An aquifer is most vulnerable should it have highly permeable materials overlying it, such as gravels, or no overlying material at all. Conversely a low vulnerability aquifer could be one that has a thick overlying clay deposit.
- 13.5.23 Within the study area, comparison of Figure 13.1 Superficial deposits and Figure 13.2 Bedrock geology, shows that there are large areas where gravel superficial deposits overlie bedrock (such as sandstone formations which are principal aquifers (Table 13-8). These locations are of high aquifer vulnerability.

### **Source Protection Zones**

- 13.5.24 Locations of the Source Protection Zones (SPZ) (Ref 13.33) are shown in Figure 13.6.
- 13.5.25 The northern end of the OHL route and the Switching Station near Lower Frankton are within a Source Protection Zone 3 (SPZ3) for two Severn Trent potable water supply groundwater abstractions at Rednal and Kinsall. This SPZ3 (merged) is located between Tower 151 and the Switching Station, near Lower Frankton. The most northern tower, Tower 172 is located approximately 100m outside from the SPZ2 and 550m south of the nearest SPZ1. The temporary construction compound for the Switching Station is located within the merged SPZ 3, with the northernmost 40 metres of the construction compound area being inside the SPZ2.

### **Water Framework Directive**

- 13.5.26 Table 13-9 and Figure 13.7 show the WFD status for groundwater bodies underlying the study area in England and Wales (Ref 13.39 and Ref 13.40).

Table 13-8 – Groundwater Body WFD classification

Water Body (WFD ID)	Cycle 3 Water Body Classification
Severn Uplands – Lower Palaeozoic Water Body (GB40902G205300)	Overall Status: Poor Chemical Status: Poor Quantitative Status: Good
Severn Uplands – Permo-Triassic Sandstone Knockin Water Body – (GB40901G202300)	Overall Status: Poor Chemical Status: Poor Quantitative Status: Good
Dee Permo-Triassic Sandstone Water Body (GB41101G202400)	Overall Status: Poor Chemical Status: Poor Quantitative Status: Good

- 13.5.27 Cycle 3 water body classification covers the period 2021 to 2027. As part of Natural Resources Wales ongoing assessment, a list of catchments have been identified across Wales that represent the best opportunities to deliver sustainable management for both water and wellbeing outcomes (Ref 13.41). The study area does not fall within any of these ‘Opportunity Catchments’.
- 13.5.28 Within England, Severn Uplands – Permo Triassic Sandstone Knockin Water Body and the Dee Permo-Triassic Sandstone Water Body are classified as ‘Poor’ chemical status due to a “fail” in the drinking water protected area (Ref 13.39). Severn Uplands – Permo Triassic Sandstone Knockin failed due to agricultural and rural land management, most likely from nitrate pollution. The Dee Permo-Triassic Sandstone does not have a reason for failing noted. Both groundwater bodies are shown to be improving with time. Detailed information is not available for the Severn Uplands – Lower Palaeozoic Water Body.

### Groundwater Dependant Terrestrial Ecosystems

- 13.5.29 Table 13-10 below shows all published Groundwater Dependant Terrestrial Ecosystems (GWDTEs) (Ref 13.56) within 1km of the OHL and their nearest towers. These are also shown on Figure 13.6. All GWDTEs are located in England. Wales Water Watch (Ref 13.40) states that no GWDTEs are located within the study area.

Table 13-9 – GWDTEs located within the study area from south to north

Name of site (alternative name)	Other status	Distance from nearest tower	Distance from Project's draft Order Limits	Underlying aquifer (aquifer designation)
(Midland Meres & Mosses [Phase 2] Ramsar site)  Morton Pool and Pasture	Ramsar site, SSSI	0.34km from Tower 134	0.18km	Superficial deposits: Peat (Unproductive). Expected to be underlain by Glaciofluvial Sheet Deposits (Secondary A)  Bedrock: Kinnerton Sandstone Formation (Principal Aquifer)
Crofts Mill Pasture	SSSI	0.56km from Tower 135	0.39km	Superficial deposits: Alluvium (Secondary A) and Glaciofluvial Sheet Deposits (Secondary A)  Bedrock: Kinnerton Sandstone Formation (Principal Aquifer)

- 13.5.30 The Morton Pool and Pasture SSSI is of particular significance given its status as a Ramsar site, and its proximity to the towers. Details are described in Chapter 7: Ecology, including survey information. However, in summary, the Midland Meres & Mosses (Phase 2) Ramsar sites comprise 18 sites made up of nutrient-rich open water bodies with fringing habitats of reed swamp, fen, carr and damp pasture, and peatlands. The landscape features developed in depressions in the glacial superficial deposits left by receding ice sheets (Ref 13.57).
- 13.5.31 Severn Uplands Permo Triassic Sandstone Knockin is the WFD water body which underlies both sites listed in Table 13.10. The Environment Agency shows a 'good' status in both chemical and quantitative indicators for GWDTEs for this water body.
- 13.5.32 The Montgomery Canal (Aston Locks-Keepers Bridge) is an important nature conservation area in vicinity of the OHL route and includes a 4km section that is shown as a published GWDTE. Details are described in Chapter 7: Ecology. However, the GWDTE published section of the canal is greater than 500m from the Project's draft Order Limits and is therefore outside of the study area.

### **Current licensed Groundwater Abstractions**

- 13.5.33 Current licenced groundwater abstractions are shown in Figure 13.6. Table 13-11 shows the groundwater licences and their primary purpose. For some licences there are multiple abstraction points and these are shown where multiple location coordinates have been listed in Table 13-11. All licences are located in the north, around Oswestry. The 'Environmental' licence refers to a remedial river and wetland support licence held by the Environment Agency. The two public water supply abstractions are owned by Severn Trent Water. Public water supplies shown on Figure 13.6 are to a location accuracy of 1km. At the time of writing no information was available from NRW, therefore there could be abstraction licences within the study area in Wales.

Table 13-10 – Licensed Groundwater Abstractions in the Study Area

Licence No.	Primary Purpose	Number of Abstraction Points	Max Annual Quantity (m <sup>3</sup> )	Location (Easting, Northing)
18/54/01/0154	Agriculture	1	1,818	332500 , 328000
18/54/01/0314	Private Water Supply	1	24,889	330000 , 322000
18/54/01/0620	Industrial	1	9,999	333600 , 326900
18/54/01/0621	Agriculture	1	70,000	332400 , 323300
18/54/01/0639/1/R01	Industrial	1	14,890	324600 , 321200
18/54/03/0179	Public Water Supply	2	1,825,000	330000 , 330000
				330000 , 320000
18/54/04/1118	Environmental	6	39,000,000	333700 , 330000
				335000 , 330900
				337300 , 330200
				336700 , 331300
				336700 , 327900
337000 , 328800				
MD/054/0001/016/R02	Agriculture	1	50,000	334900 , 324800

- 13.5.34 A bottled spring water company, Trederwen Springs Ltd, is located in the area of Llansantffraid and Deytheur, adjacent to Trederwen Hall in Llansantffraid-Ym-Mechain, Powys. Licence information for the possible, associated groundwater abstraction was not available at the time of writing. The Scoping Opinion response from the Llansantffraid & Deytheur Community Council states that the company is a significant employer in the area. Details about the associated water abstraction, are not available at the time of writing, although it is noted that the Trederwen Springs Ltd contact address is approximately 150m from the nearest Project's draft Order Limits on the B4393 (change to the bellmouth) . The closest tower, Tower 101, is approximately 470m north of the contact address.
- 13.5.35 The Environment Agency's Shropshire Groundwater Scheme utilises groundwater storage within the Permo-Triassic sandstone formations of North Shropshire. The water is used to artificially maintain flows in the River Severn to meet the demands of abstractors and the ecological needs of the river. Groundwater is abstracted via boreholes, and discharged, either directly into the River Severn, or via one of its major tributaries. The Environment Agency have confirmed (Ref 13.59) that the future proposed Phase 7 of the scheme would comprise two separate groups of groundwater pumping development, of which one group of two wells would be located to the north and west of the Project, and four wells to the south and east. In addition, the Environment Agency have confirmed that the OHL would pass close to two groundwater pumping station locations, and while distances were not stated, the Environment Agency (Ref 13.59) commented that the development of OHL in this area should not present a significant constraint on future construction and maintenance of the infrastructure making up the Environment Agency's proposed Phase 7 area of the Shropshire Groundwater Scheme. Further consultation will be undertaken and presented in the ES in relation to these features.

## **Groundwater Flow and Levels**

### **Superficial aquifers**

- 13.5.36 Both Secondary A, and Secondary (undifferentiated) aquifers are present within the Project's draft Order Limits and within the study area. Secondary A aquifers mostly comprise Glaciofluvial deposits, River Terrace deposits, and Alluvium (Figure 13.1). These are most commonly found within valleys, and hydraulic connectivity with rivers within those valleys is assumed. Secondary (undifferentiated) aquifers are mostly made up of Till. These are located in higher

valley areas and are assumed to be in hydraulic connectivity with the Alluvium and Glacial Tills.

- 13.5.37 Within the Underground Cable Route and up to Tower 46, near Newbridge, Till is the underlying superficial deposit. This is typically laterally variable depending on the distribution of clay, silt, gravels and boulders. It is therefore likely that the presence, levels, and flow of groundwater will be variable within this geological unit.
- 13.5.38 The route between Tower 48 near Newbridge and Tower 115 near Llanymynech, runs broadly along the Vyrnwy River valley. Groundwater flow within this section is assumed to be in the same direction as the river, in areas of granular strata. Hydraulic connectivity with the river is expected with shallow groundwater levels on the Vyrnwy floodplain.
- 13.5.39 Between Tower 116 near Llanymynech and Tower 165 near Babbinswood, groundwater flow is assumed to be towards the southwest, following various streams and rivers and local topography.
- 13.5.40 Peat deposits are found within the study area. Within these deposits groundwater levels are expected to be shallow, but flows are expected to be small. Two minor peat deposits are identified from geological mapping within the Project's draft Order Limits near Tower 18 and Tower 23, around the A458 road. Review of the potential for impacts to peat would be led by Chapter 15: Soils and Agriculture.
- 13.5.41 Within all the Superficial aquifers it is assumed that intergranular flow is the main means by which groundwater flows.

### **Bedrock Aquifers**

- 13.5.42 The distribution of bedrock aquifers that underlie the study area can be split into three broad sections of the Project route:
- Secondary (undifferentiated) aquifers along the Underground Cable Route.
  - Secondary B aquifers from Tower 1 to Tower 115, near Llanymynech.
  - Principal aquifers from Tower 116 to the Switching Station near Lower Frankton.
- 13.5.43 Beneath the Underground Cable Route, the Secondary (undifferentiated) aquifer consists almost entirely of the Penstrowed Grits Formation (Figure 13.2), which crops out in a north-south alignment.



- 13.5.44 The OHL from Tower 1 to Tower 115, near Llanymynech, is underlain by Secondary B aquifers, comprising mostly mudstones. It is assumed that the Secondary B aquifers have some hydraulic connectivity with the overlying superficial aquifers. The groundwater flow direction is expected to be broadly in the same direction as the River Vyrnwy, but may vary locally.
- 13.5.45 The route from Tower 116, near Llanymynech, to the Switching Station near Lower Frankton is underlain by the Kinnerton Sandstone Formation and Chester Formation. These make up part of the Principal Permo-Triassic Sandstone aquifer that is found in Shropshire, Cheshire, and Staffordshire. These units behave as a single aquifer with high porosity. The Kinnerton Sandstone Formation has a mean hydraulic conductivity of 0.16m per day (m/d), with highest flows in the lower part of the formation where grain size is larger. The Chester Formation has a mean hydraulic conductivity of 0.57m/d (Ref 13.42); here hydraulic conductivity values are controlled by the amount of cementation in the beds. Intergranular porosity is considered to be more significant than fracture porosity.
- 13.5.46 Groundwater abstractions affect groundwater flow, with movements being towards these abstractions at a local level. The public water supply wells and Environment Agency Shropshire Groundwater Scheme wells to the north of the study area, as shown in Figure 13.6 and Table 13-11, are anticipated to impact groundwater levels in the principal bedrock aquifers.

### **Private Water Supplies**

- 13.5.47 In general, a private water supply (PWS) is any supply that is not provided by a water company. For PWS that are not licensed, locating historical wells may indicate the location of PWS. In rural areas, PWS may often supply potable water supply (drinking water) to individual residual buildings and businesses. They may also be used for agricultural purposes.
- 13.5.48 Numerous historical wells are shown on Figure 13.6, dating from 1830, based on historical maps (Ref 13.37), and BGS GeoIndex (Ref 13.32). Consultation with local authorities is ongoing and at the time of writing a list of private water supply wells (PWS) is not available. Therefore, some of the historical wells should be considered as being potentially an active PWS. Where PWS are identified as being used for potable supply, then source protection zones should be defined. The default SPZ1 is a minimum 50m radius buffer zone. The default SPZ2 is a minimum radius of 250m or 500m radius (less than 2000m<sup>3</sup>/day or greater than

2000m<sup>3</sup>/day respectively), based on the EA manual for production of groundwater source protection zones (Ref 13.58).

- 13.5.49 Table 13-12 shows historical wells within 250m of the Project's draft Order Limits from both historical mapping and the BGS GeoIndex. It is not known whether the historical wells are active, have been decommissioned, or are abandoned. Most of these wells are noted on maps between 1945 – 1965. It is possible that wells noted on different maps in a similar location are the same well, at a slightly different grid reference
- 13.5.50 For completeness, all wells within 250m of the Project's draft Order Limits are noted. None of the wells in Table 13-12 coincide with the current licenced abstractions shown in Table 13-11.

Table 13-11 – Wells within 250m of the Project's draft Order Limits

Distance from OL <sup>1</sup>	Date Surveyed <sup>2</sup>	Nearest Tower	Depth, m	Easting	Northing	Aquifer
40m	1945-1965	UGC <sup>3</sup>	Unknown	299889	302371	Unconfirmed
within OL	1945-1965	Tower 1	Unknown	303156	305030	Unconfirmed
30m	1945-1965	Tower 1	Unknown	302975	304930	Unconfirmed
60m	1830-1880	Tower 1	Unknown	303030	304770	Unconfirmed
130m	1945-1965	Tower 15	Unknown	306480	307062	Unconfirmed
150m	1945-1965	Tower 16	Unknown	306650	307282	Unconfirmed
200m	1945-1965	Tower 16	Unknown	306692	307239	Unconfirmed
70m	1945-1965	Tower 18	Unknown	306893	307619	Unconfirmed
200m	1945-1965	Tower 24	Unknown	307619	309051	Unconfirmed
140m	1945-1965	Tower 24	Unknown	307170	309324	Unconfirmed
20m	1945-1965	Tower 27	Unknown	307947	309555	Unconfirmed
100m	1945-1965	Tower 28	Unknown	308346	309829	Unconfirmed
Within OL	1945-1965	Tower 28	Unknown	308541	309739	Unconfirmed

Distance from OL <sup>1</sup>	Date Surveyed <sup>2</sup>	Nearest Tower	Depth, m	Easting	Northing	Aquifer
Within OL	1945-1965	Tower 32	Unknown	309500	310123	Unconfirmed
130m	1945-1965	Tower 33	Unknown	309844	309810	Unconfirmed
210m	Unknown	Tower 36	36	310720	310290	Secondary Aquifer (Undifferentiated)
10m	1945-1965	Tower 39	Unknown	311336	309675	Unconfirmed
10m	1945-1965	Tower 41	Unknown	311933	309904	Unconfirmed
250m	1945-1965	Tower 41	Unknown	312076	309653	Unconfirmed
80m	1945-1965	Tower 48	Unknown	312755	311510	Unconfirmed
250m	null	T-Tower 49	16.2	313440	311380	Superficial Deposits
100m	Unknown	Tower 54	15.7	314450	311960	Superficial Deposits
130m	1945-1965	Tower 54	Unknown	314357	312421	Unconfirmed
10m	1945-1965	Tower 55	Unknown	314569	312561	Unconfirmed
220m	1945-1965	Tower 58	Unknown	315782	312378	Unconfirmed
160m	1945-1965	Tower 60	Unknown	316067	312881	Unconfirmed

Distance from OL <sup>1</sup>	Date Surveyed <sup>2</sup>	Nearest Tower	Depth, m	Easting	Northing	Aquifer
20m	1945-1965	Tower 65	Unknown	316893	313765	Unconfirmed
10m	1945-1965	Tower 66	Unknown	317449	313628	Unconfirmed
60m	1949-1972	Tower 66	Unknown	317506	313618	Unconfirmed
30m	1949-1972	Tower 66	Unknown	317468	313663	Unconfirmed
80m	1945-1965	Tower 67	Unknown	317295	314044	Unconfirmed
60m	1830-1880	Tower 67	Unknown	316742	314682	Unconfirmed
110m	1945-1965	Tower 67	Unknown	316805	314703	Unconfirmed
180m	1830-1880	Tower 67	Unknown	316831	314770	Unconfirmed
220m	1945-1965	Tower 67	Unknown	316856	314806	Unconfirmed
50m	1945-1965	Tower 69	Unknown	317193	315193	Unconfirmed
200m	1945-1965	Tower 70	Unknown	317196	315391	Unconfirmed
170m	Unknown	Tower 71	51	318500	314800	Llandovery Rocks (undifferentiated)
40m	1830-1880	Tower 77	Unknown	319064	316193	Unconfirmed
180m	Unknown	Tower 78	73	318959	316482	Ordovician Rocks and Silurian Rocks (undifferentiated)

Distance from OL <sup>1</sup>	Date Surveyed <sup>2</sup>	Nearest Tower	Depth, m	Easting	Northing	Aquifer
120m	2012	Tower 90	76.3	321665	318687	Ashgill Rocks (undifferentiated)
Within OL	1945-1965	Tower 93	Unknown	321853	319771	Unconfirmed
50m	1945-1965	Tower 100	Unknown	323422	319865	Unconfirmed
Within OL - under OHL	1945-1965	Tower 103	Unknown	324397	320331	Unconfirmed
30m	2016	Tower 104	27	324850	320270	Unknown
10m	2016	Tower 105	70	324870	320260	Ordovician Rocks and Silurian Rocks (undifferentiated)
Within OL	1945-1965	Tower 107	Unknown	325535	320169	Unconfirmed
190m	1892-1914	Tower 107	Unknown	325710	320382	Unconfirmed
10m	Unknown	Tower 113	Unknown	326900	319700	Unknown
10m	Unknown	Tower 113	Unknown	326900	319800	Unknown

Distance from OL <sup>1</sup>	Date Surveyed <sup>2</sup>	Nearest Tower	Depth, m	Easting	Northing	Aquifer
10m	Unknown	Tower 119	16	327740	320770	Superficial Deposits
230m	1947	Tower 123	23	328820	321250	Sherwood Sandstone Group
90m	1951	Tower 123	67	328700	322050	Sherwood Sandstone Group
120m	1947	Tower 124	Two wells at 39m and 76m depth	329420	321120	Sherwood Sandstone Group
230m	1935	Tower 130	11	329290	323120	Superficial Deposits
117m	1892-1914	Tower 133	Unknown	330121	323536	Unconfirmed
160m	1830-1880	Tower 138	Unknown	331399	323813	Unconfirmed
90m	Unknown	Tower 140	9.1	332050	324370	Kinnerton Sandstone Formation
250m	Unknown	Tower 140	69.3	332200	324300	Kinnerton Sandstone Formation
70m	1892-1914	Tower 142	Unknown	332003	325076	Unconfirmed
40m	1952	Tower 153	26.5	333120	327770	Kinnerton Sandstone Formation
110m	1892-1914	Tower 156	Unknown	333323	328473	Unconfirmed
210m	1892-1914	Tower 157	Unknown	333515	328777	Unconfirmed

Distance from OL <sup>1</sup>	Date Surveyed <sup>2</sup>	Nearest Tower	Depth, m	Easting	Northing	Aquifer
210m	1948	Tower 157	49.4	333500	328780	Sherwood Sandstone Group
170m	Unknown	Tower 157	80	333900	328500	Sherwood Sandstone Group
240m	1892-1914	Tower 157	Unknown	333597	329029	Unconfirmed
70m	1975	Tower 164	152	334670	330300	Sherwood Sandstone Group
90m	1892 - 1914	Tower 166	Unknown	334691	330247	Unconfirmed
57m	1892 - 1914	Tower 167	Unknown	334887	330522	Unconfirmed
175m	1892 - 1914	Tower 167	Unknown	335128	330526	Unconfirmed
180m	1892 - 1914	Tower 167	Unknown	335740	330627	Unconfirmed

Note: <sup>1</sup> OL is abbreviated in this table to mean Project's draft Order Limits <sup>2</sup> Date surveyed refers to the survey data shown on the historical maps on which the well feature is shown. <sup>3</sup> Underground Cable Route has been abbreviated to UGC in this table.

## Springs

13.5.51 Springs within a buffer zone of 500m from the Project's draft Order Limits have been noted using historical maps and are shown on Figure 13.6 and listed in Table 13.13.



Table 13-12 – Springs within 500m of the draft Project Order Limits

Distance from OL	Date Surveyed	Nearest Tower	Easting	Northing	Superficial Deposits	Bedrock Deposits
330m	1945-1965	Tower 06	305283	304534	Devensian Till	Nantglyn Flags Formation
360m	1945-1965	Tower 65	317125	313519	None	Laundry Mudstone Formation
280m	1830-1880	Tower 65	317301	313221	Head Deposits	Nant-Ysgollon Mudstone Formation
330m	1945-1965	Tower 66	317911	313451	Devensian Till	Nant-Ysgollon Mudstone Formation
210m	1945-1965	Tower 89	321522	318483	Devensian Till	Dolhir Formation
200m	1945-1965	Tower 89	321528	318459	Devensian Till	Dolhir Formation
450m	1949-1972	Tower 101	323775	319360	None	Dolhir Formation
Within OL	1892 - 1914	Switching Station near Lower Frankton	335694	332004	Alluvium over Till	Chester Formation
Within OL	1892 - 1914	Switching Station near Lower Frankton	335697	332044	Alluvium over Till	Chester Formation

- 13.5.52 There are no designated sites for nature conservation in vicinity of the springs listed in Table 13.13.
- 13.5.53 Trederwen Springs Ltd is a bottled water company located in the village of Trederwen and is located close to towers Tower 101 to Tower 104. As discussed above, details of the water source(s), including if there is a spring or other groundwater source, are not known at the time of writing but further information will be gathered as part of the ES.

### **Watercourses and Baseflow**

- 13.5.54 Groundwater can contribute to the baseflow of a watercourse, which can be important during dry weather periods and low river flows. At the time of writing the importance of groundwater to the flow of main rivers and ordinary water courses in the study area is not known. However, further work to identify any sensitive watercourses, in relation to groundwater baseflow, within the study area, will be undertaken.

### **Groundwater Flooding**

- 13.5.55 The likely hydraulic connection between the sometimes extensive gravel superficial deposits and nearby watercourses in the study area has been described above. Such ground conditions are an example of ground conditions that may contribute to the potential for groundwater flooding. Consultation with NRW and the Environment Agency, and the lead local flood authorities will include discussion of any known areas susceptible to groundwater flooding within the study area. The assessment of groundwater flooding will be assessed in conjunction with Chapter 12: Water Resources.

### **Nitrate Vulnerable Zones**

- 13.5.56 Nitrate Vulnerable Zones (NVZ) are shown in Figure 13.7 (Ref 13.46). There are no NVZs in Wales, within the study area. In England, NVZs are located from Tower 119, to the Switching Station near Lower Frankton in the north. Consultation with the EA will be conducted to assess any cumulative impacts that could be caused in the NVZ within the study area.

## Future Baseline

- 13.5.57 The baseline conditions with regards to geology and hydrogeology are not anticipated to alter significantly prior to commencement of the construction of the Project. The assessment has been undertaken on a precautionary basis considering reasonable worst-case scenario for the Project, and there are no anticipated changes to the baseline data that would materially alter the assessment.

## Climate Change

- 13.5.58 Current climate change projections suggest that the study area will experience drier summers and wetter winters, with increased prevalence of high intensity rainfall events and potentially more frequent summer droughts.
- 13.5.59 The increased irregular seasonality and intensity of rainfall may affect the ground conditions through, for example, increased drying, erosion and land instability. This potential change to the future baseline and how it might affect the land contamination risk assessments shall be considered in the proposed assessment of ground conditions during the EIA process, in line with the Environment Agency LCRM guidance (Ref 13.22). The potential impact will be appropriately mitigated within the design process, and this will therefore comprise embedded mitigation.
- 13.5.60 Climate change has the potential to cause changes to future baseline groundwater levels and flows and groundwater quality in the UK. However, other influences on groundwater, such as land-use change and abstraction changes have historically caused greater differences to groundwater levels than from climate change (Ref 13.63). Water demand for agriculture may increase to water crops during longer and warmer dry periods. Water demand for public water supply may also increase, perhaps for increased outdoor use. Groundwater quality may be influenced by greater intensity of rainfall run off and agricultural control of nutrients is likely to remain the biggest potential influence on any future changes.

## 13.6 Preliminary Mitigation Measures

- 13.6.1 The likely significant effects of the Project during construction and operation phase have been considered based upon currently available data relating to both the construction and operation phases of the Project. The preliminary mitigation

measures are listed below. It should be noted that this assessment is ongoing and is subject to change through ongoing development of the Project proposals.

### **Embedded Mitigation**

- 13.6.2 The overriding design principle for the Project is to seek to avoid or minimise impacts on sensitive geology and hydrogeology receptors and by avoiding potential sources of contamination. Environmental appraisal has been an integral part of the Project design from the outset, which has meant that the Project has been able to avoid environmentally sensitive features as far as reasonably practicable.
- 13.6.3 Where possible within the design, towers, Grug y Mynydd Collector Substation and Cors y Carreg Cable Sealing End Compound will be positioned to avoid impacts on geologically important sites, PWSs and GWDTEs.

### **Good Practice**

- 13.6.4 Good practice mitigation measures, comprising management activities and techniques, would be implemented during construction of the Project to limit impacts through adherence to good site practices and legal compliance.
- 13.6.5 Relevant good practice measures to be implemented during the construction phase of the Project relating to Ground Conditions, Geology and Hydrogeology will include, but not be limited to the following which would be secured by through the DCO.
- Geo-environmental and geotechnical intrusive ground investigation and assessment will be undertaken in accordance with current best practice including BS5930, BS10175 and Eurocode 7 which will inform the ground conditions, identify the presence of soil or groundwater contamination and, if required, a site remediation strategy and foundation works risk assessments will be carried out where appropriate. This will be undertaken as part of the detailed pre-construction design.
  - Construction methods such as appropriate piling techniques (if required) to minimise the risk of mixing of aquifer bodies through the creation of new pathways would be utilised. Foundation Works Risk Assessments will be undertaken in accordance with the Environment Agency guidance Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination (Environment Agency, 2001) to understand potential impacts on controlled waters (where it has not been possible to avoid through design).

Where required, this would include suitable mitigation measures to minimise potential effects.

- Use and storage of chemicals to be undertaken in accordance with the Environment Agency and Government Pollution Prevention for business and controlled and monitored through the OCEMP and general construction site good environmental and waste management procedures;
- The control of earthworks or materials movement (including any re-use of materials) under appropriate Environmental Permits, exemptions or CL:AIRE The Definition of Waste: The development industry Code of Practice (Ref 13.68).
- Any temporary dewatering activities during construction would be undertaken in accordance with Environment Agency and Natural Resource Wales guidance, and any necessary abstraction licence or environmental permit (for discharge).
- Protocol for dealing with any unexpected contamination;
- Consultation with the local authority prior to construction to ensure minimal mineral sterilisation; and
- Consultation with NRW regarding the towers near to the identified GCR site.

## **13.7 Preliminary Likely Significant Effects**

- 13.7.1 This section outlines the preliminary assessment of impacts for the Project during construction and operational phases. Table 13-14 and Table 13-15 below outline the preliminary likely significant effects.
- 13.7.2 The preliminary likely significant effects of the Project have been assessed using currently available data relating to both the construction and operation phases of the Project. The preliminary potential residual effects are outlined below. It assumes that mitigation measures are in place before assessing the effects. This is in accordance with guidance from the IEMA as part of preparing a proportional assessment (Ref 13.20).
- 13.7.3 Construction workers are at potential risk from exposure to contaminated soils and shallow groundwater through dermal contact, ingestion, inhalation of soil dust (including asbestos) and inhalation of volatile organic vapours/ground-gas from potentially contaminated soils and groundwater. The health and safety of construction workers is however governed by other legislation and therefore they are not considered as receptors within the assessment.

## **Construction**

- 13.7.4 The potential impacts for ground conditions, geology and hydrogeology associated with the construction phase are described in Table 13-14.

Table 13-13 – Construction Phase – Preliminary Assessment of Potential Impacts

Impact Receptor	Sensitivity of Resource / Receptor	Description of potential Impact / Change
Geological sites of regional and local importance	<p>Very High - Afon Vyrnwy (GCR)</p> <p>High - Ffridd Mathrafal Track Section (SSSI)</p> <p>Medium - Tan-y-Ffridd Quarry (RIGS)</p>	<p>Potential adverse impacts (damage and/or loss) to geologically important sites caused by construction works, though this will be limited to discrete areas, in particular at the Afon Vyrnwy (Tower 119).</p> <p>The impacts of the Project will be subject to detailed assessment which would identify any measures necessary to prevent likely significant effects. Options for potential mitigation and/or betterment (e.g. improved access) can be explored which may be delivered by the Project to mitigate the significance of the potential impact</p>
Mineral reserves	<p>Medium - Sand and Gravel, Slate and Sandstone safeguarding areas within the study area.</p>	<p>The Project crosses identified mineral safeguarding areas and therefore there will be some damage and/or sterilisation of mineral resources and therefore potential adverse impacts.</p> <p>Further assessment of these effects including consultation with the Mineral Officers with the local authorities would be presented in the ES. The impacts of the Project will be subject to detailed assessment which would identify any measures necessary to prevent likely significant effects.</p>

Impact Receptor	Sensitivity of Resource / Receptor	Description of potential Impact / Change
Human Health (nearby residents and users of public open spaces / rural areas)	<p>Depending on the location of the risk:</p> <p>Very High – Residential land use, public water abstraction</p> <p>High – Public Open Spaces</p> <p>Medium – Commercial / Industrial land use</p>	<p>Whilst unlikely considering the current baseline understanding, there is the potential for Made Ground / existing contamination within the study area to be disturbed and mobilised which could impact human health and therefore potential adverse impact. However with the proposed assessment and mitigation, including standard and embedded mitigation, impacts to human health during construction are not anticipated.</p> <p>Storage of construction materials and wastes leading to the generation of potentially contaminated runoff will be managed in accordance with standard practice and controlled by the OCEMP, impacts during construction are therefore not anticipated. Further assessment of these effects would be presented in the ES. At this stage, no likely significant effects are anticipated.</p>
Aquifers, public water supply wells, PWS, SPZs, springs, GWDTE, other controlled waters	Very high to low	<p>Localised ground contaminants (related to current/historic land uses) being mobilised during construction works and migrating into underlying groundwater and surface water environment could pose a potential adverse impact. However, with the proposed assessment and standard and embedded mitigation, including standard practice and designing out of the risk and associated risk assessments, impacts to groundwater receptors from contamination during construction are not anticipated.</p> <p>Further assessment of these effects would be presented in the ES. At this stage, no likely significant effects are anticipated.</p>



Impact Receptor	Sensitivity of Resource / Receptor	Description of potential Impact / Change
Aquifers, PWS, springs	Very high to low	<p>In the Underground Cable Route, proposed trenching has the potential to cause temporary drainage of shallow groundwater. If groundwater control is needed, additional groundwater lowering could be caused and therefore and therefore potential temporary adverse impact. Trenching may also have the potential for creating pollution pathways for shallow water and therefore and therefore potential temporary adverse impact. Whilst the extent and magnitude of such effects is expected to be small, selected ground investigation would be used to assess potential impacts and required mitigation that would be implemented by the OCEMP. Further assessment of these effects would be presented in the ES. At this stage, no likely significant effects are anticipated.</p>
Aquifers, PWS, public water supply wells, SPZs, GWDTEs, springs	Very high to low	<p>Foundation construction in sensitive locations, for example in a source protection zone, could impede local groundwater flow and could cause temporary detriment to water quality (increased suspended solids content) and therefore potential temporary adverse impact. However, Foundation Work Risk Assessments and good practice mitigation would be used to reduce the impact.</p> <p>Further assessment of these effects would be presented in the ES. At this stage, no likely significant effects are anticipated.</p>
Aquifers, PWS, public water supply wells,	Very high to low	<p>Groundwater control, comprising temporary dewatering (pumping), has the potential to lower groundwater levels and reduce groundwater flows. This may cause temporary reduction or loss of yields in boreholes and therefore potential temporary</p>

Impact Receptor	Sensitivity of Resource / Receptor	Description of potential Impact / Change
SPZs, GWDTEs, springs, watercourses (receiving baseflow)		<p>adverse impact. However, groundwater abstraction is subject to regulation. Any proposed abstractions of greater than 20m<sup>3</sup>/day would be subject to abstraction licensing and approvals by the EA or NRW. The Applicant would consider, in consultation with the regulator, a scheme wide or catchment wide dewatering application, if required, which would provide greater understanding of any potential combined impacts.</p> <p>Small scale dewatering, if compliant with Section 5 of the Water Abstraction and Impounding (Exemptions) Regulations 2017, would adhere to the regulation requirements. These include minimum distances from which dewatering is allowed from sensitive water features such as nature conservation sites, springs, wells or boreholes used to supply water. Therefore, the risks to sensitive water receptors would be reduced.</p> <p>Mitigation included in the OCEMP, and following standard practices, would reduce the potential for significant effects such that no likely significant effects are expected.</p>
Aquifers, PWS, public water supply wells, SPZs, GWDTEs, springs, other controlled	Very high to low	<p>Groundwater control, comprising temporary dewatering (pumping), whilst expected to be limited and of short duration, may require discharge to surface water or ground and therefore potential temporary adverse impact. However, such discharges would be subject to environmental permitting and with good practice mitigation, would reduce the impact to controlled waters.</p> <p>Should the exemption from licensing temporary dewatering from excavations to surface water, RPS 261, apply, then the Applicant would be required to comply with</p>

Impact Receptor	Sensitivity of Resource / Receptor	Description of potential Impact / Change
waters (e.g. watercourses)		<p>the conditions which include not to discharge within 500m upstream of designated nature conservation sites including a SSSI or a Ramsar site. The discharge would also be required to be of uncontaminated, clean water.</p> <p>Mitigation included in the OCEMP, and following standard practices, would reduce the potential for significant effects such that no likely significant effects are expected.</p>
Aquifers, all groundwater abstractions	Very high to low	<p>Use of drilling muds, such as used for directional drilling techniques, if trenchless solutions (alternative to excavated trenches) were used, could pose a risk to controlled waters and therefore potential temporary adverse impact. However, good practice systems would be employed and would be part of the requirements of a OCEMP, which would reduce the potential for significant effects such that no likely significant effects are expected.</p>
Groundwater Dependent Terrestrial Ecosystems	<p>Very high – Morton Pool and Pasture Ramsar site</p> <p>High – Crofts Mill Pasture SSSI</p>	<p>The published GWDTEs reported within the study area are located within a Nitrate Vulnerable Zone. Whilst the need for temporary trenches or shallow excavation for access tracks in vicinity of GWDTE is unlikely, these would be subject to good practice and requirements in the OCEMP to avoid creation of new pathways (and therefore potential temporary adverse impact), of nutrient rich water to GWDTE. Therefore, no likely significant effects are expected.</p>
SPZ1, SPZ2, SPZ3,	Very high to low	<p>Construction of the Switching Station near Lower Frankton has the potential to cause adverse impacts on the source protection zones, aquifers and licensed abstractions. Groundwater control methods, if used, have the potential to lower</p>

Impact Receptor	Sensitivity of Resource / Receptor	Description of potential Impact / Change
Principal aquifers (bedrock), Secondary A aquifer, Secondary Undifferentiated aquifer (superficial deposits)		groundwater levels and cause temporary reduction or loss of yields at boreholes or wells used for water abstraction. However, Foundation Works Risk Assessments and good practice mitigation that would be part of the requirements of a OCEMP would be used to reduce the impact, in consultation with the Environment Agency. In addition, embedded mitigation includes locating the Project's draft Order Limits outside of any published SPZ1s. Further assessment of these effects would be presented in the ES but at this stage, no likely significant effects are anticipated.

## **Operation**

- 13.7.5 The potential impacts for ground conditions, geology and hydrogeology associated with the operation phase of the Project are described in Table 13-15.
- 13.7.6 The Planning Inspectorate agreed that contamination could be scoped out for the operational phase.

Table 13-14 – Operational Phase – Preliminary Assessment of Potential Impacts

Resource / Receptor	Effect & Sensitivity of Resource / Receptor	Description of potential Impact / Change
Geological sites of regional and local importance	<p>Very High - Afon Vyrnwy (GCR)</p> <p>High - Ffridd Mathrafal Track Section (SSSI)</p> <p>Medium - Tan-y-Ffridd Quarry (RIGS)</p>	<p>Potential impacts (damage and/or loss) to geologically important sites caused by maintenance works, though this will be limited to discrete areas, in particular at the Afon Vyrnwy (Tower 119).</p> <p>The potential for likely significant effects at discrete locations cannot be confirmed at this stage and is subject to detailed assessment. Options for potential mitigation and/or betterment (e.g. improved access) can be explored which may be delivered by the Project to mitigate the significance of the potential impact.</p>
Mineral reserves	<p>Medium - Sand and Gravel, Slate and Sandstone safeguarding areas within the study area.</p>	<p>The Project crosses identified mineral safeguarding areas and minerals may or may not be present. If it is the case that minerals are present there is the potential for some damage and/or sterilisation of mineral resources.</p> <p>Further assessment of these effects including consultation with the Mineral Officers with the local authorities would be presented in the ES. The potential for likely significant effects cannot be confirmed at this stage and is subject to detailed assessment.</p>

Resource / Receptor	Effect & Sensitivity of Resource / Receptor	Description of potential Impact / Change
Aquifers, PWS, springs	Very high to medium	In the Underground Cable Route, proposed trenching has the potential to cause permanent drainage of shallow groundwater. Trenching may also have the potential for creating pollution pathways. Whilst the extent and magnitude of such effects is expected to be small, assessments would be used to assess potential impacts and required mitigation. Therefore, at this stage, no likely significant effects are anticipated.
GWDTE	<p>Very high – Morton Pool and Pasture Ramsar site</p> <p>High – Crofts Mill Pasture SSSI, Montgomery canal, Aston Locks-Keepers Bridge</p>	The published GWDTEs reported within the Study Area are located within a Nitrate Vulnerable Zone. Nutrient rich water entering a GWDTE has the potential to be detrimental to the biodiversity of the GWDTE and to degrade the WFD status. Whilst the need for drainage ditches or other permanent shallow excavations in vicinity of GWDTE is unlikely, then should any be required then these would be subject to good practice to avoid creation of new pathways of nutrient rich water to GWDTE. Therefore, at this stage, no likely significant effects are anticipated.
SPZ1, SPZ2, SPZ3, Principal aquifers (bedrock),	Very high to low	The Switching Station near Lower Frankton is located in an area that includes principal bedrock aquifers, sometimes overlain by permeable deposits comprising glaciofluvial deposits (Secondary A aquifer). Source protection zones SPZ1, SPZ2 and SPZ3) are also located in the same area. Therefore, there are very high value to

Resource / Receptor	Effect & Sensitivity of Resource / Receptor	Description of potential Impact / Change
Secondary A aquifer, Secondary Undifferentiated aquifer (superficial deposits)		low value hydrogeological receptors in this area. However, good practice design of any foundations and any permanent access tracks would be applied to reduce any adverse impacts on the groundwater receptors, with respect to groundwater levels, flows or groundwater quality. In addition, embedded mitigation includes locating the Project's draft Order Limits outside of any published SPZ1s. Therefore, at this stage, no likely significant effects are anticipated.



## 13.8 Preliminary Mitigation and Enhancement Measures

- 13.8.1 This section outlines the preliminary mitigation and compensation measures which are likely to be required to address the potential effects assessed in Section 13.7.
- 13.8.2 Reflecting IEMA guidance on delivering proportionate EIA (Ref 13.60), the assessments made assume that relevant embedded, standard and additional measures are in place. These will be set out in detail with an appendix to the ES and will include a OCEMP which will be secured through the DCO. The OCEMP sets out the requirements of all contractors working on the Project in adhering to environmental statutory requirements, guidance and best practice. The requirements of the OCEMP have been assumed as good practice mitigation within the assessment of effects during construction.
- 13.8.3 Further assessment to quantify potential risks to the identified receptors associated with contamination would be undertaken in accordance with LCRM and DMRB LA 109 guidance. Whilst considered unlikely in the context of the Project, if a significant risk is identified, remedial measures will be proposed.
- 13.8.4 If a risk to controlled waters is established that it is not possible to avoid through design, Foundation Works Risk Assessments will be undertaken to understand potential impacts on controlled waters (where it has not been possible to avoid through design). Where required, this will include suitable mitigation measures to minimise potential effects.
- 13.8.5 As part of the detailed pre-construction design, a suitable and likely targeted environmental and geotechnical site investigation will be undertaken in accordance with current best practice including BS5930, BS10175 and Eurocode 7 which will inform, if required, a site remediation strategy and piling risk assessments where appropriate.
- 13.8.6 Where required and where it is not possible to avoid through design, a geo-conservation strategy will be undertaken for RIGS/ GCR sites to understand potential effects on them together with potential mitigation and/or betterment (e.g. improved access) which may be delivered by the Project.

- 13.8.7 Where significant effects on ground conditions have not been avoided during design and the implementation of standard good practice measures, additional geographic/receptor specific measures will be identified to avoid/reduce likely significant effects.

## 13.9 Next Steps

- 13.9.1 To enhance the baseline conditions assessment further consultation and surveys are required as detailed below.
- Consultation with the relevant local authorities with respect to minerals safeguarding.
  - Further consultation with National Resource Wales (NRW), the Environment Agency and Natural England to obtain more baseline information.
  - Continue consultation with the local authorities (Powys County Council and Shropshire Council) in order to obtain details of private water supplies. This is particularly appropriate for those used for drinking water. This dataset should then be included within the EIA.
  - All current private abstractions that are used for drinking water (or bottled water) should have source protection zones applied. Therefore, as part of the EIA, the EA and NRW will be consulted in order to agree source protection zones for potable water abstractions from groundwater or springs.
  - Further consultation will be undertaken with the relevant local authorities planning and environmental health to obtain more baseline information;
  - The Environment Agency will be contacted to obtain relevant information about the Shropshire Groundwater Scheme, as requested by the Environment Agency in the Scoping Opinion (Ref 13.59).
  - Groundwater flooding information will be requested of the NRW, EA and lead local flood authority.
  - Review of the potential for impacts to peat would be led by Chapter 15: Soils and Agriculture and assisted as necessary in relation to geology and hydrogeology aspects.

### Assessments / Surveys

- 13.9.2 In line with the guidance contained within LRCM and LA 109, a Preliminary Risk Assessment (PRA) will be undertaken as part of the ES, and this will also help develop the conceptual site model. It will be supported by targeted site walkovers at identified key features, which could include mineral sites, key potential sources of contamination and relevant geological exposures.

- 13.9.3 Where required based on the outcomes of the PRA and development of the Conceptual Site Model, targeted ground investigations will be conducted taking into account the Project design and standard and embedded mitigation, which would aid more information on the current ground conditions, including areas of potential contamination and areas within the proposed structures. Subsequent generic quantitative risk assessment will be completed to further understand potential risks.
- 13.9.4 In addition to the data sources listed in Section 13.4, the assessment within the ES will be supported by field notes collected as part of targeted walkover surveys to review the areas of GWTDEs.
- 13.9.5 PWS information has been requested from local authorities. PWS locations would be identified from this information and supplemented with other enquiries as necessary. Additional information and/or a selected water features survey would be targeted at features nearest to proposed below ground works or structures of the Project.

## 13.10 References

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## 14 Air Quality

### 14.1 Introduction

14.1.1 This chapter presents the preliminary environmental information relating to air quality for the Project and presents a preliminary assessment of likely significant air quality effects identified to date, that could result from the Project (described in Chapter 2: Project Description). This chapter describes:

- Legislation, Policy and Guidance;
- Consultation and Engagement;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Preliminary Assessment of Effects;
- Preliminary Mitigation and Enhancement Measures;
- Preliminary Likely Significant Effects; and
- Next Steps.

14.1.2 The Project's draft Order Limits are illustrated on Figure 2.1.

14.1.3 This section should be read in conjunction with:

- Chapter 2: Project Description;
- Chapter 5: Environmental Assessment Methodology;
- Chapter 7: Ecology;
- Chapter 10: Traffic and Transport; and
- Chapter 20: Cumulative Effects.

14.1.4 This section is supported by the following figures:

- Figure 2.1 Project's draft Order Limits;
- Figure 14.1 Air Quality Baseline; and
- Figure 14.2 Construction Dust Study Area.

14.1.5 This chapter is supported by the following appendix:

- Appendix 14.1 Construction Dust Methodology and Assessment.

### 14.2 Legislation, Policy and Guidance

- 14.2.1 Key legislation, policy and planning guidance relevant to the preliminary air quality assessment of potential effects on air quality associated with the construction and operation phase of the Project is presented below. A full review of compliance with relevant national and local planning policy will be provided in the Environmental Statement that will be submitted as part of the application for development consent.
- 14.2.2 Policy generally seeks to minimise air quality effects from development and to avoid significant adverse effects. This applies particularly to traffic emissions associated with the construction of the Project and the effect of this on human health and ecology. This also applies to the dust emissions during the construction phase of the Project.

### **Legislation**

#### **Directive 2008/50/EC on ambient air quality and cleaner air in Europe**

- 14.2.3 Prior to the UK's withdrawal from the EU, the EU Directive on ambient air quality (2008/50/EC) (Ref. 14.1) set out a range of mandatory Limit Values (LVs) for different pollutants including nitrogen dioxide (NO<sub>2</sub>) and particulate matter less than 10 microns (PM<sub>10</sub>), the key traffic related pollutants. The EU Directive set LVs or Target Values for the concentrations of specific air pollutants and provided a new regulatory framework for particulate matter smaller than 2.5µm in diameter (PM<sub>2.5</sub>). The Air Quality Standards Regulations 2010 (Ref. 14.2), transposed into UK law the requirements of Directive 2008/50/EC on ambient air quality.
- 14.2.4 The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (Ref. 14.3) made amendments to the Air Quality Standards Regulations 2010 (Ref. 14.2) to transpose provisions of the EU Ambient Air Quality Directive (2008/50/EC) (Ref. 14.1) into UK law, pursuant to the European Union (Withdrawal) Act 2018 (Ref. 14.4).
- 14.2.5 The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (Ref. 14.5) amended the PM<sub>2.5</sub> LV from 25 µg/m<sup>3</sup> (within the Air Quality Standards Regulations 2010) to 20 µg/m<sup>3</sup> in line with the requirement of the EU Directive (2008/50/EC) (Ref. 14.1) during the transition of the UK's withdrawal from the European Union.

#### **Air Quality (England) Regulations 2000 and Air Quality (Wales) Regulations 2000**

14.2.6 The ambient air quality standards and objectives are given statutory backing in England through the Air Quality (England) Regulations 2000 (Ref. 14.6) and in Wales through the Air Quality (Wales) Regulations 2000 (Ref. 14.7). The LVs were given statutory backing through The Air Quality Standards Regulations 2010 (Ref. 14.2). The Air Quality Strategy (AQS) objectives for the protection of human health which are applicable to this assessment are presented in Table 14-1.

*Table 14-1 – Air Quality Objectives for the Protection of Human Health*

Pollutant	Concentration ( $\mu\text{g}/\text{m}^3$ )	Averaging Period
NO <sub>2</sub>	200	1-hour mean (not to be exceeded more than 18 times per year)
	40	Annual mean
PM <sub>10</sub>	50	24-hour mean (not to be exceeded more than 35 times per year)
	40	Annual mean
PM <sub>2.5</sub>	25* (LV is 20)	Annual mean

\* It should be noted that PM<sub>2.5</sub> was included in the air quality strategy 2007 but not in the regulations as a legal requirement to be achieved by local authorities. The LV is 20  $\mu\text{g}/\text{m}^3$  - this has been used in the assessment as it is lower.

14.2.7 Reporting against compliance with LVs is undertaken by the Department for Environment, Food and Rural Affairs (Defra) and reported at a zonal/agglomeration level. Zones/agglomerations only comply when everywhere in the zone is below the LV and this is the basis of Defra's reporting, which is designed to determine what the maximum concentration is within the zone and hence determine the date the zone will comply with the LV. AQS objectives are assessed at a much more local level where an Air Quality Management Area (AQMA) can be designated as a result of exceedance at individual properties.

14.2.8 The Air Quality Objectives apply where members of the public are regularly present for the averaging time of the objective (i.e., where people will be exposed to pollutants). The annual mean objectives apply to all locations where members of the public might be regularly exposed; these include building façades of residential properties, schools, hospitals, care homes, etc. The 24-hour mean objective applies to all locations where the annual mean objective would apply, together with hotels and gardens of residential properties. The one hour mean

objective also applies at these locations as well as at any outdoor location where a member of the public might reasonably be expected to stay for one hour or more, such as shopping streets, parks and sports grounds, as well as bus stations and railway stations that are not fully enclosed.

- 14.2.9 The critical level for the protection of vegetation and ecosystems (the concentration above which direct adverse effects on sensitive vegetation may occur according to present knowledge) applicable to this assessment is presented in Table 14-2.

*Table 14-2 – Air Quality Critical Level for the Protection of Vegetation and Ecosystems*

Pollutant	Critical Level	
	Concentration	Averaging Period
Oxides of nitrogen (NO <sub>x</sub> )	30µg/m <sup>3</sup>	One calendar year

- 14.2.10 Local authorities have no legal requirement to comply with AQS objectives. They are however required to demonstrate best efforts to work towards achieving AQS objectives and a framework has been developed (Ref. 14.8) to enable local authorities to deliver and contribute to long-term air quality goals.

#### **Well-being of Future Generations (Wales) Act 2015**

- 14.2.11 The Well-being of Future Generations (Wales) Act 2015 (Ref. 14.9) requires public bodies to encourage the improvement of social, economic, environmental and cultural wellbeing of Wales. It details the ways in which specified public bodies must work, and work together to improve the well-being of Wales. Public bodies in Wales need to carry out air quality and noise management in accordance with the five ways of working set out in the Act.

#### **Environment (Air Quality and Soundscapes) (Wales) Act 2024**

- 14.2.12 The Environment (Air Quality and Soundscapes) (Wales) Act 2024 (14.10) received Royal Assent on 14th February 2024. The Act includes provisions for a national air quality target setting framework, with specific duties for Welsh Ministers to set a short or long-term target for the annual mean level average concentration of PM<sub>2.5</sub> in ambient air by February 2027 and to set an additional long-term target in respect of one of the following listed pollutants: ammonia; PM<sub>10</sub>; ground level ozone; NO<sub>2</sub>; carbon monoxide; and sulphur dioxide. The Act

requires that regulations setting a PM2.5 target are laid before Senedd Cymru within three years of the Act receiving Royal Assent, and that regulations setting a long-term target in respect of one of the listed pollutants are laid before Senedd Cymru within six years of the Act receiving Royal Assent. The Act also includes powers for Welsh Ministers to set long-term targets in respect of any matter relating to air quality in Wales.

### **The Environment Act (1995)**

- 14.2.13 Part IV of the Environment Act 1995 (Ref. 14.11) required the UK Government to produce a national AQS which contains standards, objectives and measures for improving ambient air quality. The AQS (Ref. 14.8) sets out objectives that are maximum ambient concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale.
- 14.2.14 Under the Local Air Quality Management (LAQM) regime, local authorities have a duty in accordance with Part IV of the Environment Act 1995 to make periodic reviews of local air quality against the AQS objectives. Where a local authority's review and assessment of local air quality indicates that AQS objectives are not expected to be achieved, local authorities are required to designate an AQMA. An Air Quality Action Plan (AQAP) must then be formulated, outlining a plan of action to meet AQS objectives in the AQMA.

### **The Environment Act (2021)**

- 14.2.15 The Environment Act 2021 (Ref. 14.12) has two main functions:
- To give a legal framework for environmental governance in the UK; and
  - To bring in measures for the improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity, and conservation.
- 14.2.16 The majority of the Act does not make any immediate changes for organisations other than regulators. Legislative requirements relevant to air quality include the requirement for the Secretary of State to set targets for PM2.5. The Environmental Targets (Fine Particulate Matter) England Regulations 2023 (Ref. 14.13) sets out the following targets for PM2.5:
- Annual Mean Concentration Target ('concentration target') – a target of 10 micrograms per cubic metre ( $\mu\text{g}/\text{m}^3$ ) to be met across England by 2040; and
  - Population Exposure Reduction Target ('exposure reduction target') – a 35% reduction in population exposure by 2040 (compared to a base year of 2018).

14.2.17 Defra is in the process of producing planning guidance on how developers and local planning authorities should take the targets into consideration in the planning process. The interim guidance (Ref. 14.14) was published in October 2024 and advises applicants to provide evidence in their planning applications that they have identified key sources of air pollution within their schemes and taken appropriate action to minimise emissions of PM2.5 as far as is reasonably practicable.

### **Environmental Protection Act 1990**

14.2.18 Activities that generate dust of a sufficient scale and frequency, may become a nuisance. The relevant legislation dealing with statutory nuisance is given in Part III of the Environmental Protection Act 1990 (Ref. 14.15). A statutory nuisance in relation to dust and deposits is defined under Section 79 of the act as follows:

*‘(d) Any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance;*

*(e) any accumulation or deposit which is prejudicial to health or a nuisance’.*

14.2.19 Under the provisions of the Act, where a local authority is satisfied that a Statutory Nuisance exists, it is under a mandatory duty to serve an Abatement Notice requiring abatement or cessation of one or more activities deemed to be causing the nuisance. In the absence of any kind of standard, identification of a nuisance is dependent on the professional judgment of the local authority as to whether Best Practical Means (BPM) are being employed to control emissions. Where BPM is evident or can be clearly demonstrated then a particular activity cannot be deemed to be causing a Statutory Nuisance.

### **The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018**

14.2.20 The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018 (Ref. 14.16) set out gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for Non Road Mobile Machinery (NRMM).

## **Planning Policy**

### **National Planning Policy**

#### **National Policy Statements**

14.2.21 National Policy Statements (NPSs) set out the primary policy tests against which the application for development consent for the Project would be considered. The

two relevant NPSs are Overarching National Policy Statement for Energy (EN-1) (Ref. 14.17) and National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref. 14.18). NPS EN-5 makes no specific reference to air quality.

14.2.22 Table 14-3 sets out how NPS EN-1 (Ref. 14.17) is relevant to the air quality assessment.



Table 14-3 – Relevant Sections of the Relevant National Policy Statements

National Policy Statement	NPS section	How it will be considered
EN-1	5.2.1 <i>‘Energy infrastructure development can have adverse effects on air quality. The construction, operation and decommissioning phases can involve emissions to air which could lead to adverse impacts on health, on protected species and habitats, or on the wider countryside and species.’</i>	The preliminary air quality assessment considers the impacts and resulting effects associated with the construction phase as set out in Section 14.6 Preliminary Assessment of Effects. Air quality effects associated with operational phase vehicle emissions have been scoped out of further assessment.
EN-1	5.2.4 <i>‘A particular effect of air emissions from some energy infrastructure may be eutrophication, which is the excessive enrichment of nutrients in the environment. Eutrophication from air pollution results mainly from emissions of NOx and ammonia.’</i>	The air quality assessment undertaken for the Environmental Statement (ES) will quantify changes of nitrogen deposition at relevant ecologically sensitive receptors, if required, once the construction traffic routes have been confirmed and the construction traffic flows are available.
EN-1	5.2.5 <i>‘Emissions from combustion plants are generally released through exhaust stacks. Design of exhaust stacks, particularly height, is the primary driver for the delivery of optimal dispersion of emissions and is often determined by statutory requirements. The optimal stack</i>	The assessment of combustion plant and NRMM emissions will be assessed at ES stage once further details about the proposed construction plant is available.

National Policy Statement	NPS section	How it will be considered
	<i>height is dependent upon the local terrain and meteorological conditions, in combination with the emission characteristics of the plant.'</i>	
EN-1	5.2.8 <i>'Where the project is likely to have adverse effects on air quality the applicant should undertake an assessment of the impacts of the proposed project as part of the [Environmental Statement] ES.'</i>	Screening of relevant data has been undertaken, where available, to determine where the Project is likely to have adverse impacts on air quality, the effects of which, have been assessed as part of the air quality assessment. Further assessment will be undertaken at the ES stage once further details on construction traffic and NRMM is available.
EN-1	5.2.9 <i>'The ES should describe:</i> <ul style="list-style-type: none"> <li>• existing air quality concentrations and the relative change in air quality from existing levels;</li> <li>• any significant air quality effects, mitigation action taken and any residual effects, distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project;</li> <li>• the predicted absolute emissions, concentration change and absolute concentrations as a result of</li> </ul>	Should screening of traffic data for any of the Project phases indicate detailed assessment is required, then dispersion modelling will be undertaken as part of the ES air quality assessment to determine the change in pollutant concentrations as a result of the Project at relevant human and ecological receptor locations.

National Policy Statement	NPS section	How it will be considered
	<p>the proposed project, after mitigation methods have been applied; and</p> <ul style="list-style-type: none"> <li>any potential eutrophication impacts.'</li> </ul>	
EN-1	<p>5.2.12 <i>'Where a proposed development is likely to lead to a breach of any relevant statutory air quality limits, objectives or targets, or affect the ability of a noncompliant area to achieve compliance within the timescales set out in the most recent relevant air quality plan/strategy at the time of the decision, the applicant should work with the relevant authorities to secure appropriate mitigation measures to ensure that those statutory limits, objectives or targets are not breached'</i>.</p> <p>5.2.13 <i>'The Secretary of State should consider whether mitigation measures are needed both for operational and construction emissions over and above any which may form part of the project application. A construction management plan may help codify mitigation at this stage'</i>.</p>	<p>Construction dust mitigation measures will be incorporated into an Outline Construction Environmental Management Plan (OCEMP). No air quality effects are anticipated during the operation phase as detailed in Section 14.4.</p>
EN-1	<p>5.2.16 <i>'The Secretary of State should give air quality considerations substantial weight where a project would lead to a deterioration in air quality. This could for example include where an area breaches any national air quality limits or statutory air quality objective. However, air quality considerations will also be important where</i></p>	<p>Screening of relevant data has been undertaken, where available, to determine where the Project is likely to have adverse impacts on air quality, the effects of which, have been assessed as part of the air quality assessment. Further assessment will be</p>

National Policy Statement	NPS section	How it will be considered
	<p><i>substantial changes in air quality levels are expected, even if this does not lead to any breaches statutory limits, objectives or targets.'</i></p>	<p>undertaken at the ES stage once further details on construction traffic and NRMM is available.</p>

### **National Planning Policy Framework**

- 14.2.23 The National Planning Policy Framework (NPPF) (Ref. 14.19) sets out the government's planning policies for England and how these are expected to be applied, including for air quality. Paragraph 199 of the Framework states:

*'Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.'*

- 14.2.24 The National Planning Practice Guidance (NPPG) (Ref. 14.20) includes guidance relating to: planning and air quality; the role of Local Plans with regard to air quality; when air quality is likely to be relevant to a planning decision; what should be included within an air quality assessment and how effects on air quality can be mitigated.

### **Planning Policy Wales**

- 14.2.25 Planning Policy Wales (Ref. 14.21) sets out policies that should be considered during planning applications and decisions. A number of measures are included in Planning Policy Wales that required the consideration of air quality. These measures are set out in Table 14-4.

Table 14-4 – Relevant Sections of Planning Policy Wales

Planning Policy Wales	Policy Context	How it will be considered
Paragraph 6.7.5	<p><i>‘The key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments.’</i></p>	<p>The preliminary air quality assessment considers the impacts and resulting effects associated with the construction phase as set out in Section 14.6 Preliminary Assessment of Effects. No air quality impacts are anticipated during the operation phase as detailed in Section 14.4.</p>
Paragraph 6.7.6	<p><i>‘In proposing new development, planning authorities and developers must therefore:</i></p> <ul style="list-style-type: none"> <li>• Address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;</li> <li>• Not create areas of poor air quality or inappropriate soundscape; and</li> <li>• Seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.’</li> </ul>	<p>There are no AQMAs within the study area of the assessment. A review of baseline air quality has been undertaken to identify the location of sensitive receptors. Construction dust effects have been assessed at sensitive receptors, including sensitive designated habitats within the air quality study area. Appropriate mitigation measures have been proposed. Further assessment will be undertaken at the ES stage once further details on construction traffic and NRMM is available.</p>

Planning Policy Wales	Policy Context	How it will be considered
Paragraph 6.7.13	<p><i>'When proposing to introduce a development activity into an area the impacts which existing pollution sources (including roads, railways and industrial or commercial operations) have in terms of air and noise pollution should be carefully considered, particularly taking into account any increases in pollution levels which may be reasonably expected in the foreseeable future as a result of increases transport activity.'</i></p>	<p>Screening of traffic data will be undertaken for the ES, once details of construction traffic route and flows are available, to determine where the Project is likely to have significant air quality effects. Should screening of traffic data for any of the Project phases indicate detailed assessment is required, then dispersion modelling will be undertaken as part of the air quality assessment to determine the change in pollutant concentrations as a result of the Project at relevant human and ecological receptor locations.</p>
Paragraph 6.7.26	<p><i>'Planning authorities must consider the potential for temporary environmental risks, including airborne pollution and surface and subsurface risks, arising during the construction phases of development. Where appropriate planning authorities should require a construction management plan, covering pollution prevention, noisy plant, hours of operation, dust mitigation and details for keeping residents informed about temporary risks.'</i></p>	<p>The preliminary air quality assessment considers the impacts and resulting effects associated with the construction phase as set out in Section 14.6 Preliminary Assessment of Effects. Construction dust mitigation measures will be incorporated into a CEMP. Air quality effects associated with operational phase vehicle emissions have been scoped out of further assessment as detailed in Section 14.4.</p>

## Local Planning Policy

14.2.26 The Project lies within the jurisdictions of Powys County Council and Shropshire Council. A summary of the relevant local planning policy which is relevant to a study of air quality matters and has informed the preliminary air quality assessment is provided in Table 14-5.

Table 14-5 – Relevant Local Planning Policies

Local Plan	Policy context	How it will be considered
<i>Policy DM1 – Planning Obligations</i>		
Powys Adopted Local Development Plan (2011-2026) (Ref. 14.22)	Planning obligations will be sought by agreement with applicants, where necessary, to ensure that significant environmental impacts are addressed and mitigated.	Mitigation measures as set out in Section 14.7 have been proposed where required.
<i>Policy DM2 – The Natural Environment</i>		
	Development proposals will only be permitted where they do not unacceptably adversely affect the important site designations, habitats and species afforded levels of protection through European, national and local legislation and policy.	Construction dust effects have been assessed at sensitive receptors, including sensitive designated habitats within the air quality study area. Appropriate mitigation measures have been proposed. Further assessment will be undertaken at the ES stage once



Local Plan	Policy context	How it will be considered
		further details on construction traffic and NRMM is available.
<i>Policy DM14 – Air Quality Management</i>		
	<p>Development proposals will only be permitted where any resultant air pollution does not cause or lead to an unacceptable risk of harm to human health or the natural environment.</p> <p>Proposals will need to demonstrate that measures can be taken to overcome any significant adverse risk, with particular attention being paid to:</p> <ol style="list-style-type: none"> <li>1. National Air Quality Strategy objectives and any Air Quality Management Areas; and</li> <li>2. The critical levels for the protection of habitats and species within a European site or Site of Special Scientific Interest in accordance with Policy DM2.</li> </ol>	The preliminary air quality assessment has considered construction dust effects associated with the Project at sensitive receptors, and measures to mitigate any effects have been proposed. Further assessment will be undertaken at the ES stage once further details on construction traffic and NRMM is available.
<i>Policy CS6 Sustainable Design and Development Principles</i>		

Local Plan	Policy context	How it will be considered
Shropshire Local Development Framework: Adopted Core Strategy 2011 (Ref. 14.23)	All developments should be sustainable and safeguard natural resources including high quality agricultural land, geology, minerals, air, soil and water.	Mitigation measures have been proposed where required and are summarised in Section 14.7.
<i>Draft Shropshire Local Plan (2016-2038) (Ref. 14.24)</i>	<i>DP12– The Natural Environment</i>	
	A project-level Habitats Regulations Assessment (HRA) is required for all proposals where the Local Planning Authority identifies a likely significant effect on an internationally designated site.	The preliminary air quality assessment has considered construction dust effects at internationally designated sites, and measures to mitigate any adverse effect on site integrity, should this arise.
<i>DP18 – Pollution and Public Amenity</i>		
	<p>Development will comply with existing pollution control regimes and national objectives for pollutants.</p> <p>Development which is likely to give rise to concerns about air quality, either on its own or cumulatively will provide an assessment</p>	The preliminary air quality assessment has taken into consideration all relevant legislation and policies, including air quality objectives for pollutants. The construction dust effects have been assessed and mitigation measures have been proposed. Further

Local Plan	Policy context	How it will be considered
	<p>proportionate to the scale of development and level of concern.</p> <p>Proposals which would lead to an unacceptable risk from air pollution or prevent sustained compliance with limit values or national objectives for air pollutants will be refused unless they can be practicably amended to avoid that risk.</p>	<p>assessment will be undertaken at the ES stage once further details on construction traffic and NRMM is available.</p>

## 14.3 Consultation and Engagement

- 14.3.1 The comments included in the EIA Scoping Opinion from the Planning Inspectorate (PINS) and subsequent applicant responses to this EIA Scoping Opinion are outlined below in Table 14-6.

Table 14-6 – Scoping Opinion from the Planning Inspectorate.

ID	Matter	Inspectorate’s Comments	Project Response
3.11.1	Vehicle emissions - construction (if relevant Institute of Air Quality Management (IAQM) indicative criteria are not exceeded)	If the predicted numbers of construction traffic movements generated by the Proposed Development alone or cumulatively would demonstrably not exceed the relevant indicative criteria for air quality assessment set out in the Environmental Protection UK (EPUK) and IAQM guidance, as relevant to each of the affected roads used for construction traffic (once the route(s) has been confirmed), the Inspectorate agrees that this matter can be scoped out of the ES. Where predicted construction traffic flows meet the criteria, the Scoping Report confirms that this matter will be scoped into the ES.	At the current stage of assessment, details on the construction traffic flows are not yet available, therefore the air quality effects from construction vehicle emissions will be assessed at ES stage once further details are available. If any of the screening criteria are met, detailed assessment will be undertaken, as detailed in Section 14.4.
3.11.2	Non-Road Mobile Machinery (NRMM) emissions – construction and operation	Limited information has been provided in the Scoping Report regarding the likely use of NRMM. Specifically, no information has been provided as to the type, number, location or operational hours of such machinery and likely emissions, other than brief references to the temporary and transient	A preliminary assessment of NRMM emissions has been undertaken based on the expectation that operation of NRMM would be temporary and transient in nature. Once further

ID	Matter	Inspectorate's Comments	Project Response
		<p>nature of NRMM use. On this basis the Inspectorate is unable to exclude a LSE during construction and does not agree that this matter can be scoped out of the ES. Accordingly the ES should include an assessment of NRMM emissions during construction, or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of a LSE. The Inspectorate is content that this matter can be scoped out for the operational phase.</p>	<p>details about the proposed construction plant are available, further assessment will be undertaken for the ES following the methodology outlined in Section 14.4.</p>
3.11.3	Vehicle emissions - operation	<p>The Scoping Report proposes to scope this matter out on the basis that significant effects are not likely due to the nature of the Proposed Development and vehicle trips associated with the operation and maintenance phase being anticipated to be below the relevant indicative criteria for air quality assessment set out in the EPUK and IAQM guidance. Further to this, the Scoping Report states that maintenance works are not anticipated to require heavy equipment or generate significant dust emissions and will therefore have insignificant effects upon air quality. The Inspectorate agrees</p>	<p>There will be travel to the site for maintenance purposes, but vehicle trips will be very limited in nature and are anticipated to be below the IAQM and EPUK Development Control screening criteria (Ref. 14.25). Therefore, assessment of operational air quality effects is scoped out of the PEIR and the ES. If predicted vehicle numbers during the operation phase change following</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>that the number of vehicle trips generated by the operation and maintenance of the Proposed Development are unlikely to result in significant effects, it is therefore considered acceptable to scope this matter out. The Project Description chapter of the ES should clearly set out the likely number and type of operation and maintenance vehicles.</p>	<p>the PEIR, the requirement for the assessment of operational effects to air quality will be reconsidered for inclusion in the ES. Further details of the number and type of operational vehicles will be reported in the ES.</p>
3.11.4	Dust emissions - operation	<p>The Inspectorate agrees that activities associated with the operational maintenance of the Proposed Development are unlikely to result in significant dust emissions and agrees to scope to matter out of the ES.</p>	<p>The Inspectorate's comment is noted and there are no changes to the scoping of operational dust emissions.</p>
3.11.5	Study area	<p>Figure 16.1 displays a construction dust assessment study area for the Scoping Corridor and the preferred collection substation search area. It is unclear whether dust impacts would occur between these two separate study areas. The ES should clarify the works and any impacts that would occur between the Scoping Corridor and Grug y Mynydd Collector Substation and provide an</p>	<p>The Project's draft Order Limits used to determine the construction dust study area in the PEIR includes all Project sections as described in Chapter 2: Project Description. The construction dust study area is presented in Figure 14.2.</p>

ID	Matter	Inspectorate's Comments	Project Response
		assessment where there is potential for LSE to occur. The final study area should be clearly depicted on a figure within the ES.	



## 14.4 Assessment Methodology and Significance Criteria

- 14.4.1 This section describes the technical methods used to determine the baseline conditions, sensitivity of the receptors and magnitude of impacts and sets out the significance criteria that have been used for the preliminary air quality assessment.
- 14.4.2 The preliminary air quality assessment within this PEIR chapter focuses on the local air quality effects associated with the construction phase of the Project. These include effects from construction dust, NRMM and construction vehicle emissions.
- 14.4.3 Assessment of operational air quality effects is scoped out of the PEIR, as detailed further on in this Section.
- 14.4.4 The relevant guidance documents used to inform the assessment are listed below:
- IAQM: Guidance on the Assessment of Dust from Demolition and Construction (Version 2.2, updated January 2024) (Ref. 14.26).
  - IAQM and EPUK: Land-Use Planning & Development Control: Planning for Air Quality (Ref. 14.25).
  - Defra: Local Air Quality Management Technical Guidance (TG22) (LAQM.TG22) (Ref. 14.27).
  - Design Manual for Roads and Bridges (DMRB) LA105 (Ref. 14.28).

### Baseline

- 14.4.5 A review of the existing baseline was undertaken to establish an understanding of the baseline air quality environment and to identify areas likely to be sensitive to changes in emissions as a result of the Project. The baseline conditions have been established within the assessment study area, which is defined in Section 14.4 Study Area and shown on Figure 14.1 Air Quality Baseline.
- 14.4.6 No air quality monitoring surveys are currently proposed for the purposes of the assessment. However, this will be reviewed once construction vehicle estimates for the construction phase are available.

## Data Sources

14.4.7 Baseline information on air quality has been collected from the following sources:

- Defra UK AIR website (Ref. 14.29) – to establish predicted background concentrations for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> and determine existing AQMAs.
- Local authority websites and annual Air Quality Status Reports – to determine existing AQMAs and local air quality monitoring results:
  - Powys County Council, Air Quality Progress Report 2023 (Ref. 14.30); and
  - Shropshire Council, Air Quality Annual Status Report 2023 (awaiting Defra approval) (Ref. 14.31);
- MAGIC website (Ref. 14.32) – to identify ecological sites within the air quality study areas.
- Air Pollution Information Service (APIS) (Ref. 14.33) – to identify any habitats or features of designated sites that are sensitive to nutrient nitrogen and acid deposition.

## Construction Assessment Methodology

### Construction Dust Emissions

14.4.8 During the construction phase of the Project, there is the potential for fugitive dust emissions (i.e. dust released from an open source such as construction works rather than from a stack) to occur as a result of construction phase activities. These have been qualitatively assessed in accordance with the methodology outlined in the latest IAQM construction dust guidance (Ref. 14.26), based on the current available information for the Project.

14.4.9 The steps for assessing dust emissions in accordance with the IAQM construction dust guidance (Ref. 14.26) are detailed in Appendix 14.1 Construction Dust Methodology and Assessment.

### Construction Vehicle Emissions

14.4.10 The assessment of the effects of vehicle emissions from traffic related to the construction phase of the Project is based on the IAQM and EPUK Development Control guidance (Ref. 14.25). This provides screening criteria indicating the thresholds above which an assessment may be necessary. There are thresholds

for the daily flows of light duty vehicles (LDV) and heavy-duty vehicles (HDV)<sup>1</sup>, which vary depending on whether an AQMA is present or not. Where the criteria are met, an assessment is generally considered necessary to determine the concentrations of pollutants in ambient air at human or ecological receptors adjacent to the roads that meet the criteria. The IAQM screening criteria are as follows:

- A change in LDV flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA or more than 500 AADT elsewhere; or
- A change HDV (>3.5 tonnes) flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere; or
- Where a road is realigned by 5m or more and is within an AQMA; or
- Where a junction is added or removed close to existing receptors.

- 14.4.11 It is not anticipated that there will be road realignments or junctions added or removed as part of the Project, except for the access routes required for the construction and operation phase of the Project. If any of the AADT and HDV criteria are met on the construction traffic routes, haul roads or access routes, a detailed assessment will be undertaken to predict the construction traffic impact on air quality. At the current stage of assessment, flows for the construction traffic routes are not yet available, therefore the air quality impacts from construction vehicle emissions will be assessed at ES stage once further details are available. If any of the screening criteria are met, the following methodology will be applied.
- 14.4.12 The significance of predicted effects will be determined in accordance with the methodology outlined in the IAQM and EPUK Development Control guidance (Ref. 14.25) and described as follows.
- 14.4.13 Potential impacts of vehicle emissions at sensitive receptor locations will be assessed by calculating the change in NO<sub>2</sub> and particulate matter concentrations as a result of the Project.
- 14.4.14 The AQS objectives only apply where members of the public are likely to be regularly present for the averaging time of the objective (i.e. where people will be exposed to pollutants). LAQM.TG22 (Ref. 14.27) defines a sensitive receptor as a location representative of human (or ecological) exposure to a pollutant over a

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<sup>1</sup> HDV = goods vehicles + buses >3.5t gross vehicle weight

time period relevant to the objective that is being assessed against where the Air Quality Strategy objectives as set out in the Air Quality (England) Regulations 2000 and Air Quality (Wales) Regulations 2000 are considered to apply, as detailed in Table 14-7.

Table 14.7 – Examples of Where the AQS Objectives Apply

Averaging Period	Objectives Should Apply At	Objectives Should Not Apply At
Annual Mean	<p>All locations where members of the public might be regularly exposed.</p> <p>Building façades of residential properties, schools, hospitals, care homes etc.</p>	<p>Building façades of offices or other places of work where members of the public do not have regular access.</p> <p>Hotels, unless people live there as their permanent residence.</p> <p>Gardens of residential properties.</p> <p>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.</p>
24-Hour Mean	<p>All locations where the annual mean objective would apply, together with hotels and gardens of residential properties.</p>	<p>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.</p>
1-Hour Mean	<p>All locations where the annual mean and 24-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets).</p> <p>Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where reasonably be expected to spend one hour or more.</p>	<p>Kerbside sites where the public would not be expected to have regular access.</p>

Averaging Period	Objectives Should Apply At	Objectives Should Not Apply At
	Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	

- 14.4.15 Where detailed assessment is required, detailed dispersion modelling will be undertaken using Atmospheric Dispersion Modelling Software (ADMS) to predict pollutant concentrations at worst case receptor locations within 200m of affected construction vehicle routes. The magnitude of change will be calculated, and total concentrations compared against relevant AQS objectives.
- 14.4.16 The significance of effects will be assessed in accordance with the IAQM and EPUK Development Control guidance (Ref. 14.25) dependent upon the percentage change in concentration between the 'without and with Project' scenarios, relative to the relevant air quality objectives, as presented in Table 14-8.

Table 14.8 – IAQM Impact Descriptors for Individual Receptors

Long Term Average Concentration at Receptor in Assessment Year	% Change in Concentration Relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial



14.4.17 The IAQM and EPUK Development Control guidance (Ref. 14.25) notes that the impact descriptors in Table 14-7 are for individual receptors only and the overall significance of effect should be determined using professional judgement, taking into the degree of impact and factors such as:

- The existing and future air quality in the absence of the development;
- The extent of current and future populations exposure to the impact; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

### **NRMM Emissions**

14.4.18 A qualitative assessment of the air quality effects from NRMM emissions during construction will be undertaken at ES stage once further details about the proposed construction plant is available. The following methodology will be applied.

14.4.19 The assessment of construction phase NRMM emissions is based on the IAQM and EPUK Development Control guidance (Ref. 14.25) and professional judgement. The guidance includes an indicative threshold for NO<sub>x</sub> emissions from construction plants. Should the single or combined emissions be below the threshold of 5mg/second, the impact on air quality is unlikely to give rise to significant effects.

14.4.20 Should screening of the relevant data indicate that any of the single or combined emissions from any of the construction plant exceed the IAQM and EPUK threshold criteria (Ref. 14.25), potential effects at sensitive receptor locations will be assessed at ES stage (once further details about the proposed plant is available) by calculating the change in NO<sub>2</sub> and particulate matter concentrations as a result of the Project.

14.4.21 As stated previously, LAQM.TG22 (Ref. 14.27) defines a sensitive receptor as a location representative of human (or ecological) exposure to a pollutant, over a time period relevant to the objective that is being assessed against, where the Air Quality Strategy objectives are considered to apply, as detailed in Table 14.6.

14.4.22 If required, detailed dispersion modelling will be undertaken using ADMS to predict pollutant concentrations at worst case receptor locations. The magnitude of change will be calculated and total concentrations compared against relevant AQS objectives in Table 14-1 and Table 14-2.

- 14.4.23 The significance of effects will be assessed in accordance with the IAQM and EPUK Development Control guidance (Ref. 14.25) where the overall significance of the project in terms of NRMM emissions would then be determined using professional judgement, taking into account factors such as the baseline and future air quality in the absence of the Project, the number of receptors affected (this will be determined using the IAQM Impact Descriptors shown in Table 14-7) and the influence and validity of any assumptions adopted when undertaking the assessment.
- 14.4.24 A preliminary assessment of NRMM emissions has been undertaken based on the expectation that operation of NRMM would be temporary and transient in nature. Once further details about the proposed construction plant are available, further assessment will be undertaken for the ES following the methodology above.

## **Operational Assessment Methodology**

### **Operation Phase Vehicle Emissions**

- 14.4.25 During the operation phase, there will be travel to the site for maintenance purposes, but this will be very limited in nature and it is currently predicted that vehicle trips will be well below the IAQM and EPUK Development Control screening criteria (Ref. 14.25). Therefore, assessment of operational air quality effects is scoped out of the PEIR and the ES, as reported in the Scoping Report (Ref. 14.34). If predicted vehicle numbers during the operation phase change following the PEIR, the requirement for the assessment of operational effects to air quality will be reconsidered for inclusion in the ES.

## **Study Areas**

### **Construction Dust Emissions**

- 14.4.26 In accordance with the IAQM Construction Dust guidance (Ref. 14.26), the study area for construction phase dust is:
- 250m from the boundary of the Project's draft Order Limits for human receptors and up to 50m for ecological receptors; and
  - 50m from the construction traffic route(s) used by construction vehicles on the public highway, up to 250m from the Project entrance(s).

### **Construction Vehicle Emissions**

- 14.4.27 Due to limited detail on construction traffic flows at this stage, screening of construction traffic data against criteria set out in Section 14.4 to determine the

construction vehicle emissions assessment study area has not been possible at this stage. Once further detail on construction traffic routes and flows is available, screening of construction traffic data will be undertaken for the ES to determine the study area, and detailed assessment of construction vehicle emissions will be carried out if required.

- 14.4.28 The study area for assessment of construction vehicle emissions will comprise an area within 200m of the roads which exceed the criteria in accordance with DMRB LA105 (Ref. 14.28).
- 14.4.29 Representative worst-case human health receptors and ecological receptors that are sensitive to changes in air quality will be selected within the study area. Examples of receptors are presented in Table 14-6.

### **Construction Plant and Equipment Emissions**

- 14.4.30 No specific guidance exists on the definition for a study area for NRMM and construction plant point sources due to the large variation in the area of potential effects from different types of sources. For the purposes of this assessment a study area of up to 200m radius from NRMM and construction plant is considered appropriate given the size and temporary nature of the operations. Beyond this distance it is judged that the effect of any emissions on local air quality would not be significant. Given the uncertainty of the locations of NRMM within the Project's draft Order Limits at this stage, the study area has been defined as 200m of the proposed construction compounds as a precautionary approach. Further detail of the study area and assessment will be provided in the ES.

### **Assumptions and Limitations**

- 14.4.31 The following assumptions and limitations have been identified:
- It is assumed that all construction activities other than construction traffic will take place within the Project's draft Order Limits.
  - There is limited detail available for the proposed NRMM and construction plant, therefore detailed assessment has not been possible at this stage and will be assessed in the ES.
  - There is limited detail on construction traffic flows available at this stage, therefore screening and detailed assessment of construction vehicle emissions has not been possible at this stage and will be assessed in the ES.
  - The construction information used for the assessment of construction dust is subject to change as the EIA process progresses. Any changes that could affect the conclusion of the construction dust assessment will be stated and

reassessed in the ES. However, it is anticipated that any changes to proposed construction activities are not likely to change the conclusion of the construction dust assessment.

## 14.5 Baseline Conditions

14.5.1 This section comprises an overview of the baseline conditions for air quality, in order to establish the likely type and nature of potential effects.

### Baseline

#### Local Authority Monitoring Data

- 14.5.2 A review of the existing baseline has been undertaken to establish an understanding of the baseline air quality environment, to identify areas that are likely to be sensitive to changes in emissions as a result of the Project.
- 14.5.3 As required by the Environment Act (1995), as amended by the Environment Act (2021) (Ref. 14.12), the local authorities covering the Air Quality Study Area have undertaken review and assessment of air quality within their area of jurisdiction.
- 14.5.4 There are currently no declared AQMAs within Powys. Powys County Council monitoring data for the most recently reported year of 2022 did not show any exceedances of the AQS objectives in Powys. The highest annual mean NO<sub>2</sub> concentration reported in Powys in 2022 was 25.4µg/m<sup>3</sup> in Newtown, located 14km south of the Project.
- 14.5.5 In Shropshire, two AQMAs have been declared due to exceedances of the AQS objectives:
- Shrewsbury No. 3 AQMA – declared in 2003 and amended in 2006. The area comprising Frankwell, part of Bridge Street and Smithfield Road Castle Gates and adjacent land, extending to encompass most of the Town Centre including High Street, Wyle Cop, English Bridge and Coleham Head gyratory. Declared for exceeding the annual mean NO<sub>2</sub> AQS objective (Ref. 14.29).
  - Bridgnorth Pound Street AQMA – declared in 2005. The area encompassing Pound Street and the junction of Whitburn Street and Salop Street. Declared for exceeding the annual mean NO<sub>2</sub> AQS objective (Ref. 14.29).
- 14.5.6 The closest AQMA to the Project's draft Order Limits is Shrewsbury No. 3 AQMA, located 20km east of the Project's draft Order Limits. Shropshire Council monitoring data for the most recently reported year of 2023 identified

exceedances of the annual mean NO<sub>2</sub> AQS objective at the following locations in Shropshire:

- Tern Hill (monitoring site DF223), located 28km north-east of the Project's draft Order Limits.
- Pound Street (monitoring site DF83), located 50km south-east of the Project's draft Order Limits.

### Defra Background Concentrations

14.5.7 Predictions of background pollutant concentrations are periodically produced by Defra to assist local authorities in their review and assessment of air quality. These are produced for every 1km Ordnance Survey grid square in the UK. The Project's draft Order Limits are located across a number of grid squares. Data for these grid squares were downloaded from the Defra website (Ref. 14.29) for the purposes of the assessment. Table 14-9 summarises the range of background concentrations for the current year 2024 relating to the grid squares covering the Project's draft Order Limits and surrounding study area.

*Table 14.9 Background Pollutant Concentrations 2024*

Pollutant	Minimum Concentration (µg/m <sup>3</sup> )	Maximum Concentration (µg/m <sup>3</sup> )	Average Concentration (µg/m <sup>3</sup> )	Annual Mean Air Quality Objective (µg/m <sup>3</sup> )
NO <sub>2</sub>	1.9	5.4	2.9	40
PM <sub>10</sub>	7.3	11.8	8.6	40
PM <sub>2.5</sub>	4.4	5.4	4.8	20

14.5.8 Table 14-9 shows that 2024 background NO<sub>2</sub> and particulate matter concentrations in the vicinity of the Project are well below the relevant annual mean air quality objective values.

### Future Baseline

14.5.9 Background pollutant concentrations are predicted to decrease in future years, as evidenced by trends observed from local authority monitoring data and future predicted Defra background map concentrations (Ref. 14.29).

- 14.5.10 Traffic emissions are likely to contribute to baseline air quality concentrations in the vicinity of the Project. Whilst vehicle numbers are likely to increase, emissions (per vehicle) are predicted to decrease over time due to new technology, increasingly stringent emission regulations and zero emission vehicles.

## **14.6 Preliminary Assessment of Effects**

- 14.6.1 The preliminary assessment of the effects of the Project described in this section considers the embedded mitigation measures described in Section 14.7.

### **Construction Dust**

- 14.6.2 The preliminary assessment of construction dust is presented in Table 14-10 below. The full assessment is presented in Appendix 14.1 Construction Dust Methodology and Assessment.

Table 14.10 – Preliminary Assessment of Construction Dust

Preliminary Assessment	
Receptor	Over 100 human receptors with high sensitivity within 250m of the Project’s draft Order Limits. 40 ecological receptors with high sensitivity within 50m of the Project’s draft Order Limits.
Potential Impact	Construction dust arising from trackout (transportation of dust and dirt onto the public road network), earthworks and construction activities which may impact upon human and ecological receptors.
Project phase	Construction phase.
Duration	For the duration of the construction phase.
Mitigation	Mitigation set out in Table 13 of Appendix 14.1 Construction Dust Methodology and Assessment.
Preliminary sensitivity	The preliminary sensitivity of the surrounding area is summarised in Table 11 of Appendix 14.1 Construction Dust Methodology and Assessment. The sensitivity of the surrounding area to dust soiling is considered high from earthworks and construction, and medium from trackout activities. The sensitivity of the surrounding area for human health is considered low from earthworks, construction and trackout activities. The ecological sensitivity of the surrounding area is considered high from earthworks, construction and trackout activities.

## Preliminary Assessment

Preliminary magnitude	The preliminary magnitude of the construction activity is summarised in Table 9 of Appendix 14.1 Construction Dust Methodology and Assessment. The magnitude of dust emissions is considered to be large from earthworks, construction and trackout activities.
Preliminary likely significance of effect	Not significant assuming the mitigation measures in Table 13 of Appendix 14.1 Construction Dust Methodology and Assessment are adopted.
Confidence in prediction	High



## Construction Vehicle Emissions

- 14.6.3 At the current stage of assessment, construction traffic flows are not yet available, therefore the air quality impacts from construction vehicle emissions and resulting effects will be assessed at ES stage once further details are available and if any of the IAQM and EPUK screening criteria (Ref. 14.25) have been met.
- 14.6.4 Based on available information at the current stage, the preliminary assessment of construction vehicle emissions is presented in Table 14-11 below.

*Table 14.11 – Preliminary Assessment of Construction Vehicle Emissions*

Preliminary Assessment	
Receptor	Human and ecological receptors within 200m of the construction traffic routes meeting the IAQM and EPUK screening criteria (Ref. 14.25).
Potential Impact	Increase in NO <sub>x</sub> , NO <sub>2</sub> and particulate matter concentrations at receptor locations.
Project phase	Construction phase.
Duration	For the duration of the construction phase.
Mitigation	To be identified in the ES following detailed modelling (if required).
Preliminary sensitivity	Receptors have high sensitivity.
Preliminary magnitude	Not known. To be determined in the ES following detailed modelling (if required).
Preliminary likely significance of effect	Not known. To be determined in the ES following detailed modelling (if required).
Confidence in prediction	Not known. To be determined in the ES following detailed modelling (if required).

## Non-Road Mobile Machinery Emissions

14.6.5 The preliminary assessment of NRMM emissions is presented in Table 14.12 below.

Table 14.12 – Preliminary Assessment of NRMM Emissions

Preliminary Assessment	
Receptor	Human and ecological receptors within 200m of NRMM.
Potential Impact	Increase in NO <sub>x</sub> , NO <sub>2</sub> and particulate matter concentrations at receptor locations.
Project phase	Construction phase.
Duration	For the duration of the construction phase.
Mitigation	Measures AQ1, AQ2, AQ3, as listed in Section 14.7.
Preliminary sensitivity	High
Preliminary magnitude	Low
Preliminary likely significance of effect	Not significant. Based on the information available to date.
Confidence in prediction	Moderate. Further assessment to be undertaken at ES stage once more detailed information is available.

## 14.7 Preliminary Mitigation and Enhancement Measures

### Embedded Mitigation Measures

14.7.1 Measures have been embedded into the design of the Project to avoid or reduce significant effects that may otherwise be experienced during construction and operation (and maintenance) of the Project. Embedded measures are those that are intrinsic to and built into the design of the Project, which have been presented in Chapter 2: Project Description. These include:

- Sensitive siting of infrastructure and temporary works.

- Commitments made within the OCEMP. These include good practice mitigation measures, comprising management activities and techniques, which will be implemented during construction of the Project to limit effects through adherence to good practices and achieving legal compliance.

### **Essential Measures**

14.7.2 Essential mitigation measures are additional topic and site-specific measures that have been applied to mitigate or offset any likely significant effects.

14.7.3 As a result of the preliminary construction dust assessment detailed in Appendix 14.1 Construction Dust Methodology and Assessment, a number of mitigation measures have been identified (Table 13 of Appendix 14.1 Construction Dust Methodology and Assessment) to reduce the impact on human health and ecology including:

- AQ1: Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites, where practicable.
- AQ2: Plant and construction vehicles will conform to relevant applicable standards for the vehicle type as follows:
  - Euro 4 (NOx) for petrol cars, vans and minibuses
  - Euro 6 (NOx and PM) for diesel cars, vans and minibuses
  - Euro VI (NOx and PM) for lorries, buses, coaches and Heavy Goods Vehicles (excluding specialist AIL)
- AQ3: Vehicles will be maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so.
- AQ4: Materials and equipment will not be moved or handled unnecessarily. When loading and unloading materials from vehicles, including cable drums and excavated materials, drop heights will be limited;
- AQ5: Wheel washing will be provided at each main compound access point on to the highway. An adequate supply of water will be made available at these locations at all times. Road sweepers will be deployed on public roads where necessary to prevent excessive dust or mud deposits.
- AQ6: Earthworks and stockpiled soil will be protected (to avoid dust generation) by covering, seeding or using water suppression where appropriate.
- AQ7: Bonfires and the burning of waste material will be prohibited.

- AQ8: The contractor(s) shall undertake daily site inspections to check conformance to the Management Plans.

14.7.4 Any essential mitigation measures associated with construction vehicle and NRMM emissions other than those measures described above and in Table 13 of Appendix 14.1 Construction Dust Methodology and Assessment will be set out in the ES following detailed assessment.

## **14.8 Preliminary Likely Significant Effects**

### **Construction**

- 14.8.1 The construction dust risk assessment undertaken for the construction phase, as detailed in Appendix 14.1 Construction Dust Assessment, determined that the worst-case risk of construction dust effects would be high (adverse). Appropriate measures have been identified in Table 13 of Appendix 14.1 Construction Dust Methodology and Assessment and will be incorporated into the OCEMP. With the implementation of these measures, the effects of construction dust have been determined to be not significant.
- 14.8.2 At the current stage of assessment, construction traffic flows are not yet available, therefore the air quality impacts from construction vehicle emissions will be assessed at ES stage once further details are available and if any of the IAQM and EPUK screening criteria (Ref. 14.25) have been met.
- 14.8.3 Limited data is available on the quantity and type of NRMM and plant at this stage of the Project design. A preliminary assessment based on the assumed temporary and transient nature of their use and the low background concentrations has been undertaken and it is considered that significant adverse effects arising from NRMM and plant emissions during construction are unlikely. However, the effects of NRMM emissions will be re-assessed at ES stage once further details are available regarding the type of equipment, location and duration of use.

## **14.9 Next Steps**

- 14.9.1 It is expected that greater detail will be known in regard to the Project's construction including the finalised location of compounds and expected vehicle movements generated by construction traffic and worker commuting.

- 14.9.2 Once the construction traffic routes have been finalised and flows are available, the traffic data will be screened against the IAQM and EPUK screening criteria (Ref. 14.25) to identify if detailed assessment is required to identify the air quality impacts from construction vehicle emissions. If predicted vehicle numbers during the operation phase change following the PEIR, the requirement for the assessment of operational effects to air quality will be reconsidered for inclusion in the ES.
- 14.9.3 Upon finalisation of the design of the Project for the ES, the assessment of construction dust and NRMM will be reviewed and updated if required.

### **Consultation**

- 14.9.4 In the period between the PEIR and ES stage, the assessments set out within this chapter will be further developed and refined based on the statutory consultation and ongoing stakeholder engagement outcomes.

### **Surveys**

- 14.9.5 No Project specific air quality monitoring is expected to be undertaken between the PEIR and ES stage. However, if screening of the construction phase traffic against the IAQM and EPUK screening criteria (Ref. 14.25) identifies roads requiring detailed assessment, the need for a survey will be reviewed depending on the available Local Authority monitoring data within the construction traffic emissions study area.

## **14.10 References**

- Ref. 14.1 European Union (2008), Ambient Air Quality and Cleaner Air for Europe (2008/50/EC)
- Ref. 14.2 HMSO (2010) The Air Quality Standards Regulations 2010, Statutory Instruments No. 1001
- Ref. 14.3 HMSO (2019). Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019. UK: HMSO
- Ref. 14.4 HMSO (2018), European Union (Withdrawal) Act 2018. UK: HMSO.
- Ref. 14.5 HMSO (2020). The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.
- Ref. 14.6 HMSO (2000), Air Quality (England) Regulations 2000. UK: HMSO
- Ref. 14.7 Welsh Government (2000), The Air Quality (Wales) Regulations 2000

- Ref. 14.8 Department for Environment, Food and Rural Affairs (2023), Air Quality Strategy: Framework for Local Authority Delivery
- Ref. 14.9 Welsh Government (2015), Well-being of Future Generations (Wales) Act 2015
- Ref. 14.10 Welsh Government (2024), Environment (Air Quality and Soundscapes) (Wales) Act 2024
- Ref. 14.11 HMSO (1995), The Environment Act 1995
- Ref. 14.12 HMSO (2021), The Environment Act 2021
- Ref. 14.13 HMSO (2023), The Environmental Targets (Fine Particulate Matter) England Regulations 2023. UK HMSO
- Ref. 14.14 Department for Environment, Food and Rural Affairs (2024), PM2.5 Targets: Interim Planning Guidance.
- Ref. 14.15 Environmental Protection Act (1990), Part III of the Environmental Protection Act 1990. UK: TSO
- Ref. 14.16 HMSO (2018), The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018.
- Ref. 14.17 Department of Energy Security & Net Zero (2023), Overarching National Policy Statement for Energy (EN-1).
- Ref. 14.18 Department of Energy Security & Net Zero (2023), National Policy Statement for Electricity Networks Infrastructure (EN-5).
- Ref. 14.19 Ministry of Housing Communities and Local Government (2024), National Planning Policy Framework.
- Ref. 14.20 Ministry of Housing, Communities and Local Government (2019) National Planning Practice Guidance.
- Ref. 14.21 Welsh Government (2024). Planning Policy Wales.
- Ref. 14.22 Powys County Council (2018). Powys Local Development Plan 2011-2026.
- Ref. 14.23 Shropshire Council (2011). Shropshire Local Development Framework: Adopted Core Strategy.
- Ref. 14.24 Shropshire Council (2020), Draft Shropshire Local Plan (2016-2038).
- Ref. 14.25 Institute of Air Quality Management and Environmental Protection UK (2017), Land-Use Planning & Development Control: Planning for Air Quality.
- Ref. 14.26 IAQM (2024), Guidance on the Assessment of Dust from Demolition and Construction.
- Ref. 14.27 Defra (2022), Local Air Quality Management Technical Guidance (TG22).

- Ref. 14.28 National Highways (formerly Highways England) (2024) Design Manual for Roads and Bridges LA 105.
- Ref. 14.29 Defra, UK AIR. Available at: <https://uk-air.defra.gov.uk/>
- Ref. 14.30 Powys County Council (2023), Powys Air Quality Progress Report 2023.
- Ref. 14.31 Shropshire Council (2023), Shropshire Air Quality Annual Status Report 2023.
- Ref. 14.32 Defra and Natural England, MAGIC. Available at: <https://magic.defra.gov.uk/>
- Ref. 14.33 UK Centre for Ecology and Hydrology, Air Pollution Information System. Available at: <https://www.apis.ac.uk/>
- Ref 14.34 Green GEN Cymru (2024). Green GEN Vyrnwy Frankton Scoping Report.

## 15 Soils and Agriculture

### 15.1 Introduction

15.1.1 This Chapter provides the results of the preliminary assessment of the effects of the Project on Soils and Agriculture and describes:

- Legislation, Policy and Guidance.
- Consultation and Engagement.
- Assessment Methodology and Significance Criteria.
- Baseline Conditions.
- Preliminary Mitigation Measures.
- Preliminary Likely Significant Effects.
- Preliminary Mitigation and Enhancement Measures.
- Next Steps.

15.1.2 The chapter covers effects on the following, during construction and operation (which includes maintenance):

- Soils (including peat).
- Agricultural Land Classification (ALC), including best and most versatile (BMV) land.
- Land Use.

15.1.3 There are interrelationships related to the potential effects on Agriculture and Soils and other environmental topics. Therefore, please also refer to the following chapters:

- Chapter 6: Landscape and Visual Amenity.
- Chapter 7: Ecology.
- Chapter 12: Water Resources.
- Chapter 13: Ground Conditions, Geology and Hydrogeology.

### 15.2 Legislation, Policy and Guidance

#### Legislation

15.2.1 The Agricultural Land (Removal of Surface Soil) Act 1953 (Ref 15.1) is the only relevant legislation that is specific to the assessment of Soils and Agriculture. The act outlines the offense and punishment as a result of removing surface soil without planning permission from agricultural land.



## Policy

### Department for Energy Security and Net Zero (2024) Overarching National Policy Statement (NPS) for Energy (EN-1) (Ref 15.2)

- 15.2.2 EN-1 states that energy projects have the potential to have adverse effects on Agriculture and Soils and this has been considered within this chapter.
- 15.2.3 Paragraph 5.11.12 of EN-1 states ‘Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5).’

### Department for Energy Security and Net Zero (2024) Statement for Electricity Networks Infrastructure (EN-5) (Ref 15.3)

- 15.2.4 NPS EN-5 sets out limited policy in relation to soils and agriculture. In relation to electric and magnetic fields (EMFs) it states in paragraph 2.9.58 that ‘*There is little evidence that exposure of crops, farm animals or natural ecosystems to transmission line EMFs has any agriculturally significant consequences.*’
- 15.2.5 Paragraph 2.9.25 (third bullet point) of NPS EN-5 in relation to proposals for undergrounding states that they should consider: ‘*...the potentially very disruptive effects of undergrounding on local communities, habitats, archaeological and heritage assets, marine environments, soil (including peat soils), hydrology, geology, and, for a substantial time after construction, landscape and visual amenity. (Undergrounding an overhead line will mean digging a trench along the length of the route, and so such works will often be disruptive – albeit temporarily – to the receptors listed above than would an overhead line of equivalent rating).*’
- 15.2.6 Paragraph 2.9.25 (final bullet point) of NPS EN-55 in relation to proposals for undergrounding states that they should consider: ‘*...the applicant’s commitment, as set out in their ES, to mitigate the potential detrimental effects of undergrounding works on any relevant agricultural land and soils (including peat soils), particularly regarding Best and Most Versatile land, including development and implementation of a Soil Resources and Management Plan. Such a commitment must guarantee appropriate handling of soil, backfilling, and return of the land to the baseline Agricultural Land Classification (ALC), thus ensuring no loss or degradation of agricultural land. Such a commitment should be based on soil and ALC surveys in line with the 1988 ALC criteria and due consideration of*

*the Defra Construction Code of Practice for Sustainable Use of Soils on Construction Sites.'*

#### **National Planning Policy Framework (2023) (Ref 15.4)**

- 15.2.7 The National Planning Policy Framework includes a requirement to avoid BMV land, or minimise the extent affected through the design process.
- 15.2.8 Paragraph 187 states that 'Planning policies and decisions should contribute to enhance the natural and local environment by...recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of best and most versatile agricultural land, and of trees and woodland.'
- 15.2.9 A footnote to Paragraph 188 states 'Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality. The availability of agricultural land used for food production should be considered, alongside the other policies in this Framework, when deciding what sites are most appropriate for development.'

#### **Environmental Improvement Plan (2023) (Ref 15.5)**

- 15.2.10 The Environment Improvement Plan outlines the aims and goals for the UK to improve environmental condition over the next 25 years.
- 15.2.11 Section 4 of Goal 6, Improving and protecting soil health, sets out commitments relating to soil, including establishing a soil health indicator and baseline map of soil health for England, revising the Code of Practice for the sustainable use of soil on construction sites and begin development of a Soil Re-Use and Storage Depot scheme to help prevent soil that would otherwise be classified as waste going to landfill, and encourage remediation and re-use of soil.

#### **Welsh Government (2017); Natural Resources Policy (Ref 15.6)**

- 15.2.12 The Natural Resources Policy outlines how the natural resources in Wales will be managed.
- 15.2.13 The Agriculture and Food section, at page 21 states a requirement to 'maintain and enhance farmland biodiversity, habitats and historic features to make a positive contribution to increasing ecosystem resilience and maximise benefits to society... continue to co-ordinate and embed best practice for the sustainable management of our soil resources.'

**The Second State of Natural Resources Report (SoNaRR) Assessment of the achievement for sustainable management of natural resources: Land use and soils Natural Resources Wales (2020) (Ref 15.7)**

- 15.2.14 Within the land use and soil chapter, the report outlines the need to improve and protect soil as a natural resource and states that '*land use, land management and planning should take account of changes to soil suitability and capability with predicted climatic change.*'
- 15.2.15 This has an ambition to 'ensure all peatlands with semi-natural vegetation are subject to favourable management/restoration (a minimum estimated area of 30,000 ha)... Restore a minimum of 25% (~c. 5,000 ha) of the most modified areas of peatland to functional peatland ecosystems... Both of these programmes, if done correctly, will safeguard soil from degradation processes such as erosion and soil organic matter loss, enhance soil carbon stock in the long term, and mitigate drought and flood risk.'
- 15.2.16 The report also highlights that 'soil structure can be easily damaged by poor land management, which in turn negatively affects soil functions and the provision of benefits, such as biodiversity, agricultural productivity, clean water and flood prevention, and climate change mitigation.'

**Powys County Council (2011) Powys Local Development Plan 2011-2026 (Ref 15.8)**

- 15.2.17 The third objective of the plan is 'to support the re-use and remediation of suitably and sustainably located previously developed land and where this is not possible to make efficient use of green field sites. To apply a general presumption against unsustainable development in the open countryside including the undeveloped coast, development on soils of high environmental and agricultural value and important mineral resources which are recognised as finite resources.'
- 15.2.18 Paragraph 4.11.14 states 'the use of planning conditions at the application stage will ensure that land is restored to a high standard in readiness for its agreed after-use, which should be set out in the application after prior discussions with the Authority. Early discussions are vital and will enable the Authority to provide guidance on preferred after-uses and reclamation standards, taking into account local strategies.'

**Shropshire Council (2011) Shropshire Local Development Framework:  
Adopted Core Strategy (Ref 15.9)**

- 15.2.19 CS6: Sustainable Design and Development Principles states a requirement that all development ‘Makes the most effective use of land and safeguards natural resources including high quality agricultural land, geology, minerals, air, soil and water.’

**Guidance**

**Welsh Government (2022). Agricultural Land Classification Guidance and Services (Ref 15.10)**

- 15.2.20 This outlines documents and services used to accurately predict and classify soils using the ALC criteria, including predictive maps, predictive map guidance frequently asked questions, enquires and reports. ALC criteria is used to assess impact on BMV land.

**A New Perspective on Land and Soil in Environmental Impact Assessment (IEMA, 2022) (Ref 15.11).**

- 15.2.21 The IEMA guidance outlines the guidance and regulations to be followed to assess the impact on soil and land as part of an Environmental Impact Assessment.

**Institute of Quarrying (2024). Good Practice Guide for Handling Soils in Mineral Workings (Ref 15.12)**

- 15.2.22 The guidance succeeds Defra’s Good Practice for Handling Soils and outlines the standards of restoration required in construction when using earth-moving machinery for soil stripping, storage and replacement. The guidance informs soil preliminary mitigation measures within the chapter.

**Ministry of Agriculture Fisheries and Food (1998). Agriculture land classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land (Ref 15.13)**

- 15.2.23 The ALC Guidelines outline how soil and site properties should be described and used to classify land grades which is used to inform the impact on BMV land.

**Department for Environment, Food and Agriculture (Defra) (2009).  
Construction Code of Practice for Sustainable Use of Soils on Construction  
Sites (Ref 15.14);**

- 15.2.24 The Code of Practice assists construction activities to better protect soil resources by providing guidance to help protect and enhance soil resources on site through pre-construction planning, soil management during construction and landscape, habitat or garden creation. The guidance is considered to inform the impact on soil quality ecosystems.

**Guide to assessing development proposals on agricultural land (Ref 15.15);**

- 15.2.25 The guide outlines appropriate resources and policy to help protect agricultural land and soils with the overarching aims to protect '*the best and most versatile (BMV) agricultural land from significant, inappropriate or unsustainable development proposals*' and '*all soils by managing them in a sustainable way.*' This guidance informed the assessment on BMV land and the significance of impact on agricultural quality.

**Guidance Note: Working with Soil Guidance Note on Benefitting from Soil Management in Development and Construction (Ref 15.16);**

- 15.2.26 The guidance outlines how the use of a soil management plan can assist the protection and management of soils during construction and planning. The guidance is considered within the preliminary mitigation measures.

**British Standard Specification for Topsoil and Requirements for Use (Ref 15.17);**

- 15.2.27 The standard outlines the set of requirements for topsoil classification regarding specific characteristics such as texture, acidity and contaminants. This is important as it provides standards required to be met by the soil management plan and preliminary mitigation measures.

**British Standard Specification for Subsoil and Requirements for Use (Ref 15.18).**

- 15.2.28 The standard outlines the set of requirements for subsoil classification regarding specific characteristics such as texture, acidity and contaminants. This is important as it provides standards required to be met by the soil management plan and preliminary mitigation measures.

## 15.3 Consultation and Engagement

- 15.3.1 Engagement with stakeholders has been primarily through the Scoping Opinion and through the data requests made to consultees to inform the baseline conditions.
- 15.3.2 The comments included in the Scoping Opinion from the Planning Inspectorate (PINS) and subsequent responses to this Scoping Opinion are outlined below in Table 15-1. Furthermore, all engagement undertaken to date is outlined in this Section.

Table 15-1 Scoping Opinion from the Planning Inspectorate

ID	Matter	Inspectorate's Comments	Project Response
3.10.1	Effects on agricultural land – operation and maintenance	The Scoping Report proposes to scope this matter out on the basis that temporary and permanent losses of agricultural land (including BMV land) would be fully assessed during the construction stage assessment. The Inspectorate considers that the assumed 80-year lifespan of the Proposed Development represents a long-term impact which should be reflected in the assessment conclusions. On the basis of the above, the Inspectorate is content that a separate assessment of effects upon agricultural land during operation and maintenance can be scoped out of further assessment.	The impact on agricultural land (including BMV land) will be assessed during construction and a separate assessment on agricultural land during operation and maintenance will be scoped out.
3.10.2	Effects on soils (including peat) – operation and maintenance	The Scoping Report states that operational effects on soils are predicted to be limited and not significant, subject to re-instatement of land required for temporary works according to a Soil Resources Management Plan (SRMP). It also explains that maintenance and repair works which may result in disturbance of soils during operation would be undertaken in accordance with standard good practice soil handling methods. Draft/ outline versions of the SRMP and Peat Management Plan (which would be produced if it	The impact on soils (including peat) will be assessed during construction and a further assessment during operation and maintenance will be scoped out. The assessment will ensure there are clear links to commitments made in the outline Soil and Peat Management Plans, which will be secured through a requirement in the DCO (as a sub-plan to the Outline Construction Environment Management Plan (OCEMP)).

ID	Matter	Inspectorate's Comments	Project Response
		<p>is confirmed there will be impacts to peat) should be provided with the application and appropriately secured through the dDCO. Where the ES relies upon mitigation measures which would be secured through the draft/ outline plan(s), it should be demonstrated (with clear cross-referencing) where each measure is set out in the draft/ outline document. Any permanent losses of peat should be reflected in the construction assessment conclusions.</p> <p>Subject to the above and having regard to the nature and characteristics of the Proposed Development, the Inspectorate agrees that impacts on soils (including peat) during operation and maintenance are unlikely to result in significant effects. This matter can be scoped out of further assessment.</p>	
3.10.4	Field surveys	<p>The Scoping Report states that soil and Agricultural Land Classification (ALC) surveys will be undertaken in areas where soils and agricultural land will be disturbed. The Scoping Report also states that peat probing and augering will be undertaken “where peat is known or likely to be present”. For the avoidance of doubt, surveys should be</p>	<p>The Met Office UK National Climate Projections (UKCP18) will also be used to assess effects of climate change and future baseline of soils and agriculture within the ES assessment.</p>



ID	Matter	Inspectorate's Comments	Project Response
		<p>undertaken in areas of disturbance from all components of the Proposed Development (including the collector substation and underground cabling between the collector substation), as well as sections of haul routes and construction compound locations where soils are likely to be compacted. Effort should be made to agree the locations and method of the survey effort, including numbers of soil/ peat samples to be taken with relevant consultation bodies.</p>	
3.10.5	<p>Impacts on farming operations, farm businesses and agricultural enterprises</p>	<p>Where fragmentation would affect the viability of agricultural land holdings during construction and operation, this should be identified in the ES. The ES should assess impacts on farming operations, farm businesses and agricultural enterprises during construction and operation, where significant effects are likely to occur. The Applicant is referred to the Inspectorate's comments in Table 3.1 of this Opinion regarding the proposed approach to considering socioeconomic impacts.</p>	<p>The effects on agricultural landholding and business enterprise will be considered during the ES assessment, following the DMRB methodology.</p>
3.10.6	<p>Impacts on agricultural land</p>	<p>The ES should quantify the amount of agricultural land that would be temporarily and permanently lost as a result of the Proposed Development (by ALC grade, with reference to accompanying map/s depicting the grades).</p>	<p>The ES chapter will quantify the impacts on agricultural land according to ALC grade for both permanent and temporary loss, with areas</p>

ID	Matter	Inspectorate's Comments	Project Response
			calculated based on mapping which will be provided as an Appendix to this chapter.

- 15.3.3 The Welsh Government's Land Quality and Advice Service (LQAS) and Natural England will be consulted prior to surveys commencing to agree the scope of the surveys and to discuss mitigation measures. Technical Notes (as stand-alone documents) outlining the Project's proposed approach as well as the proposed approach to ALC and peat surveys and assessment have been shared with the Statutory Stakeholders. Engagement with LQAS occurred on the 17<sup>th</sup> January 2025 and Natural England consultation is still to be arranged.

## **15.4 Assessment Methodology and Significance Criteria**

### **Study Area**

- 15.4.1 The study area for the assessment of soils and agriculture comprises the Project's draft Order Limits. The assessment is confined to within this boundary as no land will be affected outside of this. Should impacts associated with fragmentation within a landholding be identified the area will be extended as required through seeking landholding-specific information.

### **Baseline Data collection**

#### **Desk Study**

- 15.4.2 Baseline conditions of the Project have been established through a desk study using the following sources:
- British Geological Survey (BGS) Geology Viewer (Ref 15.20).
  - Soils and their use in Wales (Rudeforth et al., 1984) (Ref 15.21).
  - OS mapping and aerial photography with respect to current land use (Ref 15.22).
  - The Predictive Agricultural Land Classification Map 2 ('ALC2') with respect to the potential location of Best and Most Versatile (BMV) Agricultural Land (Ref 15.23).
  - Department for Environment, Food and Rural Affairs (Defra), Magic Map Application (Ref 15.24).
  - Climatological Data for Agricultural Land Classification (Meteorological Office, 1989) (Ref 15.25).
  - National Soil Association Map (Cranfield University) (Ref 15.26).

## Site Visits and Surveys

- 15.4.3 Detailed ALC and soil surveys will be undertaken prior to the submission of the ES and will be included as a factual ALC survey report appended to the ES chapter.
- 15.4.4 The scope of these surveys will be agreed with Natural England and LQAS and will focus on where the land is predicted or likely to be BMV land within the proposed construction footprint. In addition, where peat is known or likely to be present within the construction footprint, peat probing will be undertaken to map peat depths and determine, where possible, the limits of peat resources. Probing will be undertaken alongside augering to collect information on peat stratigraphy and confirm peat depth where probing provides uncertain results (e.g. to enable the distinction between peat and soft mineral sediment).

## Environmental Impact Assessment Methodology

- 15.4.5 The assessment of the impacts on the receptors of soil and agricultural land will be undertaken in accordance with IEMA Guidance, “A New Perspective on Land and Soil in Environmental Impact Assessment” published in 2022 (Ref 15.11).  
The DMRB LA112 (Ref 15.12) has been used to assess the impact on agricultural land holdings.
- 15.4.6 The baseline information collected will be used to assess the sensitivity of soils and agricultural land in relation to their potential and there will be engagement with relevant disciplines to ensure the reported assessment of impacts aligns across all relevant Environmental Impact Assessment (EIA) chapters.
- 15.4.7 Judging the significance of the effects on soils and agricultural land requires an assessment of the sensitivity of the baseline environment. The sensitivity will be assessed in relation to the susceptibility of the receptors to change. The magnitude of impacts would then take into consideration the size and scale of effects; geographical extent; duration and reversibility.
- 15.4.8 The rationale for corridor, route alignment and tower position selection and the interaction with agricultural land (BMV) and peat soils will be presented within the Design Evolution and Alternatives chapter of the ES. The design will be used to inform the assessment of effects on Soils and Agriculture, as the location of specific elements will change the overall impact on BMV land and therefore the magnitude of impacts (such as extent of agricultural land take or the sensitivity of the soils impacted).

## Significance criteria

- 15.4.9 Tables 15.2 to Table15.7 set out the criteria which will be used to determine the sensitivity of receptors and the magnitude of impacts on agricultural land and soils. Table 15.7 provides the matrix for identifying, by reference to sensitivity and magnitude, the significance of effects in EIA terms.

Table 15-2 – Guidance on Sensitivity of Agricultural Land and Soils

Sensitivity	Soil Resource and Soil Functions
Very High	<p>Biomass production: ALC Grades 1 &amp; 2 (for Wales all BMV (Grade 1, 2 and 3a) is considered Very High);</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected features within a European site (e.g., SAC, SPA, Ramsar); Peat soils; Soils supporting a National Park, or Ancient Woodland;</p> <p>Soil carbon: Peat soils;</p> <p>Soils with potential for ecological / landscape restoration;</p> <p>Soil hydrology: Very important catchment pathway for water flows and flood risk management;</p> <p>Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Scheduled Ancient Monuments (SAMs) and adjacent areas; World Heritage and European designated sites; Soils with known archaeological interest;</p> <p>Soils supporting community / recreational / educational access to land covered by National Park designation; and</p> <p>Source of materials: Important surface mineral reserves that would be sterilised (i.e., without future access).</p>
High	<p>Biomass production: ALC Grade 3a (for Wales all BMV (Grade 1, 2 and 3a) is considered Very High);</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected features within a UK designated site (e.g., United Nations Educational, Scientific and Cultural Organisation (UNESCO) Geoparks, SSSI or area of Outstanding Natural Beauty (AONB), Special Landscape Areas (SLAs) and Geological Conservation Review sites); Native Forest and woodland soils; Unaltered soils supporting seminatural vegetation (including the UKBAP Priority habitats or Section 6 habitats in Wales);</p> <p>Soil carbon: Organo-mineral soils (e.g., peaty soils);</p>

Sensitivity	Soil Resource and Soil Functions
	<p>Soil hydrology: Important catchment pathway for water flows and flood risk management;</p> <p>Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Soils with probable but as yet unproven (prior to being revealed by construction) archaeological interest; historic parks and gardens; Regionally Important Geological Site (RIGS); Soils supporting community / recreational / educational access to RIGS and AONBs; and</p> <p>Source of materials: Surface mineral reserves that would be sterilised (i.e., without future access).</p>
Medium	<p>Biomass production: ALC Grade 3b;</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected or valued features within non-statutory designated sites (e.g., LNRs, Local Geological Sites (LGSs), Sites of Nature Conservation Importance (SNCIs), SLAs; Non-Native Forest and woodland soils;</p> <p>Soil carbon: Mineral soils;</p> <p>Soil hydrology: Important minor catchment pathway for water flows and flood risk management;</p> <p>Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Soils with possible but as yet unproven (prior to being revealed by construction) archaeological interest; Soils supporting community/ recreational / educational access to land; and</p> <p>Source of materials: Surface mineral reserves that would remain accessible for extraction.</p>
Low	<p>Biomass production: ALC Grade 4 and 5;</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting valued features within non-designated notable or priority habitats / landscapes. Agricultural soils;</p> <p>Soil carbon: Mineral soils;</p>

Sensitivity	Soil Resource and Soil Functions
	Soil hydrology: Pathway for local water flows and flood risk management; Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Soils supporting no notable cultural heritage, geodiversity nor community benefits; Soils supporting limited community / recreational / educational access to land; and Source of materials: Surface mineral reserves that would remain accessible for extraction.
Negligible	As for low sensitivity, but with only indirect, tenuous, and unproven links between sources of impact and soil functions

Table 15-3 – Guidance on the Sensitivity of Soils in Relation to Handling / Disturbance

Sensitivity	Definition
High Sensitivity (low resilience to structural damage)	Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams) and organo-mineral and peaty soils where the FCD are 150 or greater; Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where the FCDs are 225 or greater; and All soils in wetness class (WCV or WCVI).
Medium Sensitivity (medium resilience to structural damage)	Clays, silty clays, sandy clays, heavy silty clay loams, heavy clay loams, silty loams and organo-mineral and peaty soils where the FCDs are fewer than 150; Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where FCDs are fewer than 225; and Sands, loamy sands, sandy loams and sandy silt loams where the FCDs are 225 or greater or are in wetness classes WCIII and WCIV.



Low sensitivity (high resilience to structural damage)	Soils with a high sand fraction (sands, loamy sands, sandy loams and sandy silt loams) where the FCDs are fewer than 225 and are in wetness classes WCI to WCII.
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Table 15-4 Determination of Sensitivity Criteria for Agricultural Landholdings

Sensitivity of Impact	Description of Impacts
Very High	Agricultural land holdings: 1) Areas of land in which the enterprise is wholly reliant on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on a frequent basis (daily).
High	Agricultural land holdings: 1) Areas of land in which the enterprise is dependent on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on a frequent basis (weekly).
Medium	Agricultural land holdings: 1) Areas of land in which the enterprise is partially dependent on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on a reasonably frequent basis (monthly).

Sensitivity of Impact	Description of Impacts
Low	Agricultural land holdings: 1) Areas of land which the enterprise is not dependent on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on an infrequent basis (monthly or less frequent).
Negligible	Agricultural land holdings: 1) Areas of land which are infrequently used on a non-commercial basis.

Table 15-5 – Magnitude Criteria for Impacts on Agricultural Land and Soils

Magnitude of Impact	Description of Impacts
High	Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of more than 20ha or loss of soil-related features set out in Table 15.2, as advised by other topic specialists in EIA team (including effects from ‘Temporary Developments’*); or Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of more than 20ha or gain in soil-related features set out in Table 15.2, as advised by other topic specialists in EIA team (including effects from ‘temporary developments’*).

Magnitude of Impact	Description of Impacts
Medium	<p>Permanent, irreversible loss of one or more soil functions or soil volumes, over an area of between 5 and 20ha or loss of soil-related features set out in Table 15.2, as advised by other topic specialists in EIA team (including effects from ‘Temporary Developments’*);</p> <p>or</p> <p>Potential for improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of between 5 and 20ha or gain in soil-related features set out in Table 15.2, as advised by other topic specialists in EIA team.</p>
Low	<p>Permanent, irreversible loss over less than 5ha or a temporary, reversible loss of one or more soil functions or soil volumes), or temporary, reversible loss of soil related features set out in Table 15.2 above, as advised by other topic specialists in EIA team;</p> <p>or</p> <p>Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of less than 5ha or a temporary improvement in one or more soil functions due to remediation or restoration or off-site improvement, or temporary gain in soil-related features set out in Table 15.2, as advised by other topic specialists in EIA team.</p>
Negligible	<p>No discernible loss or reduction or improvement of soil functions or soil volumes that restrict current or proposed land use.</p>
<p>* Temporary developments can result in a permanent impact if resulting disturbance or land use change causes permanent damage to soils</p>	

Table 15-6 – Magnitude Criteria for Impacts on Agricultural Landholdings

Magnitude of Impact	Description of Impacts
High	<p>Private property and housing, community land and assets, development land and businesses and agricultural land holdings:</p> <p>1) Loss of resource and / or quality and integrity of resource; Severe damage to key characteristics, features or elements. e.g., direct acquisition and demolition of buildings and direct development of land to accommodate highway assets; and / or</p> <p>2) Introduction (adverse) or removal (beneficial) of complete severance with no / full accessibility provision.</p>
Medium	<p>Private property and housing, community land and assets, development land and businesses and agricultural land holdings:</p> <p>1) Partial loss of / damage to key characteristics, features or elements, e.g., partial removal or substantial amendment to access or acquisition of land compromising viability of property, businesses, community assets or agricultural holdings; and/or</p> <p>2) Introduction (adverse) or removal (beneficial) of severe severance with limited / moderate accessibility provision.</p>
Low	<p>Private property and housing, community land and assets, development land and businesses and agricultural land holdings:</p> <p>1) A discernible change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements, e.g., amendment to access or acquisition of land resulting in changes</p>

Magnitude of Impact	Description of Impacts
	<p>to operating conditions that do not compromise overall viability of property, businesses, community assets or agricultural holdings; and / or</p> <p>2) Introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision.</p>
Negligible	<p>Private property and housing, community land and assets, development land and businesses and agricultural land holdings:</p> <p>1) Very minor loss or detrimental alteration to one or more characteristics, features or elements. e.g., acquisition of non-operational land or buildings not directly affecting the viability of property, businesses, community assets or agricultural holdings; and / or</p> <p>2) Very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision.</p>
No Change	<p>No loss or alteration of characteristics, features, elements or accessibility; no observable impact in either direction.</p>

- 15.4.10 The assessment of sensitivity and magnitude will then be combined to form a judgement regarding the overall significance of effect. This will be categorised as major, moderate, minor or negligible/no effect. 'Moderate' and 'major' effects are considered significant in the context of the EIA Regulations. The nature of effects will be described as positive (beneficial), neutral or negative (adverse).

*Table 15-7 – Degree of Significance*

Sensitivity	Magnitude			
	High	High	High	High
Very High	Very Major	Very Major	Major	Minor
High	Major	Major	Moderate	Minor/Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor/Negligible	Neutral	Negligible	Negligible

- 15.4.11 Effects that are identified in the PEIR of a moderate significance or greater will be considered significant.

### **Assumptions and Limitations**

- 15.4.12 No limitations have currently been identified. The assessment presented in this chapter is based on publicly available data. The full assessment presented in the ES will be reliant on land access to enable focussed soil and ALC surveys; the extent of surveys undertaken will be fully detailed in the assessment reported in the ES and if areas are unable to be surveyed any associated limitations to the assessment will be set out.

## **15.5 Baseline Conditions**

### **Existing Baseline**

#### **Soils**

- 15.5.1 The following soil associations have been identified within the Project's draft Order Limits. The associations mapped can be identified on Figure 15.1 have been identified from the National Soil Association Map (Ref 15.26).

- Bridgnorth - Well drained sandy and coarse loamy soils over soft sandstone.
- Cegin - Slowly permeable seasonally waterlogged fine silty and clayey soils.
- Clifton - Slowly permeable seasonally waterlogged reddish fine and coarse loamy soils and similar soils with slight seasonal waterlogging.
- Conway - Deep stoneless fine silty and clayey soils variably affected by groundwater.
- Crowdy 2 - Thick very acid amorphous raw peat soils. Perennially wet. Hagged and eroded in places.
- Denbigh 1 - Well drained fine loamy and fine silty soils over rock.
- East Keswick 1 - Deep well drained fine loamy soils and similar soils with slowly permeable subsoils and slight seasonal waterlogging.
- Hafren - Loamy permeable upland soils over rock with a wet peaty surface horizon and bleached subsurface horizon, often with thin ironpan. Some peat on higher ground. Rock and scree locally.
- Manod - Well drained fine loamy or fine silty soils over rock. Shallow soils in places. Bare rock locally. Steep slopes common.
- Newport 1 - Deep well drained sandy and coarse loamy soils.
- Rheidol - Well drained fine loamy soils over gravel, shallow in places. Some related soils affected by groundwater in hollows.
- Teme - Deep stoneless permeable silty soils.
- Wick 1 - Deep well drained coarse loamy and sandy soils locally over gravel.
- Wilcocks 2 - Slowly permeable seasonally waterlogged loamy upland soils with a peaty surface horizon.

## **Agricultural Land Classification**

15.5.2 ALC Map 2 (Ref 15.23) from Welsh Government and Magic Mapping (Ref 15.24) have been used to collate information on ALC grades within the Project's draft Order Limits, which are shown on Figure 15.2. The proposed route is split into 9 sections.

1. Grug y Mynydd Collector Substation – this section is entirely Grade 5 land.
2. UGC Section: Grug y Mynydd to Cors y Carreg – this section is predominantly Grade 5 land with a small segment of Grade 4 land.
3. CSEC near Cors y Carreg – this section is entirely Grade 5.
4. OHL Section 1: Cefn Coch to Llangyniew – this section is Grade 5 south of Nant Pen-y-Cwm and mainly Grade 3b north of Nant Pen-y-Cwm with small segments of Grade 4 and Grade 5 land.
5. OHL Section 2: Llangyniew to Meifod – this section is predominantly Grade 2 land with small sections of Grade 3b and Grade 4 land.

6. OHL Section 3: Meifod to Llansantffraid-ym-Mechain – this section is predominantly Grade 2 land with segments of Grade 3a land in the northern part of the section.
7. OHL Section 4: Llansantffraid-ym-Mechain to Llanymynech – this section mainly Grade 2 land with small areas of Grade 3a, 3b and 4 land.
8. OHL Section 5: Llanymynech to Lower Frankton – this section is mainly provisional Grade 3 land with sections of Grade 2 and 4 land.
9. Lower Frankton Switching Station – this section is predominantly provisional Grade 3 land with small sections of Grade 4 land.

15.5.3 There are no publicly available detailed ALC surveys on Magic Maps (Ref 15.24) within the Project's draft Order Limits as shown in Figure 15.3.

### **Land Use**

15.5.4 Aerial photography, OS mapping and preliminary field surveys of accessible areas indicate the land within the Project's draft Order Limits predominately comprises grassland with some small areas of woodland within the Wales section of the route to the A465 where the route enters the Afon Efyrynwy floodplain. In this area there appears to be more arable land use combined with improved pasture. Arable land becomes more common around Llansantffraid – Ym-Mechain with a more even mix of arable and pasture through the sections of the route in England.

### **Agri-Environment Schemes**

15.5.5 Agri Environment Schemes baseline information is outlined to provide background context in relation to agricultural enterprises. Agri Environment Schemes comprise government funding to farmers and land managers to support activities which improve the local environment. There are different levels which have increasing complexity and land management requirements but also, therefore, have greater environmental benefits. Magic Mapping (Ref 15.24) has been used to collate information on Agri-Environment Schemes within the Project's draft Order Limits, and this is shown on Figure 15.4.

15.5.6 Within Section OHL Section 2: Llangyniew to Meifod there is an area of Wood Pasture and Parkland located west of Broniarth Hill adjacent to the Vyrnwy River. Within OHL Section 5: Llanymynech to Lower Frankton there are Entry Level plus Higher Level Stewardship Schemes located northeast of Llanymynech and east of Llyncllys as well as an Organic Entry Level plus Higher Level Stewardship Scheme located east of Crickheath and a Higher Tier Country Stewardship Agreement Management Area located east of Morton. As well as a Higher Level



Stewardship Scheme and Higher Tier Country Stewardship Agreement Management Area both located east of Maesbury Marsh. Within Lower Frankton Switching Substation there are Mid Tier Country Stewardship Agreement Management Areas north of Wootton and east of Whittington.

### **Woodland and Forestry Schemes**

- 15.5.7 Woodland and Forestry Schemes are assessed within Chapter 7: Ecology. However, baseline information is outlined to provide background context in relation to agricultural enterprises. Woodland and Forestry Schemes are government provided incentives that reward landowners for the creation and management of woodlands. Magic Mapping (Ref 15.24) has been used to collate information on Woodland and Forestry Schemes within the Project's draft Order Limits and is shown on Figure 15.5.
- 15.5.8 Within UGC Section: Grug y Mynydd to Cors y Carreg there is a Wales Woodland and Forestry Scheme located south of Llyn Newydd. Within OHL Section 5: Llanymynech to Lower Frankton there are Woodland Grant Schemes 3 located south of Llanymynech and north of Maesbrook adjacent to the Morda River as well as west of Queen's Head.

### **Future Baseline**

- 15.5.9 Climate change is considered unlikely to result in substantive changes to agriculture and soil within the proposed timeframe for construction. The Met Office's UK Climate Projections (UKCP18) (Ref 15.25) predict that the future climate would consist of warmer winters with more intense rainfall events. However, the overall annual rainfall is expected to remain consistent with current levels as there is expected to be a change to a larger volume in winter and lower volume in summer. The increased intensity of rainfall events would increase risk of soil erosion and runoff, risking reducing topsoil thickness and thus land quality if not properly mitigated.
- 15.5.10 The global annual temperature is predicted to increase by 2°C. This increase in global temperature would increase soil surface cracking but also increase total field capacity days of the Site. However, these changes will be slight to negligible.
- 15.5.11 The overall future baseline of soils and land use would stay more or less the same although the climate change would have a slight impact on soils and land use and its management. Farming practices and agricultural systems may change in response to such effects how adaptations to its practices are likely to overcome some changes in conditions.

## 15.6 Preliminary Mitigation Measures

- 15.6.1 Environmental appraisal has been an integral part of the Project design from the outset, which has meant that the Project has been able to avoid environmentally sensitive features as far as reasonably practicable.
- 15.6.2 Measures have also been embedded into the design of the Project to avoid or reduce significant effects that may otherwise be experienced during construction and operation (and maintenance) of the Project.
- 15.6.3 Embedded measures are those that are intrinsic to and built into the design of the Project, which have been presented in Chapter 2: Project Description. The relevant references to Agriculture and Soils include:
- The route alignment and siting have been designed as far as practicable to avoid impacts on identified environmental receptors/features and to reflect the Holford Rules.
  - The location of the towers at this stage is carefully chosen with several factors considered for example
    - Proximity to watercourse
    - Being near to the access point for ease of construction and future maintenance.
    - Use of land, cropped field or grazing (towers in cropped fields ideally need to be on the boundaries where possible to make it easier for the landowner to harvest crops).
  - Third-party utilities, both overhead and underground, in proximity to tower location.
  - An Underground Cable Route is proposed between the Grug y Mynydd Collector Substation and the Cable Sealing End Compound. This would be routed through the proposed Llyn Lort Energy Park for approximately 4.8km. The proposed Underground Cable Route would avoid impacts on the operation of the proposed wind turbines and other on-site infrastructure for the proposed Llyn Lort Energy Park.
  - Where possible the cable route would be designed and constructed near the energy park access road. This would reduce the environmental impact and provide value engineering by utilising the same access road for the energy park. This would also make installation more efficient as well as ensure good future access for maintenance and system monitoring.

- 15.6.4 Good Practice mitigation measures, comprising management activities and techniques, will be implemented during construction of the Project to limit effects through adherence to good practices and achieving legal compliance.
- 15.6.5 An OCEMP will be produced and submitted with the ES to be submitted in the DCO. The below list of good practice measures relevant to Agriculture and Soils will be included and referenced within the OCEMP.
- The OCEMP will be developed into the CEMP for construction.
  - A record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities. This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey.
  - Land used temporarily will be reinstated where practicable to its pre-construction condition and use (or a condition agreed with the landowner). Hedgerows, fences, and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, with landowner agreement.
  - The Project will be constructed in compliance with the required Environmental Control Plans (ECPs). Those which are relevant to this chapter which are anticipated to be required, at this stage include an Outline Landscape and Ecological Management Plan (OLEMP) and an Outline Soil Management Plan (SMP).
  - Earthwork mounds and stockpiled soil will be protected (to avoid dust generation) by covering, seeding, or using water suppression where appropriate (to be determined by the soil types and the likely storage duration).
  - Where necessary, stone pads will be installed in areas where heavy equipment, such as cranes and piling rigs, are to be used. The stone pads will provide stable working areas and will reduce disturbance to the ground by spreading loads and reducing soil compaction.
  - Soil management measures will be detailed in a SMP which will form part of the OCEMP (a draft SMP will be appended to the OCEMP. If peat is to be affected by the Project an Outline Peat Management Plan will also be developed. Measures will include but not be limited to the following:
    - Details of the soil resources present
    - How the topsoil and subsoil will be stripped and stockpiled
    - Suitable conditions for when soil handling will be undertaken, for example avoiding handling of waterlogged soil

- Indicative soil storage locations
- How soil stockpiles will be designed taking into consideration site conditions and the nature/ composition of the soil
- Specific measures for managing sensitive soils
- Suitable protective surfacing where soil stripping can be avoided, based on sensitivity of the environment and proposed works
- Approach to reinstating soil that has been compacted, where required;
- Details of measures required for soil restoration.
- Where practicable and safe to do so, existing access to and from residential, commercial, community and agricultural land uses will be maintained throughout the construction phase or as agreed through landowner discussions. This may require signed diversions or temporary restrictions to access. The means of access to affected properties, facilities and land parcels will be communicated to affected parties at the start of the Project / at the start of the relevant sections, with any changes communicated in advance of the change being implemented. Where field-to-field access points require alteration because of construction, alternative field access will be provided in consultation with the landowner/ occupier.
- Existing water supplies for livestock will be identified before construction commences. Where supplies will be lost or access compromised by construction works, temporary alternative supplies will be provided where necessary. Water supplies will be reinstated following construction, where practicable.
- Consultation with affected landowners will be carried out to investigate the current extent of land drainage. If necessary, pre-construction land drainage will be explored with the intent of maintaining the efficiency of the existing land drainage system and to assist in maintaining the integrity of the working areas during construction. The Project may include a system of 'cut-off' drains which feed into a new header drain and the Project will also consider surface water runoff measures.
- Should animal bones be discovered during construction, which may indicate a potential burial site, works will cease, and advice will be sought from the Animal Health Regional Office on how to proceed, relevant to the origin and age of the materials found.
- All movement of plant and vehicles between fields will cease in the event of a notification of a disease outbreak in the vicinity of the Project that requires the cessation of activities. Advice will be sought from the relevant authorities to develop suitable working methods required to reduce the biosecurity risk associated with the continuation of works.

- Where deemed necessary, clay bungs or other vertical barriers will be constructed within trench excavations by a suitably experienced person, to prevent the creation of preferential drainage pathways.
- The mechanisms by which mitigation measures will be secured and delivered will be set out in the ES and secured through requirements to the DCO.

## **15.7 Preliminary Likely Significant Effects**

- 15.7.1 This section outlines the preliminary assessment of impacts for the Project during construction and operation phases. Where a range of impacts is possible a worst case scenario has been used to assess significance.

## Construction

Table 15-8 – Construction Phase – Preliminary Assessment of Potential Effects

Receptor	Sensitivity	Magnitude	Significance	Description of potential impact/change
<p><b>Soil quality and ecosystem services</b></p> <p>Textures ranging from sandy to clay</p> <p>Field Capacity Days (FCD) 186-215</p>	High to Medium	<p>Medium – All of the soils disturbed during construction will be either restored back to preconstruction condition or will be re-used within the Project, where practicable. The restoration of soil profiles will be undertaken following good practice (which will be detailed in the SMP) to ensure they are returned to their pre-construction condition.</p> <p>Permanent impacts on soils (with their re-use within the project, where practicable) is expected, based on current design, to comprise an area of between 5-20ha.</p>	Major	<p>Changes to one or more soil function (biomass production; supporting ecological habitat, soil biodiversity or landscape areas; soil carbon; soil hydrology; supporting archaeological or cultural heritage resources). The effect on soils is likely to be Major and therefore potentially Significant. The actual effects on soils will be fully assessed based on the survey data to be collected.</p>
<b>Peat</b>	Very High	Small – Any peat disturbed during construction will be restored back	Major	As peatland is a highly sensitive area and the effect will be Major

Receptor	Sensitivity	Magnitude	Significance	Description of potential impact/change
Southern section of route until Nant Pen y Cwm (section 1 and 2)		to preconstruction condition or will be re-used within the Project to retain its characteristics. The restoration of peat profiles will be undertaken following good practice to ensure they are returned to their pre-construction condition. Permanent impacts on peat and organic soils are likely to be minimised through the design.		the impact may be potentially Significant. This will be updated based on survey information and any design changes which can be implemented to avoid effects on peat.
<b>BMV land within Wales</b> North of A495 until England border	Very High	Small – All of the soils disturbed during construction will be either restored back to preconstruction condition or will be repurposed for landscaping. The restoration of soil profiles will be undertaken following good practice to ensure they are returned to their pre-construction condition. Permanent loss of BMV land is expected to be below 5ha.	Major	Temporary and permanent loss of BMV land from agricultural production within the Project's draft Order Limits. The effect on BMV land is likely to be Major which is potentially Significant. The actual effect on BMV land will be fully assessed based on the survey data to be collected.

Receptor	Sensitivity	Magnitude	Significance	Description of potential impact/change
<p><b>BMV Land within England</b> Grade 1 and 2 found in a small section around the B4396 and north of Maesbury Marsh to east of Queens Head (sections 6 and 7 and thus includes the proposed substation) England route generally predominant provisional grade 3</p>	Very High to High	Medium – All of the soils temporarily disturbed during construction will be either restored back to preconstruction condition or will be repurposed for landscaping. The restoration of soil profiles will be undertaken following good practice to ensure they are returned to their pre-construction condition. Permanent loss of BMV land is expected to be between 5-20ha.	Very Major	Temporary and permanent loss of BMV land from agricultural production within the Project's draft Order Limits. The effect on BMV land is likely to be Very Major which is potentially Significant. The actual effect on BMV land will be fully assessed based on the survey data to be collected.
<p><b>Agricultural Landholdings</b></p>	High to Medium	Small	Moderate	As the majority of the agricultural land holdings are small, and the majority of land disturbance will be temporary in nature the overall effect on farm holdings is likely to be Moderate and potentially Significant. Further information will be gathered on land use to confirm this for the ES.



## Operation

- 15.7.2 During the operation of the Project, land taken temporarily for the construction of the Project would have been reinstated and returned to agricultural use, whilst land taken permanently by the Project would remain out of agricultural use. As the construction phase would comprise both the temporary and permanent loss, there would be no significant effect expected during operation phase and therefore scoped out in the scoping report.
- 15.7.3 Maintenance and repair work that may result in the disturbance to soils during operation would be undertaken in accordance with standard good practice soil handling methods, therefore, no likely significant effects are expected.

## 15.8 Preliminary Mitigation and Enhancement Measures

- 15.8.1 The assessment undertaken within this PEIR has not identified any requirements for essential mitigation or enhancement measures at this stage for soils. This will be reassessed and considered further for the ES to further evaluate any possible mitigation of the significant effects.

## 15.9 Next Steps

- 15.9.1 The ALC / peat surveys and report will be completed prior to submission of the ES. This information will support the assessment of impacts on BMV land as peat where present within England and Wales as a result of the Project following consultation with LQAS and NE.

### Consultation

- 15.9.2 Consultation with LQAS and Natural England will be arranged prior to the finalisation and submission of the ES. This consultation is needed to confirm agreement of methodology used during the ALC survey, as proposed in the stand alone Technical Notes that have been shared with the Statutory Stakeholders.

### Surveys

- 15.9.3 ALC surveys (and peat surveys where required) are proposed to be undertaken as detailed in Section 15.4 between now and the submission of the ES. The ALC surveys will assess the quality of agricultural land and determine the impact on

BMV land. These surveys will better inform the assessment of impact on agriculture and soil as well as be submitted as an Appendix ALC factual report as part of the ES submission.

## 15.10 References

- Ref. 15.1 Agriculture Land (Removal of Surface Soil) Act 1953, <https://www.legislation.gov.uk/ukpga/Eliz2/1-2/10/contents> [accessed 10/07/2024].
- Ref. 15.2 Overarching National Policy Statement (NPS) for Energy (EN-1). Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> [accessed 10/07/2024].
- Ref. 15.3 National Policy Statement (NPS) for Infrastructure (EN-5). Available at: <https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf> [accessed 10/07/2024].
- Ref. 15.4 Ministry of Housing, Communities & Local Government (2023) National Planning Policy Framework. [https://assets.publishing.service.gov.uk/media/669a25e9a3c2a28abb50d2b4/NPPF\\_December\\_2023.pdf](https://assets.publishing.service.gov.uk/media/669a25e9a3c2a28abb50d2b4/NPPF_December_2023.pdf) [accessed 29/07/2024].
- Ref. 15.5 Environmental Improvement Plan (2023). Available at: <https://www.gov.uk/government/publications/environmental-improvement-plan> [accessed 26/07/2024].
- Ref. 15.6 Welsh Government (2017), Natural Resources Policy, <https://www.gov.wales/sites/default/files/publications/2019-06/natural-resources-policy.pdf> [accessed 10/07/2024].
- Ref. 15.7 State of Natural Resources Report (SoNaRR) for Wales (2020); <https://naturalresources.wales/media/695923/sonarr2020-executive-summary.pdf> [accessed 10/07/2024].
- Ref. 15.8 Powys Local Development Plan 2011-2026; <https://en.powys.gov.uk/article/4898/Adopted-LDP-2011---2026> [accessed 10/07/2024].
- Ref. 15.9 Shropshire Local Development Framework: Adopted Core Strategy, <https://www.shropshire.gov.uk/planning-policy/local-planning/core-strategy-2006-2026/> [accessed 10/07/2024].
- Ref. 15.10 Welsh Government (2022). Agricultural Land Classification Guidance and Services, <https://www.gov.wales/agricultural-land-classification> [accessed 10/07/2024].

- Ref. 15.11 A New Perspective on Land and Soil in Environmental Impact Assessment (IEMA, 2022).
- Ref. 15.12 National Highways (2020). Design Manual for Roads and Bridges (DMRB) LA112: Population and human health.
- Ref. 15.13 Institute of Quarrying (2024). Good Practice Guide for Handling Soils in Mineral Workings, <https://www.quarrying.org/soils-guidance> [accessed 10/07/2024].
- Ref. 15.14 Ministry of Agriculture Fisheries and Food (1998). Agriculture land classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.
- Ref. 15.15 Department for Environment, Food and Rural Affairs (Defra) (2009). Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.
- Ref. 15.16 Natural England (2021) Guide to assessing development proposals on agricultural land. <https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development/guide-to-assessing-development-proposals-on-agricultural-land> [accessed 27/07/2024].
- Ref. 15.17 British Society of Soil Science (2021) Guidance Note: Working with Soil Guidance Note on Benefitting from Soil Management in Development and Construction
- Ref. 15.18 British Standard Institution. (2015). BS 3882:2015 Specification for topsoil. London: British Standards Institution.
- Ref. 15.19 British Standards Institution. (2013). BS 8601:2013 Specification for subsoil and requirements for use. London: British Standards Institution.
- Ref. 15.20 BGS (British Geological Survey) Geology Viewer <https://geologyviewer.bgs.ac.uk/> [accessed 10/07/2024].
- Ref. 15.21 Rudeforth, C. C.; Hartnup, R.; Lea, J. W.; Thompson, T. R. E. & Wright, P. S. (1984) Soils and their use in Wales, Soil Survey of England & Wales.
- Ref. 15.22 OS Master Map Imagery Layer (Ordnance Survey) <https://www.ordnancesurvey.co.uk/products/os-mastermap-imagery-layer> [accessed 10/07/2024].
- Ref. 15.23 Predictive Agricultural Land Classification (ALC) Map 2, Welsh Government [https://datamap.gov.wales/layers/inspire-wg:wg\\_predictive\\_alc2](https://datamap.gov.wales/layers/inspire-wg:wg_predictive_alc2) [accessed 10/07/2024].
- Ref. 15.24 Department for Environment, Food and Rural Affairs (Defra), Magic Map Application <https://magic.defra.gov.uk/MagicMap.aspx> [accessed 10/07/2024].

- Ref. 15.25 Meteorological Office (1989). Climatological Data for Agricultural Land Classification. London: The Meteorological Office.
- Ref 15.26 Cranfield University (2016). National Soil Association Map [https://www.landis.org.uk/soilsguide/mapunit\\_list.cfm](https://www.landis.org.uk/soilsguide/mapunit_list.cfm) [accessed 16/01/2024].

## 16 Health and Wellbeing

### 16.1 Introduction

16.1.1 This Chapter provides the results of the preliminary assessment of the potential effects of the Project on Health and Wellbeing and describes:

- Legislation, Policy and Guidance.
- Consultation and Engagement.
- Assessment Methodology and Significance Criteria.
- Baseline Conditions.
- Preliminary Mitigation Measures.
- Preliminary Likely Significant Effects.
- Preliminary Mitigation and Enhancement Measures.
- Next Steps.

16.1.2 There are interrelationships related to the potential effects on Health and Wellbeing and other environmental topics. Therefore, please also refer to the following chapters:

- Chapter 6: Landscape and Visual Amenity.
- Chapter 10: Traffic and Transport.
- Chapter 11: Noise and Vibration.
- Chapter 12: Water Resources.
- Chapter 13: Ground Conditions, Geology and Hydrogeology.
- Chapter 14: Air Quality.
- Chapter 19: Socio-economics, Recreation and Tourism.

### 16.2 Legislation, Policy and Guidance

#### Legislation

16.2.1 This section provides a summary of legislation which is specific to the assessment of Health and Wellbeing.

#### **Well-being of Future Generations (Wales) Act 2015**

16.2.2 The Well-being of Future Generations (Wales) Act 2015 (Ref 16.1) mandates public bodies to promote the pursuit of the economic, social, environmental, and cultural well-being of Wales in alignment with the sustainable development

principle. It sets out seven well-being goals for public bodies to achieve. These goals include creating a prosperous, resilient, healthier, more equal Wales with cohesive communities, a vibrant culture and language, and a globally responsible outlook.

### **The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017**

- 16.2.3 The Infrastructure Planning (Environmental Impact Assessment) (EIA) Regulations 2017 (Ref 16.2) sets out the process for conducting EIA and aim to promote sustainable development by integrating environmental considerations into the planning process for major infrastructure projects.
- 16.2.4 Schedule 4, Section 5 sets out the requirement to include a description of the factors that are likely to be significantly affected by the development, including population and human health.

### **Policy**

- 16.2.5 A summary of the relevant national and local planning policies specific to Health and Wellbeing is detailed as follows.

#### **Overarching National Policy Statement for Energy (EN-1)**

- 16.2.6 The Overarching National Policy Statement for Energy (EN-1) (Ref 16.3) sets out the overarching policy for energy infrastructure and states that energy projects may have Health and Wellbeing impacts.
- 16.2.7 Paragraph 4.4.4 of EN-1 states that ‘As described in the relevant sections of this NPS and in the technology specific NPSs, where the proposed project has an effect on humans, the [Environmental Statement] ES should assess these effects for each element of the project, identifying any potential adverse health impacts, and identifying measures to avoid, reduce or compensate for these impacts as appropriate.’
- 16.2.8 Paragraph 4.4.5 of EN-1 states that ‘The impacts of more than one development may affect people simultaneously, so the applicant should consider the cumulative impact on health in the ES where appropriate.’
- 16.2.9 Paragraph 4.4.6 of EN-1 states that ‘Opportunities should be taken to mitigate indirect impacts, by promoting local improvements to encourage health and wellbeing, this includes potential impacts on vulnerable groups within society and

impacts on those with protected characteristics under the Equality Act 2010, i.e. those groups which may be differentially impacted by a development compared to wider society as a whole.'

#### **National Policy Statement for Electricity Networks Infrastructure (EN-5)**

- 16.2.10 The National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 16.4) sets out the additional policy for energy infrastructures, including factors influencing site selection and design.
- 16.2.11 Paragraphs 2.9.44 to 2.9.58 state that there is the potential for the emission of Electric and Magnetic Fields (EMF) from overhead power lines. At high enough levels, EMFs can be harmful to human health (Ref 16.5). Such levels are much greater than those produced by the UK electricity system. EN-5 include reference to the standards or guidelines for EMF exposure, including the guidelines developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). The ICNIRP establishes guidelines for limiting EMF exposure that will provide protection against known adverse health effects. The guidance presents basic restrictions on exposure and reference levels for compliance. Paragraph 2.10.11 states that *'The applicant should consider the following factors:*
- *Height, position, insulation and protection (electrical or mechanical as appropriate) measures subject to ensuring compliance with the Electricity Safety, Quality and Continuity Regulations 2002;*
  - *That optimal phasing of high voltage overhead power lines is introduced wherever possible and practicable in accordance with the Code of Practice to minimise EMFs; and*
  - *Sny new advice emerging from the Department of Health and Social Care relating to government policy for EMF exposure guidelines.'*

#### **National Planning Policy Framework (NPPF)**

- 16.2.12 The NPPF (Ref 16.6) sets out various policies with respect to the health objectives of the planning system.
- 16.2.13 Section 8 'Promoting healthy and safe communities' of the NPPF states that 'Planning policies and decisions should aim to achieve healthy, inclusive and safe places...' in paragraph 96.

## **Planning Policy Wales – Edition 12**

- 16.2.14 The Planning Policy Wales (PPW) (Ref. 16.7) sets out the land use planning policies of Wales and ensures that the planning system aims towards sustainable development and improves the social, economic, environmental and cultural well-being of Wales. One of the five national sustainable placemaking outcomes includes ‘Facilitating Accessible and Healthy Environments’ where land use choices and places should ensure everyone can live, work, travel and play in a way that supports good physical and mental health, and the built environment should be planned to promote mental and physical well-being.

### **The Powys Local Development Plan (2011-2026)**

- 16.2.15 The local development plan (Ref 16.8) sets out the Council’s policies in relation to the development and land use in Powys over its 15 year plan period from 2011 to 2026.
- 16.2.16 Policy DM1 Planning Obligations states that planning obligations will be sought to ensure that the development would provide adequate infrastructure and significant adverse environmental impacts are address and mitigated.
- 16.2.17 Policy DM3 Public Open Space states that proposals located wholly or partially within existing open space will only be permitted where *‘There is an excess of such provision in the area; and There is no longer a requirement for that type of open space in the area; and The site would not be suitable to provide an alternative type of Open Space for which there is a shortfall; or It can be demonstrated that alternative provision can be made available that is of enhanced or equivalent community benefit in terms of its size, characteristics, location and accessibility...’*.
- 16.2.18 Policy DM13 Design and Resources states that proposals must ‘...demonstrate a good quality design and shall have regard to the qualities and amenity of the surrounding area, local infrastructure and resources.’

### **Shropshire Local Development Framework: Adopted Core Strategy 2011**

- 16.2.19 The Core Strategy Development Plan Document (DPD) (Ref 16.9) sets out the Council’s policies for the future use and development of land in Shropshire during the period to 2026.
- 16.2.20 Policy CS6 Sustainable Design and Development Principles states that ‘...development will be designed to a high quality using sustainable design



principles, to achieve an inclusive and accessible environment... Contributes to the health and wellbeing of communities, including safeguarding residential and local amenity and the achievement of local standards for the provision and quality of open space, sport and recreational facilities....’.

- 16.2.21 Policy CS8 Facilities, Services and Infrastructure Provision states that the ‘The development of sustainable places in Shropshire with safe and healthy communities where residents enjoy a high quality of life will be assisted by: ... Positively encouraging infrastructure, where this has no significant adverse impact on recognised environmental assets...and working closely with network providers to ensure provision of necessary energy distribution networks.’

### **Pre-Submission Draft of the Shropshire Local Plan 2016 to 2038**

- 16.2.22 The draft local plan (Ref 16.10) sets out the high-level objective into the Shropshire Council framework in achieving sustainable development.
- 16.2.23 Policy SP5 High-Quality Design states that ‘New development will deliver high quality design by ensuring the creation of better places in which to live and work, improving sustainability, supporting active and healthy lifestyles and ensuring individual and community well-being.’ It also states that the proposals will set out how it has considered the health and well-being of neighbours and the other nearby residential, occupiers, business and visitors.
- 16.2.24 Policy SP6 Health and Wellbeing states that ‘New development should ensure the health and well-being of individuals, communities and places.’
- 16.2.25 Policy DP15 Open Space and Recreation states that ‘Existing open space, sports and recreational buildings and land, including playing fields, should not be built on unless: a) an assessment has been undertaken which clearly shows the open space, buildings or land to be surplus to requirements; or b) the loss resulting from the proposed development would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location; or c) the development is for alternative sports and recreational provision, the benefits of which clearly outweigh the loss of the current or former use.’

### **Guidance**

- 16.2.26 Relevant guidance for assessing Health and Wellbeing that has informed this PEIR and will inform the assessment within the ES, comprises:
- Government White Paper: Healthy Lives, Healthy People (Ref 16.11).

- Mental Well-being Impact Assessment (MWIA) toolkit (Ref 16.12).
- Health in Environmental Impact Assessment – A Primer for a Proportionate Approach (Ref 16.13).
- A Green Future: Our 25 Year Plan to Improve the Environment (Ref 16.14).
- Putting Health into Place (Ref 16.15).
- Health Impact Assessment in spatial planning (Ref 16.16);
- ICNIRP Guidelines for Limiting Exposure to Electromagnetic Fields (Ref 16.17).
- Advice on the content of Environmental Statements accompanying an application under the Nationally Significant Infrastructure Planning (NSIP) Regime (Ref 16.18);
- Planning Practice Guidance – Healthy and safe communities (Ref 16.19).
- Effective Scoping of Human Health in Environmental Impact Assessment (Ref 16.20).
- Determining Significance for Human Health in Environmental Impact Assessment (Ref 16.21).
- Health Impact Assessment – a practical guide (Ref 16.22).

## **16.3 Consultation and Engagement**

16.3.1 Following the submission of the Scoping Report (Ref 16.23), a Scoping Opinion (Ref 16.24) was produced by the Planning Inspectorate. A summary of comments which is specific to Health and Wellbeing chapter is detailed below in Table 16-1. Furthermore, the subsequent stakeholder responses to the EIA Scoping Opinion are outlined in Table 16-2 and all engagement undertaken to date is outlined in Table 16-3.

Table 16-1 – Scoping Opinion from the Planning Inspectorate

ID	Matter	Inspectorate’s Comments	Project Response
3.1.1	Electric and magnetic fields (EMFs) – construction and operation	<p>The Scoping Report proposes to scope out the effects of EMFs during operation on the basis that the Proposed Development would comply with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) health protection and exposure guidelines.</p> <p>On the basis that the Proposed Development will as a minimum comply with the current relevant EMF guidelines in all of its operations and that any DCO application will include a separate document which will include details and information on how the Proposed Development will comply with relevant guidelines and codes of practice, the Inspectorate agrees that this matter can be scoped out for operation. However, the Inspectorate considers that the ES should contain a summary of the separate compliance document described.</p> <p>On the basis that EMFs are associated with power distribution during operation, the Inspectorate</p>	<p>PINS’s agreement to scope out the effects of EMFs during operation is noted. An EMF compliance report will be provided to evidence compliant levels of EMF from the Project (note that the compliance report will sit outside the EIA process). The EMF compliance report will be submitted with the Development Consent Order (DCO) application. A summary of the EMF compliance report will be provided in the ES Health and Wellbeing chapter for context and to aid understanding with regards the lack of physical health impacts.</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>agrees to scope out an assessment of EMFs during construction.</p>	
3.1.4	<p>Standalone ES aspect chapter for health and wellbeing</p>	<p>The Scoping Report proposes to scope out a standalone ES aspect chapter for health and wellbeing on the basis that impacts upon health and wellbeing would be covered within individual ES aspect chapters, namely; landscape and visual amenity, traffic and transport, noise and vibration, ground conditions, geology and hydrology, air quality.</p> <p>Paragraph 6.28 states that where there are intra-project effects, this would be considered in the intra-project cumulative assessment and presented within a human health section within the cumulative effects chapter.</p> <p>The Inspectorate considers that a separate ES chapter covering health and wellbeing is required to ensure that the overall impacts of the scheme are not overlooked. Consideration should be given to direct and indirect impacts to both physical and mental health of receptors, as well as the potential</p>	<p>A separate Health and Wellbeing chapter has been produced to cross reference and present the relevant information in one place within the PEIR, drawing information on health-related environmental change from related topic chapters such as landscape and visual amenity, traffic and transport, noise and vibration, ground conditions, geology and hydrology, air quality. The chapter will include a summary of health effects relating to both physical and mental health during construction and be prepared in line with IEMA guidance.</p> <p>The same process will be undertaken in the ES to re-assess the potential effects based on the final design.</p> <p>The ES chapter will also assess effects in relation to the different needs of vulnerable groups. The ES chapter will use Welsh Health Impact Assessment Support Unit (WHIASU) guidance (Ref 16.22) to identify vulnerable groups.</p>

ID	Matter	Inspectorate's Comments	Project Response
		<p>for particular effects on any vulnerable populations. However, the ES should avoid duplication of assessment and where relevant, the health and wellbeing aspect chapter should cross refer to information contained in other aspect chapters. The health and wellbeing chapter should take into account relevant guidance such as the Institute of Environmental Management and Assessment (IEMA) 2022 guidance 'Determining Significance for Human Health in Environmental Impact Assessment'. The Scoping Report confirms that impacts on Public Rights of Way (PRoWs), which could affect access to services, will be assessed in ES Chapter 11 (Traffic and Transport). In addition to access to services, the potential for loss/ disruption to PRoW to affect people's health and wellbeing should also be considered and an assessment of any LSE provided. The Applicant's attention is drawn to Powys County Council's scoping consultation response (Appendix 2 of this Opinion) in this regard.</p>	

ID	Matter	Inspectorate's Comments	Project Response
3.1.5	Health and wellbeing - operation	The Scoping Report proposes to scope this matter [Health and wellbeing – operation] out on the basis that impacts on health and wellbeing are unlikely to extend beyond the construction phase of the development and no significant effects during the operation of the Proposed Development are likely, due to the inherent lack of pathway from these impacts to human receptors during operation. The Inspectorate is content that given the nature of the Proposed Development, impacts on human health during operation are unlikely to result in LSE and agrees to scope this matter out.	Scoping Opinion noted.

Table 16-2 – Subsequent Stakeholder Responses to the EIA Scoping Opinion

Organisation	Project Response
<p><u>Llansantffraid &amp; Deytheur Community Council</u></p> <p>The council expressed concerns about the health effect from high energy overhead cables, visual impact, and mental stress from the added burden of constant meetings.</p>	<p>The Applicant will ensure policies and procedures will be in place at the design phase to ensure the Project will be designed to comply with legislation and comply with public EMF exposure limits.</p>

Organisation	Project Response
	<p>An EMF compliance report will be provided to evidence compliant levels of EMF from the Project (note that the compliance report will sit outside the EIA process). The EMF compliance report will be submitted with the DCO application.</p> <p>The assessment will consider potential mental health impacts arising from the Project during construction, specifically in relation to the protective factors of mental wellbeing identified in the MWIA: enhancing control, increasing resilience, facilitating participation and promoting social inclusion. This will include consideration of control-related place-based impacts such as neighbourhood quality, drawing on information provided in Chapter 6: Landscape and Visual on visual impact, as well as resilience-related risk-based impacts. Stakeholder engagement and public consultation are key aspects of participation and inclusion.</p>
<p><u>Llanymynech and Pant Parish Council</u></p> <p>Health and safety is a key consideration if these things are so close to homes. There has been much research on this, particularly in Europe, with disturbing findings on the implications for the health and wellbeing of people living near power lines. It is not acceptable to expose anyone to these risks. Helen Morgan MP recently visited the area and met with residents. She said, “why should</p>	<p>Direct physical impacts to health from the Project will be avoided by ensuring it is designed to avoid placing pylons within land used for resources such as residences and facilities used for education, medical and social care, recreation and community activities. The Project will also comply with evidence-based EMF exposure limits (Ref 16.25) and therefore avoid the potential for direct physical health impacts arising from EMF. However, there remains a perception of risk associated with EMF, which has the potential to impact mental health.</p> <p>An EMF compliance report will be provided to evidence compliant levels of EMF from the Project (note that the compliance report will sit outside the EIA process). The EMF compliance report will be submitted with the DCO application.</p>

Organisation	Project Response
<p>rural communities have to be forced to accept things that would not be tolerated in more urban environments, we are not second-class citizens”. It should also be acknowledged that there is a significant mental health impact of this whole process on residents and the long-term anxiety that living with noise and fear of induced illness will engender.</p> <p>The council also expressed concern relating to the potential for health impacts from power transmission, arising from the emission of EMF.</p>	<p>The assessment will consider potential mental health impacts arising from the Project during construction, specifically in relation to the protective factors of mental wellbeing identified in the MWIA: enhancing control, increasing resilience, facilitating participation and promoting social inclusion. This will include consideration of control-related place-based impacts such as neighbourhood quality, as well as resilience-related risk-based impacts. Stakeholder engagement and public consultation are key aspects of participation and inclusion.</p>
<p><u>Powys County Council</u></p> <p>Health and Wellbeing has been scoped out of the EIA as an individual topic chapter with information contained in appropriate chapters. Public rights of way make a significant contribution to the health and wellbeing of residents and visitors to Powys. This must be considered in the sections of text around health and wellbeing, whether incorporated</p>	<p>A separate Health and Wellbeing chapter has been produced to cross reference and present the relevant information in one place within the PEIR. The same process will be undertaken in the ES to re-assess the potential effects based on the final design.</p>



Organisation	Project Response
<p>into other chapters or forming a separate chapter in its own right. It would be preferable if Health and Wellbeing was an individual topic chapter, however it is agreed that information must be included within relevant chapters if not included as a separate topic.</p>	
<p><u>Powys County Council</u></p> <p>EMFs Information is to be prepared and submitted as a separate document with the application but scoped out of the EIA and PCC has no comments this respect.</p>	<p>Scoping Opinion noted.</p>
<p><u>UK Health Security Agency</u></p> <p>UKHSA requests that the proposer confirms either that the project does not contain any EMF sources that have a potential health impact; or that a health impact assessment is carried out in the Environmental Statement (ES)...Advice on the content of Environmental Statements accompanying an application under the NSIP Regime... should be</p>	<p>The Project will comply with evidence-based EMF exposure limits (Ref 16.25) and therefore avoid the potential for direct physical health impacts arising from EMF. An EMF compliance report will be provided to evidence compliant levels of EMF from the Project (note that the compliance report will sit outside the EIA process). The EMF compliance report will be submitted with the DCO application.</p> <p>The Public Health England (PHE) advice document will be considered when preparing the Health and Wellbeing chapter. Health and wellbeing elements to be scoped out will be set out.</p>

Organisation	Project Response
<p>considered when preparing an ES. Please note that where impacts relating to health and/or further assessments are scoped out, promoters should fully explain and justify this within the submitted documentation.</p>	
<p><u>Whittington Parish Council</u></p> <p>The council expressed concerns over health from living near power lines and mental health impact from long-term anxiety living with noise and fear of induced illness.</p>	<p>The Project will comply with evidence-based EMF exposure limits (Ref 16.25) and therefore avoid the potential for direct physical health impacts arising from EMF. An EMF compliance report will be provided to evidence compliant levels of EMF from the Project (note that the compliance report will sit outside the EIA process). The EMF compliance report will be submitted with the DCO application.</p> <p>Assessment on potential mental health impact during construction will be assessed within the Health and Wellbeing chapter, specifically in relation to the protective factors of mental wellbeing identified in the MWIA: enhancing control, increasing resilience, facilitating participation and promoting social inclusion. This will include consideration of control-related place-based impacts such as neighbourhood quality, as well as resilience-related risk-based impacts. Stakeholder engagement and public consultation are key aspects of participation and inclusion.</p>

Table 16-3 - Summary of Engagement Undertaken for Health and Wellbeing

Engagement	Outcome
<p>A Health and Wellbeing Technical Note outlining the approach to assessment has been shared with stakeholders, including:</p> <ul style="list-style-type: none"> <li>• Powys County Council</li> <li>• Shropshire Council;</li> <li>• Llansantffraid and Deytheur Community Council;</li> <li>• Llanymynech and Pant Parish Council; and</li> </ul> <p>Whittington Parish Council.</p>	<p>Responses to the Technical Note are awaited, pending agreement on the assessment approach with stakeholders.</p>

## 16.4 Assessment Methodology and Significance Criteria

### Study Area

- 16.4.1 The study area for Health and Wellbeing has been defined using professional judgement and experience of similar linear projects, with reference to scope considerations set out in IEMA guidance (Ref 16.20), and is further defined by the Local Authority boundaries in which the Project's draft Order Limits are located (i.e. Powys County Council and Shropshire Council). The study area for Health and Wellbeing is presented in Figure 16.1 Health and Wellbeing Study Area.
- 16.4.2 The Health and Wellbeing assessment also takes account of the study areas of related topics that may affect environmental change, including:
- Chapter 6: Landscape and Visual Amenity.
  - Chapter 10: Traffic and Transport.
  - Chapter 11: Noise and Vibration.
  - Chapter 12: Water Resources.
  - Chapter 13: Ground Conditions, Geology and Hydrogeology.
  - Chapter 14: Air Quality.
  - Chapter 19: Socio-economics, Recreation and Tourism.

### Baseline Data Collection

- 16.4.3 This section details the method of baseline data collection undertaken for this PEIR chapter.

### Desk Study

- 16.4.4 The baseline conditions of the Project were established during a desk study using the following sources:
- 2021 Census (Ref 16.26) (Ref 16.33).
  - Local Authority Health Profiles (Ref 16.27) (Ref 16.28).
  - Self-reported wellbeing score (Ref 16.29).
  - Index of Multiple Deprivation (IMD) (Ref 16.27) (Ref 16.30).
  - Ordnance Survey (OS) mapping and aerial imagery.
  - Baseline data are also presented in Chapter 6: Landscape and Visual Amenity; Chapter 10: Traffic and Transport; Chapter 11: Noise and Vibration;

Chapter 12: Water Resources; Chapter 13: Ground Conditions, Geology and Hydrogeology; Chapter 14: Air Quality; and Chapter 19: Socio-economics, Recreation and Tourism.

### Site Visits and Surveys

- 16.4.5 No Health and Wellbeing surveys have been or will be undertaken.

### Environmental Impact Assessment methodology

- 16.4.6 The World Health Organization (WHO) defines health as a *'state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'* (Ref 16.31). The range of personal, social, economic, and environmental factors that influence health status are known as health determinants and include the physical environment, income levels, employment, education, social support, and housing.
- 16.4.7 The Project has the potential to give rise to changes in health status by influencing health determinants. Changes can affect the health of receptors, identified as the 'general population' and 'vulnerable groups'. The latter relates to groups who may have a higher sensitivity to these changes in health status, by virtue of factors such as age (for example older people or children), ethnicity, economic factors, disability, sex, or gender. Appendix 2 of the WHIASU guidance contains a checklist that can be used to identify vulnerable groups.
- 16.4.8 The preliminary Health and Wellbeing assessment presented in this PEIR is a qualitative assessment that determines if effects arising from the Project, following the implementation of mitigation, are likely to be beneficial, adverse, or neutral together with predicting if effects are likely to be significant. The assessment is based on the published IEMA guidance on Determining Significance for Human Health in EIA (Ref 16.21).
- 16.4.9 The health determinants that would likely be influenced by the Project are those affected by health-related environmental change (for example, visual amenity, access, noise, contaminated land and air quality health related impacts) and mental health (control, resilience and community assets, and participation and inclusion).
- 16.4.10 The consideration of impacts on mental health will specifically consider:
- The physical environment in which people live their day to day lives and how this is influenced by visual amenity, air quality, traffic (including HGV

movements) and noise. The assessment will identify where there is likely to be qualitative change to the access within, and amenity and character of neighbourhoods, including combinations of impacts arising from environmental change which may alter people's levels of satisfaction and potential engagement with their living environment.

- Opportunities for employment, education and leisure, as social inclusion is a protective factor for mental health. The assessment will identify where there is likely to be a qualitative change to availability of and/or access to facilities.
- The positive and negative aspects of participation in the consenting process itself as the extent to which people are involved and engaged in activities outside their immediate household is a protective factor for mental health.

- 16.4.11 The assessment of the potential for likely significant impacts on Health and Wellbeing resulting from health-related environmental change is presented in this Chapter, for both general population and vulnerable group receptors. These information informing the consideration of health-related environmental change is drawn from the assessments presented in Chapter 6: Landscape and Visual Amenity; Chapter 10: Traffic and Transport; Chapter 11: Noise and Vibration; Chapter 12: Water Resources; Chapter 13: Ground Conditions, Geology and Hydrogeology; Chapter 14: Air Quality; and Chapter 19: Socio-economics, Recreation and Tourism.
- 16.4.12 Physical health impacts from EMFs during construction and operation have been scoped out, on the basis that they will not be emitted during construction, and that the Project will comply with evidence-based EMF exposure limits during operation. An EMF compliance report will be provided to evidence compliant levels of EMF from the Project (note that the compliance report will sit outside the EIA process). The EMF compliance report will be submitted with the DCO application and a summary of the EMF compliance report will be provided in the ES Health and Wellbeing chapter for context and to aid understanding with regards the lack of physical health impacts.
- 16.4.13 However, it is recognised that there is a perceived risk to human health from the emissions of EMF from electricity transmission infrastructure, which in itself could lead to an impact on mental health. The consideration of impacts to mental health during operation will therefore include consideration of resilience-related risk-based impacts.

## Significance Criteria

- 16.4.14 The proposed approach to define receptor sensitivity, magnitude of impact and significance of effects are presented in Table 16-4, Table 16-5 and Table 16-6 respectively.

Table 16-4 – Health Sensitivity Methodology Criteria

Category/Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
High	High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the project); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and/or people with a very low capacity to adapt
Medium	Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt
Low	Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt
Very Low	Very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and/or people with a very high capacity to adapt.



Table 16-5 – Health Magnitude Methodology Criteria

Category/Level	<p>Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)</p> <p>The narrative explains that the population or sub-population's magnitude narrative explains that the magnitude of change due to the project is driven by (select as appropriate):</p>
High	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/injury outcomes; majority of population affected; permanent change; substantial service quality implications
Medium	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications
Low	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications
Negligible	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication.

Table 16-6 – Generic Indicative EIA Significance of Effect Matrix

		Sensitivity			
		High	Medium	Low	Very Low
<b>Magnitude</b>	<b>High</b>	Major	Major/ Moderate	Moderate/ Minor	Minor/ Negligible
	<b>Medium</b>	Major/ Moderate	Moderate	Minor	Minor/ Negligible
	<b>Low</b>	Moderate/ Minor	Minor	Minor	Negligible
	<b>Negligible</b>	Minor/ Negligible	Minor/ Negligible	Negligible	Negligible

16.4.15 The significance of effect has been assigned following the IEMA guidance on Determining Significance for Human Health in EIA (Ref 16.21). Effects classified as moderate or above are considered to be significant, while minor or below are considered to be not significant. The narrative criteria on which determination of significance is based is detailed in Table 16-7.

Table 16-7 – Significance Conclusion and Reasoning Related to Public Health

Category/Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
Major (significant)	<p>The narrative explains that this is significant for public health because (select as appropriate):</p> <ul style="list-style-type: none"> <li>• Changes, due to the project, have a substantial effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size (magnitude and sensitivity levels), and as informed by consultation themes among stakeholders, particularly public health stakeholders, that show consensus on the importance of the effect.</li> <li>• Change, due to the project, could result in a regulatory threshold or statutory standard being crossed (if applicable).</li> <li>• There is likely to be a substantial change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a causal relationship between changes that would result from the project and changes to health outcomes.</li> <li>• In addition, health priorities for the relevant study area are of specific relevance to the determinant of health or population group affected by the project.</li> </ul>
Moderate (significant)	<p>The narrative explains that this is significant for public health because (select as appropriate):</p>

Category/Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
	<ul style="list-style-type: none"> <li>• Changes, due to the project, have an <i>influential</i> effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size, and as informed by consultation themes among stakeholders, which may show <i>mixed views</i>.</li> <li>• Change, due to the project, could result in a regulatory threshold or statutory standard being <i>approached</i> (if applicable).</li> <li>• There is likely to be a <i>small</i> change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a <i>clear relationship</i> between changes that would result from the project and changes to health outcomes.</li> <li>• In addition, health priorities for the relevant study area are of <i>general relevance</i> to the determinant of health or population group affected by the project.</li> </ul>
Minor (not significant)	<p>The narrative explains that this is not significant for public health because (select as appropriate):</p> <ul style="list-style-type: none"> <li>• Changes, due to the project, have a <i>marginal</i> effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size of limited policy influence and/or that <i>no relevant consultation themes</i> emerge among stakeholders.</li> <li>• Change, due to the project, would be <i>well within</i> a regulatory threshold or statutory standard (if applicable); but could result in a guideline being crossed (if applicable).</li> <li>• There is likely to be a <i>slight</i> change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is only a <i>suggestive relationship</i> between changes that would result from the project and changes to health outcomes.</li> </ul>

Category/Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
	<ul style="list-style-type: none"> <li>In addition, health priorities for the relevant study area are of <i>low relevance</i> to the determinant of health or population group affected by the project.</li> </ul>
Negligible (not significant)	<p>The narrative explains that this is not significant for public health because (select as appropriate):</p> <ul style="list-style-type: none"> <li>Changes, due to the project, are <i>not related</i> to the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size or lack of relevant policy, and as informed by the project having <i>no responses</i> on this issue among stakeholders.</li> <li>Change, due to the project, would <i>not affect</i> a regulatory threshold, statutory standard or guideline (if applicable).</li> <li>There is likely to be a <i>very limited</i> change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is an <i>unsupported relationship</i> between changes that would result from the project and changes to health outcomes.</li> <li>In addition, health priorities for the relevant study area are <i>not relevant</i> to the determinant of health or population group affected by the project.</li> </ul>

## Assumptions and Limitations

- 16.4.16 The following limitations and assumptions have been identified for the Health and Wellbeing assessment:
- The assessment has been undertaken based on the preliminary Project design information and the consideration of preliminary conclusions from other related environmental topic assessments. This information is iterative and will be updated in the ES as the design evolves.
  - All conclusions and assessments are, by their nature, preliminary. All assessment work has applied, and continues to apply, a precautionary approach, in that where limited information is available (in terms of the proposals for the Project), a realistic worst-case scenario is assessed.
  - Health effects are considered at a population, rather than an individual, level. Effects may therefore be presented in relation to the general population or in relation to vulnerable groups.
  - Ascertaining the level of exposure of a population to effects on certain health determinants is based on professional judgement, considering inherent uncertainties in identifying how and where people may spend their time (for example in a location exposed to effects) as opposed to other locations where other factors may be responsible for health changes. The assessment draws from and builds upon the outputs of the supporting technical disciplines and is therefore subject to the same limitations and assumptions affecting those assessments.
  - The key parameters and assumptions will be reviewed based on the final Project description and design and, where required, updated, or refined. The ES will present the final key parameters and assumptions used within that assessment, drawing attention to any areas that may have changed from that which is presented in this preliminary assessment.
- 16.4.17 There are no further assumptions or limitations beyond those presented in Chapter 6: Landscape and Visual Amenity; Chapter 10: Traffic and Transport; Chapter 11: Noise and Vibration; Chapter 12: Water Resources; Chapter 13: Ground Conditions, Geology and Hydrogeology; Chapter 14: Air Quality; and Chapter 19: Socio-economics, Recreation and Tourism.

## 16.5 Baseline Conditions

### Existing Baseline

16.5.1 This section sets out the baseline condition for Health and Wellbeing within the study areas.

#### Population

16.5.2 Population size and age profile are detailed in Chapter 19: Socio-economics, Recreation and Tourism, Table 19.7. In summary, Powys and Shropshire have older age profiles compared to Wales, the West Midlands, and England and Wales overall. Powys, in particular, has experienced minimal population growth and has the highest proportion of residents aged 65 and over.

#### Ethnicity

16.5.3 The 2021 Census data indicates that the study area is significantly less diverse when compared to the England and Wales averages as presented in Table 16-8.

16.5.4 The population within Powys and Shropshire are mostly White, with Asian, Asian British or Asian Welsh, as well as mixed or multiple ethnic groups being the second and third largest ethnic group by population proportion.

Table 16-8 – Ethnicity by Local Authority and Wider Comparators

Ethnic Group	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	England and Wales (%)
Asian, Asian British or Asian Welsh	0.9	1.3	2.9	13.3	9.3
Black, Black British, Black Welsh, Caribbean or African	0.2	0.3	0.9	4.5	4.0
Mixed or Multiple ethnic groups	0.9	1.2	1.6	3.0	2.9
White	97.7	96.7	93.8	77.0	81.7

Ethnic Group	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	England and Wales (%)
Other ethnic group	0.3	0.4	0.9	2.1	2.1

Source: Nomis, 2024 (Ref 16.26) / Note: Number may not sum due to the rounding of figures in original source.

### Deprivation

- 16.5.5 Deprivation information within the study area is detailed in Chapter 19: Socio-economics, Recreation and Tourism, Section 19.5. In summary, there was some level of overall deprivation in both Powys and Shropshire in 2019. However, neither local authority is considered severely deprived compared to their respective country wide averages.

### Economic Activity

- 16.5.6 Table 16-9 shows that a higher number of population (aged 16 to 64) in both Powys and Shropshire are in employment when compared to the Wales and West Midlands averages, and largely in line with the Great Britain average.
- 16.5.7 Both Powys and Shropshire have less population (aged 16 to 64) who are unemployed (3.3%) when compared to the West Midlands (4.4%), Wales (3.7%) and Great Britain (3.7%) averages. This also reflects on the total claimant number in both local authorities where a lower number can be seen when compared to both the regional and national averages.

Table 16-9 – Economic Activity by Local Authority and Wider Comparators

Economic Activity	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	Great Britain (%)
In employment (Jan-Dec 2023)	75.1	78.8	74.1	75.2	75.8
Unemployed (Jan-Dec 2023)	3.3	3.3	3.7	4.4	3.7



Economic Activity	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	Great Britain (%)
Total claimants* (Nov 2016)	10.8	8.4	14.4	12.2	11.0
* Claimant count includes Jobseeker's Allowance and out of work Universal Credit claimants.					

Source: Nomis, 2024 (Ref 16.26)

### Local Health

- 16.5.8 The health profiles for Powys and Shropshire are reported by two separate health departments. Consequently, direct comparisons of the overall health profiles are not available, with the exception of disability data published in the 2021 Census.
- 16.5.9 Data from the 2021 Census indicate that the majority of the population in Powys and Shropshire are not classified as disabled. However, the percentages of non-disabled individuals in these areas are marginally lower than the Great Britain average. This suggests that the proportion of disabled individuals within the study area is marginally higher, as demonstrated in Table 16-10.

Table 16-10 – Disability by Local Authority and Wider Comparators

Disability	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	Great Britain (%)
Disabled under the Equality Act: Day-to-day activities limited a lot	8.7	7.5	10.3	7.9	7.5
Disabled under the Equality Act: Day-to-day activities limited a little	11.5	11.0	11.3	10.2	10.0
Not disabled under the Equality Act	79.7	81.5	78.4	81.9	82.5

Source: Nomis, 2024 (Ref 16.26)

16.5.10 Table 16-11 presents comparable health indicators reported by both Office for Health Improvement and Disparities (OHID) and Public Health Wales Observatory (PHWO). The data shows that Powys and Shropshire perform better than the national averages for the following indicators:

- Life expectancy at birth for males and females.
- Child weight.
- Teenage pregnancy.
- Physically active adult.

16.5.11 However, Shropshire is showing a slightly higher prevalence of adult obesity and hip fractures among older individuals compared to the England averages. Similarly, Powys reports a marginally higher percentage of live births with low birth weights relative to the Wales average.

*Table 16-11 – Local Health by Local Authority and Wider Comparators*

Local Health	Powys	Shropshire	Wales	West Midlands	England
Life expectancy at birth for males (2020-2022) (years)	-	79.8	-	78.1	78.9
Life expectancy at birth for males (2015-2017) (years)	79.6	-	78.3	-	-
Life expectancy at birth for females (2020-2022) (years)	-	83.9	-	82.2	82.8
Life expectancy at birth for females (2015-2017) (years)	84.2	-	82.3	-	-
Child (year 6) prevalence of obesity (2022/23) (%)	-	17.6	-	25.2	22.7
Children age 5 of healthy weight or underweight (2017/18) (%)	75.5	-	73.6	-	-

Local Health	Powys	Shropshire	Wales	West Midlands	England
Overweight (including obesity) prevalence in adults (18+) (2022/23) (%)	-	66.1	-	67.0	64.0
Working age adults of healthy weight (2014/15) (%)	39.6	-	40.2	-	-
Low birth weight of live babies (2016-2020) (%)	-	6.1	-	8.9	6.8
Low birth weight of live babies (2018) (%)	6.0	-	5.6	-	-
Deliveries to teenage mothers (2016-2020) (%)	-	0.6	-	0.9	0.7
Teenage pregnancies (2015-2017) (rate per 1,000)	15.3	-	21.9	-	-
Physically active adults (19+ years) (2022/23) (%)	-	70.9	-	64.0	67.1
Adults meeting physical activity guidelines (2014/15) (%)	39.2	-	30.6	-	-
Hip fractures in people aged 65 and over (2022/23) (per 100,000)	-	583	-	602	558
Hip fractures among older people (2018/19) (per 100,000)	541.1	-	579.0	-	-

Source: OHID, 2024 (Ref 16.27); PHWO, 2024 (Ref 16.28)

## Mental Health

- 16.5.12 In 2018, the Government published ‘Health Matters: Reducing Health Inequalities in Mental Illness’ (Ref 16.32), emphasizing that individuals with severe and enduring mental illness are at a higher risk of poor physical health and reduced life expectancy compared to the general population. The report highlights that mental health issues can impact anyone and have significant effects on society at large. It acknowledges a wide range of mental health conditions and disorders, with common conditions such as depression and anxiety affecting one in five people. Mental wellbeing, mental illness, and mental distress are interconnected, with a clear link between loneliness and poor mental and physical health.
- 16.5.13 Although the health indicators presented in Section 16.5 (i.e. disability data) suggest the study area may experience some level of mental health inequalities, Table 16-12 demonstrates an overall better wellbeing score within the study area. Specifically, both Powys and Shropshire report slightly higher self-reported happiness scores compared to the national average, and lower anxiety scores when compared to regional and national averages (Ref 16.29).
- 16.5.14 This aligns with the data published by OHID, which indicates that Shropshire has a noticeably lower rate of hospital admission for intentional self-harm compared to both the regional and national averages (Ref 16.27). However, it should be noted that Powys shows a slightly higher rate of suicide when compared to Wales as a whole (Ref 16.28).

Table 16-12 – Mental Health by Local Authority and Wider Comparators

Mental Health	Powys	Shropshire	Wales	West Midlands	Great Britain
Self-reported wellbeing: happiness score (2022/23) (Score out of 10)	7.45	7.66	7.38	7.49	7.42
Self-reported wellbeing: anxiety score (2022/23) (Score out of 10)	2.96	2.70	3.28	3.19	3.21
Emergency hospital admissions for	-	92.0	-	120.2	126.3

Mental Health	Powys	Shropshire	Wales	West Midlands	Great Britain
intentional self-harm (2022/23) (rate per 100,000)					(England)
Suicides (2014-2018) (rate per 100,000)	13.9	-	12.0	-	-

Source: Office for National Statistics (ONS), 2024 (Ref 16.29); OHID, 2024 (Ref 16.27); PHWO, 2024 (Ref 16.28)

### Vulnerable Groups

- 16.5.15 Table 16-13 shows that the local authorities within the study area do not present differences in terms of vulnerable groups and associated sensitivities in Health and Wellbeing when compared to the wider England and Wales averages. However, findings from Chapter 19: Socio-economic, Recreation and Tourism, Table 19.7 show that both Powys and Shropshire have an older age population when compared to the regional, country or nation, especially in Powys.

Table 16-13 – Wider Health Determinant for Vulnerability by Local Authority and Wider Comparators

	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	England (%)	England and Wales (%)
Cannot speak English well	0.3	0.5	0.6	1.9	-	1.5
Cannot speak English	0.1	0.1	0.1	0.4	-	0.3
Overcrowded housing	1.3	1.8	2.2	4.3	-	4.3
Not in employment	73.2	71.7	65.4	59.6	-	61.4

	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	England (%)	England and Wales (%)
for the last 12 months						
Income deprivation	11.0	9.6	16.0	19.4	12.9	-

Source: Nomis, 2021 (Ref 16.26); OHID, 2024 (Ref 16.27); Social Care Wales, 2024 (Ref 16.30).

### Health Related Environmental Change

16.5.16 As detailed in Section 16.4, this Chapter draws on information from other environmental topic chapters. These include:

- Visual amenity baseline information sets out in Chapter 6: Landscape and Visual Amenity, Section 6.5.
- Existing road network, walking, cycling and horse-riding routes set out in Chapter 10: Traffic and Transport, Section 10.5.
- Noise receptors set out in Chapter 11: Noise and Vibration, Section 11.5;
- Existing flood zones are set out in Chapter 12: Water Resources, Section 12.5.
- Ground contamination baseline information set out in Chapter 13: Ground Conditions, Geology and Hydrogeology, Section 13.5.
- Air quality and receptors set out in Chapter 14: Air Quality, Section 14.5.
- Existing community facilities and recreational receptors set out in Chapter 19: Socio-economics, Recreation and Tourism, Section 19.5.

16.5.17 Receptors of the relevant environmental change are presented in Figure 16.2 Health and Wellbeing Receptors.

### Summary

16.5.18 Overall, Powys and Shropshire have a moderate level of deprivation. The population who are limited (rather than prevented) from undertaking daily activities within the study area is broadly in line with the national averages with existing narrow inequalities. The findings indicate that the healthcare service in

the study area is unlikely to be under significant strain. Whilst many features of the general population meet the criteria for low sensitivity, the shared resources between the Project and this population, as well as the community outlook as represented by stakeholder feedback, indicate slightly higher sensitivity. For these reasons, the sensitivity of Health and Wellbeing both general population and vulnerable group receptors in the study area has been identified as medium.

### Future Baseline

16.5.19 The future baseline encompasses anticipated changes to the current health profile. An aging population is projected for both Powys and Shropshire in the coming years (see Table 16-14). When comparing the age profiles for 2018, 2028, 2038, and 2043, it is evident that although the largest proportion of the population will remain within the 16 to 64 age group, there will be notable demographic shifts. Specifically, the population aged 15 and under is expected to decrease by 1.2% in Powys and 2.2% in Shropshire. Conversely, the population aged 64 and above is projected to increase by 7.7% in Powys and 8.9% in Shropshire (Ref 16.29).

Table 16-14 – Age Projection for Powys and Shropshire for 2018, 2028, 2038 and 2043

Location	Age groups	2018 (%)	2028 (%)	2038 (%)	2043 (%)
Powys	15 and under	16.0	15.3	14.7	14.8
	16-64	57.0	53.7	50.5	50.5
	65 and over	27.0	31.0	34.9	34.7
Shropshire	15 and under	16.5	15.2	14.3	14.3
	16-64	59.2	56.4	52.8	52.5
	65 and over	24.3	28.4	32.9	33.2

Source: ONS, 2024 (Ref 16.29)

16.5.20 Life expectancy projection is not available at the local authority level. However, life expectancy at birth for both males and females is anticipated to rise for those born in 2045 in the UK. Specifically, the life expectancy for males born in 2045 is projected to increase by 2.8 years, reaching 90.1 years, while for females, it is expected to increase by 2.4 years, reaching 92.6 years.

- 16.5.21 The future health priority for Powys and Shropshire aims to improve physical and mental health in the community with an emphasis on particular areas, including tackling cancer, cardiovascular diseases, respiratory diseases, and mental health disorders in Powys (Ref 16.34); and ill health prevention, dementia support, reduce health inequality and reduce levels of obesity of all ages for Shropshire (Ref 16.35).
- 16.5.22 This growing older population is likely to place greater pressure on community facilities, particularly those related to elderly care services, such as medical services and care homes. Additionally, older individuals are more likely to rely on vehicular transportation, notably local bus services.

## **16.6 Preliminary Mitigation Measures**

- 16.6.1 Table 16-15 outlines the preliminary mitigation measures in relation to the Health and Wellbeing assessment.



Table 16-15 – Preliminary Mitigation Measures in Relation to Health and Wellbeing assessment

Receptor	Measures	Compliance mechanism
<b>Embedded mitigation measures</b>		
General population Vulnerable groups	<p>The routeing and siting of the proposed collector substation, switching station, underground cable, Cable Sealing end Compound, pylons and Overhead Lines have been considered carefully to avoid and reduce as far as practicable effects on identified environmental and health receptors.</p> <p>The Project has also aimed to avoid sensitive features such as centres of population and community, healthcare, and education facilities, through the corridor and routeing studies.</p> <p>Typical routeing principles relevant to Health and Wellbeing include:</p> <ul style="list-style-type: none"> <li>• Alignment avoiding constraints as much as possible;</li> <li>• Span lengths between towers are maximised; and</li> <li>• Positioning of Project elements to avoid PRowS as identified in open source data.</li> </ul>	Design consideration
General population Vulnerable groups	<p>The Project will be designed and operated in accordance with EMF related guidelines and policies as specified in NPS EN-5, including the ICNIRP guidelines. By complying with these guidelines and policies, the Project will mitigate potential EMF effects to ensure they meet health and safety standards.</p>	Design consideration

Receptor	Measures	Compliance mechanism
General population Vulnerable groups	Where practical, construction compounds would be located to avoid or minimise environmental and community effects, provide the best access for personnel and deliveries in relation to major structures and worksites, and meet other construction requirements for the Project.	Design consideration
General population Vulnerable groups	Further preliminary measures are detailed in Chapter 6: Landscape and Visual Amenity; Chapter 10: Traffic and Transport; Chapter 11: Noise and Vibration; Chapter 12: Water Resources; Chapter 13: Ground Conditions, Geology and Hydrogeology; Chapter 14: Air Quality; and Chapter 19: Socio-economics, Recreation and Tourism.	Design consideration
<b>Good Practice mitigation measures</b>		
General population Vulnerable groups	<p>A number of engagement and consultation strategies will be implemented to understand concerns and perceptions arising in relation to the Project, as well as to provide technical project information and context in an accessible format to inform public understanding of risk. These include early engagement, transparent communication, inclusion and conflict resolution mechanisms.</p> <p>The Project will undertake engagement with members of the public (e.g. landowners, businesses owners, local communities) during statutory consultation and provide clear and transparent information about the Project. This approach will allow public concerns to be expressed via online and hard copy channels and taken into account, as well as providing the information necessary for the public to understand (e.g. 3D model), and</p>	Statutory Consultation

Receptor	Measures	Compliance mechanism
	<p>thereby inform the management of, risk and associated mental health. Regular updates will also be provided to manage expectations and reduce uncertainty.</p> <p>The Project will actively involve community members in decision-making processes through statutory consultation, including public exhibitions, briefings and community events. This approach can be protective to mental health as a mechanism to provide control and confidence for communities that their comments are heard and valued and have contributed to the Project.</p>	
<p>General population Vulnerable groups</p>	<p>The Project will establish conflict resolution mechanisms by providing specific contact points for members of the public to submit concerns, scheduling mediation meetings where representatives from the project team and concerned community members can discuss issues in a neutral setting, providing responses, and maintaining a log of all concerns and actions taken for transparency.</p>	<p>Outline Construction Environmental Management Plan (OCEMP) (to be provided as part of the DCO application)</p>
<p>General population Vulnerable groups</p>	<p>The Project will establish a construction plan signposting a helpline for the public to submit concerns.</p>	<p>OCEMP (to be provided as part of the</p>

Receptor	Measures	Compliance mechanism
		DCO application)
General population Vulnerable groups	Further tertiary mitigation measures are detailed in Chapter 6: Landscape and Visual Amenity; Chapter 10: Traffic and Transport; Chapter 11: Noise and Vibration; Chapter 12: Water Resources; Chapter 13: Ground Condition, Geology and Hydrogeology; Chapter 14: Air Quality; and Chapter 19: Socio-economics, Recreation and Tourism.	OCEMP (to be provided as part of the DCO application)

## 16.7 Preliminary Likely Significant Effects

16.7.1 This section outlines the preliminary assessment of the effects of the Project during the construction and operation phases.

### **Construction**

16.7.2 Table 16-16 summarise the potential Health and Wellbeing preliminary effects from the construction activities.

Table 16-16 – Construction Phase – Preliminary Assessment of Potential Effects

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
Changes in visual amenity	<p>General population</p> <p>Vulnerable groups</p>	<p>The potential adverse visual change arises from visibility of construction activities, such as loss of vegetation along the OHL route, the presence of partially constructed towers (and the cranes used to do construct them), the road crossing scaffolds, the two site compounds (near Mathrafal and Trefnanney) and its use of lighting at them at the start and end of winter days, and creation of temporary access roads and the movement of construction traffic along them. These changes would be short-term and/or easily reversible as identified in Chapter 6: Landscape and Visual, Table 6.21.</p> <p>These potential significant visual effects have been identified around the Project section from Llangyniew to Lower Frankton Switching Station. Further assessment of visual effects will be undertaken and presented in the ES.</p>	<p>The physical environment in which people live their day to day lives is influenced by visual amenity, among other things. The identified visual effect could alter levels of satisfaction and engagement with the living environment, but would be temporary and/or easily reversible. The location of the construction activities would change over time during the construction period due to the linear nature of the Project where the construction is likely to take place in different locations during different phases. Relevant mitigation measures will be set out in the OCEMP, including provision of information necessary for the public to understand, and thereby inform the management of, risk and associated</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
			<p>physical and mental health. Hence, the potential changes due to the Project will be unlikely to lead to a change in the health and wellbeing baseline or affect the ability to deliver current health policies.</p> <p>Taking these factors into consideration, the preliminary residual adverse impacts are anticipated to be low. With a medium sensitivity, the preliminary residual Health and Wellbeing effects are anticipated to be temporary, minor adverse effects (not significant) on receptors between the Project section from Llangyniew to Lower Frankton Switching Station.</p> <p>Further assessment will be provided in the ES.</p>
Changes in traffic flow, access and connections	General population, especially pedestrians and cyclists	Chapter 10: Traffic and Transport, Section 10.9 and Table 10.13 identified the potential for temporary significant adverse effects on severance, where there is potential for reduced	Access to community facilities and services may be impacted as a result of the potential severance due to construction traffic. Given that the Outline Construction Traffic Management Plan

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
	<p>Vulnerable groups, specifically younger age, older age and/or low income populations</p>	<p>ability to cross the road by pedestrians and cyclists. The assessment for Primary Access Routes will be further assessed in the ES stage.</p>	<p>(OCTMP) will be implemented, the likely severance will be minimised. Hence, the potential changes due to the Project might marginally affect the ability to narrow health inequalities. The preliminary residual adverse impacts are anticipated to be low. With a medium sensitivity, the preliminary residual Health and Wellbeing effects associated with access on the general population and vulnerable groups are anticipated to be temporary, minor adverse (not significant). Further assessment will be provided in the ES.</p>
	<p>General population, especially drivers, bus users, pedestrians and cyclists</p>	<p>Chapter 10: Traffic and Transport, Section 10.9 and Table 10.12 identified the potential for temporary significant adverse effects on changed journey times and distances.</p>	<p>Access to community facilities, jobs and services may be impacted as a result of the potential traffic delays and increased journey times during construction. The vulnerable groups including younger age, older age and low-income</p>



Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
	Vulnerable groups, specifically younger age, older age and/or low income populations		<p>populations may be impacted disproportionately as they could be more dependent on public transport. Given that the OCTMP will be applied, the likely traffic delay and increased journey time will be minimised. Hence, the potential changes due to the Project might marginally affect the ability to narrow health inequalities.</p> <p>The preliminary residual adverse impacts are anticipated to be low. With a medium sensitivity, Health and Wellbeing effects associated with connection on the general population and vulnerable groups are anticipated to be temporary, minor adverse (not significant).</p>
Changes in perception of the road network	General population, especially pedestrians and cyclists	Chapter 10: Traffic and Transport, Section 10.9 and Table 10.12 identified the potential for temporary adverse impacts on fear and intimidation.	Fear, intimidation and reduced road safety and amenity on roads has the potential to affect the inclination of general population and vulnerable groups to pursue active

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
	Vulnerable groups, specifically younger age, older age and/or low income populations		travel. Active travel links to a healthy lifestyle, for both physical and mental health.
	General population  Vulnerable groups, specifically younger age, older age and/or low income populations	Chapter 10: Traffic and Transport, Section 10.9 and Table 10.12 identified the potential for temporary significant impacts in the form of a reduction in road safety for pedestrians, cyclists, bus passengers, car drivers and car passengers.	The vulnerable groups including younger age, older age and low-income populations may be impacted disproportionately as they could be more dependent on public transport or may commute by walking.  Although impacts on reduced amenity may remain, given that OCTMP will be applied during construction, potential impacts arising from construction traffic would be minimised. This is likely to reduce fear and intimidation of road users, as well as ensure the road network remains safe to use. Hence, the potential changes due to the Project will likely have a slight change in the health and wellbeing baseline and marginally affect the ability to narrow health inequalities.
	General population, especially pedestrians, cyclists and horse-riders	Chapter 10: Traffic and Transport, Section 10.9 and Table 10.12 identified the potential for temporary significant impacts associated with the loss of amenity for pedestrians and cyclists.	

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
	<p>Vulnerable groups, specifically younger age, older age and/or low income populations</p>		<p>Overall, the preliminary residual adverse impacts are anticipated to be low. With a medium sensitivity, Health and Wellbeing effects associated with active travel on the general population and vulnerable groups are anticipated to be temporary, minor adverse (not significant).</p>
<p>Changes in noise and vibration generation</p>	<p>General population</p> <p>Vulnerable groups, specifically people with pre-existing health conditions that could be hyper-sensitive to noise, as well as shift workers</p>	<p>The noise assessment detailed in Chapter 11: Noise and Vibration, Section 11.7 concluded that the preliminary, unmitigated calculations conclude a potential for significant noise effects during both the weekday and weekend periods, with significantly more exceedances during the weekend periods as a result of a reduction in limit.</p> <p>Further noise assessment on this aspect would be considered as part of the ES.</p>	<p>Changes in noise and vibration levels could lead to changes in mental health. The level of effect arising from noise pollution can depend on the type of noise and time of day it occurs, the nature of tasks being undertaken, and personal characteristics of receptors.</p> <p>The potential noise and vibration adverse effects may affect vulnerable groups disproportionately, including people with pre-existing health conditions that could be hyper-sensitive to noise, as well as shift workers. The younger age and older age population are also likely to be within</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
		<p>The vibration assessment detailed in Chapter 11: Noise and Vibration, Section 11.7 concluded that there are potential significant adverse effects</p>	<p>their homes for longer periods of time, hence, may be exposed to noise and vibration for a longer duration.</p> <p>Given that the OCEMP and provided that specific BPM mitigation measures will be implemented, the potential change due to the project would be well within the statutory standard.</p> <p>The preliminary residual adverse impacts are therefore anticipated to be low. With a medium sensitivity, Health and Wellbeing effects associated with noise pollution and vibration on the general population and vulnerable groups are anticipated to be temporary, minor adverse (not significant). Further assessment will be provided in the ES stage.</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
		<p>(i.e., moderate or greater) on 19 Vibration Sensitive Receptors (VSRs) out of the identified 654 VSRs during daytime periods ground compaction activities should specific BPM mitigation measures not be implemented.</p> <p>Further vibration assessment on this aspect would be considered as part of the ES.</p>	
Changes in water quality	General population, specifically users of main rivers, ordinary watercourses and Montgomery Canal	<p>Chapter 12: Water Resources, Table 12.6 identified the potential for temporary adverse impacts at watercourse crossings during the construction phase, for example, arising from the generation of silted runoff and associated with over-pumping and dewatering activities.</p> <p>Mitigation included in the OCEMP and following good practices would reduce the potential for significant effects.</p>	<p>Water contamination can pose risks to both human health and the environment. However, with the implementation of appropriate design measures and good practice mitigation strategies secured in the OCEMP, the potential change due to the project would be well within the statutory standard.</p> <p>The preliminary residual adverse impacts are therefore anticipated to be low. With a medium sensitivity, Health and Wellbeing effects associated with water quality on the general population and vulnerable</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
			groups are anticipated to be temporary, minor adverse (not significant).
Changes in flood risk	General population within the floodplain	Chapter 12: Water Resources, Table 12.6 identified the potential for flood risk impacts on the population, existing development and existing infrastructure within the floodplain, could be associated with construction works which could cause temporary loss of floodplain storage or disruption to flow conveyance (e.g. soil storage).	<p>Flood risk can pose a risk to human health, both physical and mental.</p> <p>However, with the assessment of Flood Risk Activity (FRA), appropriate mitigation measures will be applied to manage flood risk to existing development within the floodplain and prevent likely significant effects and well within the statutory standard.</p> <p>Therefore, the preliminary residual adverse impacts are anticipated to be low. With a medium sensitivity, Health and Wellbeing effects associated with flood risk on the general population within the floodplain are anticipated to be temporary, minor adverse (not significant).</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
Changes in water consumption	<p>General population</p> <p>Vulnerable groups, specifically low income populations</p>	<p>As stated in Chapter 12: Water Resources, Table 12.6, there is no large-scale water consumption proposed during construction and no impacts on water resource availability are anticipated.</p>	<p>Water availability is essential to human health. For example, clean and safe drinking water is essential for hydration and overall health, and adequate water resources are necessary for maintaining personal hygiene and sanitation.</p> <p>Given that no large-scale water consumption will be required from the construction of the Project, no Health and Wellbeing impact or effect associated with water consumption is anticipated on the general population and vulnerable groups.</p>
Changes in the condition of Made Ground and existing contamination	<p>General population living, working or engaging in recreational activities within 250m of the Project's draft Order Limits</p>	<p>As detailed in Chapter 13: Ground Condition, Geology and Hydrogeology, Table 13.14 there is the potential for Made Ground and existing contamination within the 250m buffer from the Project's draft Order Limits to be disturbed and mobilised which could adversely impact human health.</p>	<p>There is evidence setting out the links between contamination, pollution and human health.</p> <p>Given that the proposed mitigation, such as, good practice and measures detailed in the OCEMP are implemented, the potential of residents or users of public open spaces and rural areas will be</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
		<p>There is also the potential for contaminated runoff from the storage of construction materials and wastes.</p> <p>However, with the proposed assessment and mitigation (e.g. good practice and OCEMP), impacts on human health during construction are not anticipated during construction.</p>	<p>negligible, where the potential changes due to the Project are likely to have a very limited change in the health and wellbeing baseline and will not be related to the ability to deliver current health policies or the ability to narrow health inequalities.</p> <p>With a medium sensitivity, the preliminary residual Health and Wellbeing effects associated with ground contamination on nearby residents, and users of public open spaces and rural areas are anticipated to be temporary negligible (not significant).</p>
Changes in air quality	General population, specifically residents within 250m of the Project's draft Order Limits	Chapter 14: Air Quality, Section 14.8 identified the potential for high (adverse) magnitude dust emissions from earthworks, construction and trackout activities. However, the chapter concludes that provided the proposed mitigation identified in Appendix 14.1: Construction Dust Assessment and Methodology will be incorporated into the OCEMP and adopted	Poor air quality could lead to various adverse health effects, including respiratory and cardiovascular diseases. Additionally, vulnerable populations, for example, younger and older age population, and those with pre-existing health conditions are particularly at risk.



Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
	<p>Vulnerable groups, specifically younger and older age population, and those with pre-existing health conditions</p>	<p>during construction, the preliminary effect is likely to be not significant.</p>	<p>However, with the implementation of embedded mitigation measures in the OCEMP, the potential change due to the Project is likely to be well within the statutory standard.</p> <p>The preliminary residual adverse impacts are therefore anticipated to be low. With a medium sensitivity, Health and Wellbeing effects associated with air pollution on the nearby residents and vulnerable groups are anticipated to be temporary, minor adverse (not significant).</p>
<p>General population, specifically residents within 200m of Non-Road Mobile Machinery (NRMM) locations</p>	<p>Chapter 14: Air Quality, Section 14.8 identified the potential emission from Non Road Mobile Machinery (NRMM) and plant emission during construction phase is unlikely to be significant.</p>		
<p>Vulnerable groups, specifically younger and older age population, and those with pre-</p>	<p>The effects of NRMM emissions will be re-assessed at the ES stage once detailed information is available.</p>		

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
	existing health conditions		
	General population, specifically residents within 200m of the construction traffic route  Vulnerable groups, specifically younger and older age population, and those with pre-existing health conditions	As stated in Chapter 14: Air Quality, Section 14.8 the potential air quality impact from construction vehicle emissions will be identified in the ES stage following detailed modelling.	Assessment to be undertaken in the ES stage once detailed air quality modelling is available.
Changes in local economy and access to	General population	As stated in Chapter 19: Socio-economics, Recreation and Tourism, Table 19.9 the Project is anticipated to generate approximately 250 Full	Work and training are key social determinants of health, with a strong correlation between employment and both physical and mental wellbeing.

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
recreation and tourism assets		<p>Time Equivalent (FTE) gross direct employees during the two-year construction period.</p> <p>The direct construction employment generated by the Project is likely to have a potential temporary beneficial effect (not significant) on the Powy and Shrophire economy.</p> <p>A detailed assessment will be undertaken and presented in the ES when detail designs are available.</p>	<p>The Project presents an opportunity for temporary job creation in a limited scale. The potential change due to the Project is likely to have a very limited change in the health and wellbeing baseline.</p> <p>Consequently, the preliminary residual beneficial impacts are anticipated to be negligible. With a medium sensitivity, Health and Wellbeing effects associated with employment on the general population and vulnerable groups are anticipated to be temporary negligible (not significant).</p>
	<p>General population</p> <p>Vulnerable groups, specifically low-income populations</p>	<p>The Project is anticipated to significantly affect Llanymynech Horse Trials (part of Radfords Equestrians), Shropshire Sculpture Park, 103 PRowS in Powys and 21 PRowS in Shropshire, due to potential temporary land take, access disruption, and visual amenity, noise and air quality impacts arising from the construction vehicles and construction activities.</p>	<p>Recreational facilities and PRow are crucial for physical and mental well-being, offering opportunities for health-promoting activities, physical exercise, and social interaction.</p> <p>While temporary significant adverse effects on two businesses have been identified, these effects are expected to be</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
		<p>However, these significant effects could be reduced should appropriate mitigation be in place.</p> <p>For the remaining identified community facility, businesses, recreation and tourism assets detailed in Chapter 19: Socio-economics, Recreation and Tourism, Table 19.19 and Table 19.20, given that best practice, OCEMP and OCTMP will be applied, there are no anticipated significant adverse effects during construction.</p>	<p>short-term. It is acknowledged that there is the potential for well-being impacts, due to the potential temporary adverse effects on some businesses during construction. An OCEMP and OCTMP will be developed to manage potential temporary impacts arising from the construction of the Project, where the change due to the Project might marginally affect the ability to narrow health inequalities.</p> <p>Considering these factors, the preliminary residual adverse impacts are anticipated to be low. With a medium sensitivity, Health and Wellbeing effects associated with physical activity on the general population and vulnerable groups are anticipated to be temporary, minor adverse (not significant).</p>
Mental health – health-related environmental	General population	Various PEIR chapters identified both potential significant and not significant impacts/effects arising from environmental change which could	The physical environment in which people live their day-to-day lives is influenced by

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
change to neighbourhoods	Vulnerable groups, specifically those with pre-existing mental health condition	affect mental health during construction. Such as, changes in visual amenity to residents; fear and intimidation on road due to additional HGVs; noise pollution and vibration from construction works; contaminations; air pollution; job creation; and changes in access to business.	<p>visual amenity, air quality, traffic (including HGV movements) and noise.</p> <p>The environmental changes arising from the Project may lead to changes in mental health arising from an alteration of people's levels of satisfaction and potential engagement with their living environment due to changes in access within, and amenity and character of neighbourhoods.</p> <p>While mental health impacts can be subjective and influenced by a wide range of factors and contexts, and therefore a level of mental health impact is difficult to establish, the potential for temporary changes in mental health is likely.</p> <p>The potential environmental changes from the Project will be short-term in nature. The construction will likely occur in phases where a small minority of</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
			<p>population is likely to be affected at each phase.</p> <p>A comprehensive community liaison arrangement and strategy detailed in the OCEMP will be applied via the implementation of a construction communication plan to inform public perceptions and improve community understanding of the Project and address any concerns. This approach could provide the community with a sense of control over their living environments despite the changes.</p> <p>Hence, the Project might have a marginal effect on the ability to narrow health inequalities and is likely to have a slight change in the health and wellbeing baseline.</p> <p>Overall, the preliminary residual impacts are anticipated to be low adverse. With a medium sensitivity, Health and Wellbeing</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
			<p>effects associated with mental health on the general population and vulnerable groups are anticipated to be temporary, minor adverse (not significant).</p>
<p>Mental health – participation in consultation and the consenting process</p>	<p>General population  Vulnerable groups, specifically those with pre-existing mental health conditions</p>	<p>There are a number of consultation events and engagement activities associated with the Project, leading up to and during the construction phase.</p>	<p>The extent to which a population are involved and engaged in activities beyond their immediate household is a protective factor for mental health. However, it is acknowledged that a proportion of the local population may experience neutral or even negative effects from participating in the consenting process.</p> <p>Hence, there be a marginal effect on the ability to deliver current health policies and the ability to narrow health inequalities. The potential change due to the Project is likely to have a slight change in the health and wellbeing baseline.</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
			<p>Considering these factors, the preliminary residual impacts are anticipated to be low. With a medium sensitivity, Health and Wellbeing effects associated with mental health on the general population and vulnerable groups are anticipated to be temporary, minor adverse and minor beneficial (not significant).</p>



## Operation

16.7.3 Potential Health and Wellbeing preliminary effects from the operation of the Project are detailed in Table 16.17.

Table 16-17 – Operation Phase – Preliminary Assessment of Potential Effects

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
Mental health – perceived risk from EMFs	General population  Vulnerable groups, specifically those with pre-existing mental health conditions	Whilst the Proposed Developments will comply with EMF exposure limits and therefore avoid physical health impacts, there remains a perception of risk associated with EMF, which has the potential to impact mental health.	<p>The perception of risk associated with EMFs has the potential to impact mental health.</p> <p>An EMF compliance report will be produced as part of the DCO application. It will be publicly available to provide the necessary information to inform understanding and risk perception.</p> <p>Hence, the potential changes from the Project might have a marginal effect on the ability to deliver current health policies and the ability to narrow health inequalities. The potential change due to the Project is likely to have a slight change in the health and wellbeing baseline.</p> <p>Considering these factors, the preliminary residual impact is anticipated to be low adverse. With a medium sensitivity, Health and Wellbeing effects associated with mental health</p>

Topic	Resource / Receptor	Nature of Effects / Impact Summary	Description of Potential Effect / Change
			on the general population and vulnerable groups are anticipated to be minor adverse (not significant).

## 16.8 Preliminary Mitigation and Enhancement Measures

- 16.8.1 This section outlines the preliminary avoidance, mitigation and compensation measures which are likely to be required to address the potential impacts assessed in Section 16.7.
- 16.8.2 Essential mitigation measures and enhancement measures associated with health-related environmental change are detailed in Chapter 6: Landscape and Visual Amenity; Chapter 10: Traffic and Transport; Chapter 11: Noise and Vibration; Chapter 12: Water Resources; Chapter 13: Ground Conditions, Geology and Hydrogeology; Chapter 14: Air Quality; and Chapter 19: Socio-economics, Recreation and Tourism.
- 16.8.3 In relation to the mental health impact identified, a comprehensive community liaison arrangement and strategy detailed in the OCEMP will be applied to address the potential concerns and provide certainty on Project information to inform public perceptions of risk and understanding of the Project.
- 16.8.4 An EMF compliance report will be provided to set out the evidence for the levels of EMF that would arise from the Project being kept to a level that would not lead to health impacts (note that the compliance report will sit outside the EIA process).

## 16.9 Next Steps

- 16.9.1 The Health and Wellbeing ES assessment will be further developed based on the statutory consultation and/or stakeholder engagement, where relevant, to be undertaken between the PEIR and ES stage. The ES will incorporate and draw on the results of survey data captured following PEIR as well as assessment findings from other chapters considered relevant to the Health and Wellbeing assessment.

### Consultation

- 16.9.2 Statutory consultation will be undertaken to gather comments from stakeholders.
- 16.9.3 Consultation with Powys County Council and Shropshire Council, OHID, UK Health security Agency, Public Health Wales and access officers from Powys

County Council and Shropshire Council will be undertaken prior to the submission of the ES aiming to reach an agreement on the scope and methodology of the Health and Wellbeing assessment.

## Surveys

- 16.9.4 There is no survey required to be undertaken for Health and Wellbeing for ES stage.

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## 17 Major Accidents and Disasters

### 17.1 Introduction

17.1.1 This Chapter reports the preliminary assessment of the vulnerability of the Project to the risk of Major Accidents and Disasters (MA&D) during the construction and operation phases.

### 17.2 Legislation and Guidance

17.2.1 Compliance with all legal requirements will be adhered to, such as (but not limited to):

- Health and Safety at Work etc. Act 1974 (Ref. 17.1).
- The Construction (Design and Management) Regulations 2015 (Ref. 17.2).

17.2.2 Best practice guidance will be identified within the ES to ensure that the level of risk to the environment is as low as reasonably practicable, and that implementation of good practice mitigation measures will be secured via the draft DCO.

17.2.3 The EIA Regulations state in Schedule 4, Paragraph 8 (Ref. 17.3) that the EIA should include, where relevant ‘the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development.’

17.2.4 The Institute of Environmental Management and Assessment’s (IEMA) ‘Major accidents and disasters in EIA: A primer’ guidance (Ref. 17.4) offers a proportionate method for considering major accidents and/or disasters through screening, scoping and assessment. It provides a ‘Hazard Identification Record Template’ which can aid in the assessment process. Furthermore, the guidance aims to increase awareness of MA&D within Environmental Impact Assessment (EIA) and its application. The methodology outlined offers a transparent platform to communicate to stakeholders how development vulnerabilities to major accidents and/or disasters have been reduced to an acceptable level. The IEMA primer provides the following key definitions:

- Major Accident – “events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed



representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events”.

- Disaster – “may be a natural hazard (e.g. earthquake) or man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident”.

## 17.3 The Scoping Report

17.3.1 The potential MA&D that could arise due to the Project were appraised using the EIA IEMA Primer outlined within Chapter 6: Our Approach to Topics Not to be Included in the EIA in the Scoping Report submitted to the Planning Inspectorate on 23 January 2024 (Ref. 17.5), including:

- Physical accidents during the construction of the Project e.g. crane topple.
- Electrical accidents associated with the commissioning of the infrastructure.
- Fire/explosion during the construction phase.
- Security threats.
- External hazards.
- External interference.
- Adverse weather.

17.3.2 It was concluded in the Scoping Report that the risks to the environment can be mitigated through good working and construction practices to a level that is as low as reasonably practicable (ALARP). The Scoping Report also concluded that the Project would be designed to withstand the extremes of the UK climate (including climate change predictions) and therefore external impacts upon the Overhead Line (OHL) infrastructure are not considered likely to be significant.

## 17.4 The Scoping Opinion

17.4.1 The Planning Inspectorate did not consider that sufficient evidence had been provided at the time to justify the scoping out of an assessment of MA&D. The Planning Inspectorate requested this to be scoped into the EIA, stating in the Scoping Opinion received by the Applicant on 4 March 2024 (Ref. 17.6) that *‘The ES should assess risks of and risks from major accidents and disasters during construction and operation where significant effects are likely to occur. The Inspectorate considers that this assessment should include the potential for the Proposed Development to be vulnerable to or cause major accidents and*

*crossings of watercourses and transport infrastructure, as well as any risks to low flying aircraft.'*

## 17.5 Initial MA&D Assessment

17.5.1 In line with the information provided in the Scoping Report, the potential MA&D which could occur as a result of the Project, or arise from the surrounding environment and affect the Project include the following:

- **Physical Accident:** The construction of the Project carries the risk of an accident occurring and leading to a low number of worker fatalities (e.g., due to crane topple). The hazards associated with construction projects, are known and well understood. Established processes exist for managing projects in compliance with The Construction (Design and Management) Regulations 2015 (Ref. 17.2) and industry good practice. All aspects would be risk assessed, and the ability to safely undertake works is a material consideration in the ongoing design process. There is potential for the above ground structures (e.g. towers and OHL) to collapse during the operation and maintenance phase albeit a very small risk as appropriate Health and Safety would be adhered to on site.
- **Electrical Accident:** There may be electrical hazards associated with the commissioning of the infrastructure, and particular consideration would be given to tie-ins to the existing electrical grid. The Project is being designed to allow this to be done in a safe manner utilising appropriate standards and industry good practices.
- **Fire / Explosion:** There is the potential for a fire involving diesel fuel or combustible materials during construction. These would be prevented by selecting fuel tanks of a robust design, siting them appropriately within secured compounds and providing suitable containment and ignition control. A potential major accident identified during the operation and maintenance phase is a fire or explosion which could occur at one of the substations. Fires and explosions are primarily protected by good design of the electrical systems and fuel storage. Workers would be experienced and competent operators, who understand the risks associated with electrical and vehicle refuelling systems.
- **Security Threat:** There is the potential for hostile acts against the Project and the associated workforce, which could occur at any stage of the lifecycle of the Project. The Applicant takes safety and security very seriously and works closely with the police and security services when designing equipment and

the security measures needed to protect them. There is no history of terrorist threat to pylons and OHLs in the UK. Even so, damage to OHLs, towers and substations, however caused, can be repaired more quickly than damage to underground cables and direct current converter stations. This makes OHLs more resilient and flexible than buried assets

- **External Hazards:** External hazards are events, such as fires, explosions or releases of hazardous substances which could take place in nearby sites and cause serious harm to the Project. There are no sites falling under The Control of Major Accident Hazards (COMAH) Regulations 2015 (Ref. 17.7) within the Project's draft Order Limits. There are however, a number of buried gas pipelines, existing OHLs and buried electricity cables within the Project's draft Order Limits. For any works in close proximity to gas pipelines, the appropriate safe methods of work would be agreed with the pipeline operator and suitable risk assessment undertaken. The Health and Safety Executive would also be consulted on any developments within the consultation distance of major hazard sites and/or major accident hazard pipelines.
- **External Interference:** There is a risk that a third party might disturb and damage the infrastructure in error, which may lead to serious harm to third parties such as electrocution. The infrastructure would have appropriate signage and perimeter fencing around the Grug y Mynydd Collector Substation, Cors y Carreg Cable Sealing End Compound, the two main construction compounds and the Switching Station near Lower Frankton to warn of the presence of high voltage electricity. There is the potential for third party transport to impact on the Project. In all cases when planning to build a new OHL, consultation is undertaken with the Civil Aviation Authority, National Air Traffic Service and the Ministry of Defence.
- **Adverse Weather:** The risk of adverse weather conditions affecting the construction of the Project is limited. The design of any temporary works would be designed to account for ground and groundwater conditions. There would be procedures developed for working in areas liable to flooding, and for cessation of activities in extreme adverse conditions. When locating infrastructure, consideration is given to the topography of the land, including likely flood zones and rivers. The design of the Project would account for all foreseeable weather conditions and potential disasters (e.g., OHLs are designed to withstand extreme weather conditions, such as high winds and ice formation on the wires).

17.5.2 The Applicant would apply a comprehensive risk management framework to reduce risks to as low as reasonably practicable and ensure that there are no

significant effects throughout the Project lifecycle. Therefore, the likelihood of these potential MA&D events is considered so low that the risks are unlikely to be significant.

## 17.6 Next Steps

- 17.6.1 The Environmental Statement (ES) will take into account the comments made by the Planning Inspectorate within the Scoping Opinion and provide an assessment of potential effects from MA&D during the construction and operation phases of the Project.
- 17.6.2 Where potential MA&D risks are identified in other EIA chapters, they will be summarised in the MA&D chapter and cross-references provided. For example, any flood risk concerns will be considered within Chapter 12: Water Resources and addressed as part of the Flood Risk Assessment submitted with the ES before being summarised in the MA&D chapter.

## 17.7 References

- Ref. 17.1 Health and Safety Executive (1974). Health and Safety at Work etc. Act 1974. Available at: <https://www.hse.gov.uk/legislation/hswa.htm> [Accessed 14/01/2025].
- Ref. 17.2 Health and Safety Executive (2015). The Construction (Design and Management) Regulations 2015. Available at: <https://www.hse.gov.uk/construction/cdm/2015/index.htm> [Accessed 24/07/2024].
- Ref. 17.3 Ministry of Housing, Communities, and Local Government (MHCLG) (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations. Available at: <https://www.legislation.gov.uk/ukxi/2017/572/contents> [Accessed 24/07/2024].
- Ref. 17.4 Institution of Environmental Management and Assessment (2020) Major Accidents and Disasters in EIA: A Primer. Available at: <https://www.iema.net/resources/blog/2020/09/23/iema-major-accidents-and-disasters-in-eia-primer> (Accessed 24/09/2024).
- Ref. 17.5 Green GEN Cymru (2024). Green GEN Vyrnwy Frankton Scoping Report. Available at: <https://infrastructure.planninginspectorate.gov.uk/projects/wales/green-gen-vyrnwy-frankton/?ipcsection=docs> [Accessed 29/07/2024].

- Ref. 17.6 Planning Inspectorate (2024). Green GEN Vyrnwy Frankton Scoping Opinion. Available at:  
<https://infrastructure.planninginspectorate.gov.uk/projects/wales/green-gen-vyrnwy-frankton/?ipcsection=docs> [Accessed 24/07/2024].
- Ref. 17.7 Health and Safety Executive (2015). Control Of Major Accident Hazards Regulations 2015 (COMAH). Available at:  
<https://www.hse.gov.uk/comah/background/comah15.htm> [Accessed 24/07/2024].

## 18 Greenhouse Gases

### 18.1 Introduction

- 18.1.1 This chapter presents the preliminary findings of the assessment of likely significant environmental effects from Greenhouse Gas (GHG) emissions arising from the Project during construction. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 18.1) require the consideration of climate change, including how the Project will impact on climate change through the release of GHG emissions.
- 18.1.2 GHG emissions are used as a measure of the Project's impact on climate. The increase in concentration of GHG emissions in the global atmosphere is causing a change in climatic conditions creating climate change impacts. Any GHG emissions arising as a result of the Project will therefore have an impact on climate change.
- 18.1.3 The Greenhouse Gases assessment will measure the effects on the climate of GHG emissions arising from the Project, including how the Project would affect the ability of the UK and Welsh governments to meet their carbon reduction targets and budgets.
- 18.1.4 The PEIR sets out the approach to defining significance of effect and contextualising the Project's emissions, with reference to relevant guidance. The calculation of GHG emissions will take account of emissions arising through land use change, direct and indirect emissions associated with the construction phase including embodied carbon emissions from materials required, and emissions arising throughout the operation of the Project. Emissions associated with the decommissioning of the Project are scoped out of the assessment.
- 18.1.5 The assessment considers if likely significant effects will arise from the Project in relation to climate change, assessing GHG emissions emitted as a result of the construction and operation. The assessment considers the identification, management and minimisation of GHG emissions of the Project. A description of the Project is available in Chapter 2: Project Description.
- 18.1.6 It should be noted that the need for the Project is to support the connection and transfer of energy from Mid Wales into the National Electricity Transmission System network. The Project would support the UK's net zero target to achieve

net zero emissions by 2050 through the connection in mid-Wales of new low carbon energy generation, and by reinforcing the transmission network. Implementing the Project would likely allow greater integration of renewables which supports grid decarbonisation and results in the reduction of GHG emissions.

- 18.1.7 Aspects of this chapter overlap with other chapters of the PEIR, including:
- Chapter 7: Ecology.
  - Chapter 10: Traffic and Transport.
  - Chapter 12: Water Resources.
  - Chapter 14: Air Quality.
- 18.1.8 Chapter 12: Water Resources details how the Project will address future flood risk, a future consequence of climate change. As such a Climate Change Resilience assessment has not been completed separately.
- 18.1.9 Construction emissions include the transport of materials to and from the Project's draft Order Limits, as well as traffic movements relating to installation. This will impact traffic and transport in the study area during the construction phase, which is expected to take place from 2027 until 2029. Increased vehicle movements will also impact Air Quality.

## 18.2 Legislation, Policy and Guidance

### Legislation

#### Planning Act 2008 (18.2)

- 18.2.1 The Planning Act created a new development consent regime for major infrastructure projects, including energy infrastructure. The Act determines the threshold for which certain types of infrastructure are considered to be nationally significant.
- 18.2.2 National Policy Statements (NPS) that are designated under section 5 of the Planning Act set out the national policy in relation to each infrastructure field. Sections of the NPSs relevant to Greenhouse Gases are set out in the Policy section.

## **Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (18.1)**

- 18.2.3 The Infrastructure Planning (Environmental Impact Assessment) (EIA) Regulations 2017 sets out the process for conducting EIA and aim to promote sustainable development by integrating environmental considerations into the planning process for major infrastructure projects.
- 18.2.4 Schedule 4, Section 5 sets out the requirement to include a description of the factors that are likely to be significantly affected by the development, including climate.

### **Paris Agreement (2015) (Ref 18.3)**

- 18.2.5 Adopted in 2015 and enforced in November 2016, the Paris Agreement is a global climate accord designed to restrict the rise in global temperatures to well below 2° Celsius (C), and to pursue efforts to limit to 1.5°C above pre-industrial levels. This international treaty aims to meet the climate targets first introduced in the 1997 Kyoto Protocol (Ref 18.4). Its overarching objectives include enhancing adaptability to the impacts of climate change and bolstering climate resilience for communities, livelihoods, and ecosystems. There is a requirement to ensure parties reach global peak of GHG emissions as soon as possible by employing means that allow pathways toward low greenhouse gas emissions and Climate-resilient development.

### **Climate Change Act 2008<sup>2</sup> (Ref 18.5)**

- 18.2.6 The Climate Change Act 2008, including The Climate Change Act 2008 (2050 Target Amendment) Order 2019 (Ref 18.6), establishes a framework for the UK to achieve its long-term objective of reducing GHG emissions by 100% from a 1990 baseline by 2050. The Act requires the Government to establish 5-year carbon budgets, as well as establishing an independent expert body, the Committee on Climate Change, to advise the Government on the level of those emissions targets and report on progress made to reduce emissions. The goal of

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<sup>2</sup> The 2050 target set out in this legislation was amended in 2019 by The Climate Change Act 2008 (2050 Target Amendment) Order 2019.



net zero by 2050 is to be achieved through the large goal of decarbonisation of UK's industry, which this Project will facilitate.

#### **The Carbon Budgets Order 2009 (Ref 18.7)**

- 18.2.7 This legislation implements the carbon budgets set out in the Climate Change Act 2008. The budgets require the UK to continually reduce emissions in line with the carbon reduction commitments established under the Act. The fourth, fifth and sixth carbon budgets are derived from The Carbon Budgets Order 2011 (Ref 18.8), The Carbon Budgets Order 2016 (Ref 18.9) and the Carbon Budgets Order 2021 (Ref 18.10). The seventh carbon budget is expected to be set in 2025.

#### **Environment (Wales) Act 2016: Part 2 Climate Change (Ref 18.11)**

- 18.2.8 The Act promotes sustainable management of natural resources and provides targets for reducing emissions of greenhouse gases. The Act requires the Welsh Government to ensure that the net Welsh emissions for 2050 is at least 100% lower than the baseline, with interim targets of 63% reduction by 2030 and 89% reduction by 2040.
- 18.2.9 The Act sets a system of carbon budgets for 2016-2020 and each succeeding 5-year period up to 2046-2050. Welsh Ministers must prepare and publish a report for each budgetary period setting out their policies and proposals for meeting the carbon budget for that period.

#### **Climate Change (Carbon Budgets) (Wales) Regulations 2018 (Ref 18.12)**

- 18.2.10 The Regulations set the Carbon Budgets for the below reporting periods:
- 2016 – 2020: 23% lower than baseline.
  - 2021 – 2025: 37% lower than baseline.
  - 2026 – 2030: 58% lower than baseline.
  - 2040 target: 89% lower than baseline.
  - 2050 target: At least 100% reduction (net zero).

### **National Policy**

#### **National Policy Statements**

- 18.2.11 NPSs set out the primary policy tests against which the application for the Project would be considered. The two relevant NPSs are Overarching NPS for energy (EN-1) (Ref 18.13) and NPS for electricity networks infrastructure (EN-5) (Ref 18.14).

## Overarching National Policy Statement for Energy (EN-1)

- 18.2.12 The Overarching NPS for energy (EN-1) (Ref 18.13) sets out general assessment principles for applications relating to energy infrastructure. The Secretary of State should consider the potential benefits of a project including meeting needs for energy infrastructure, job creation and long term or wider benefits. The objective of the energy system is to ensure the supply of energy remains secure, reliable, affordable and consistent with net zero GHG emissions by 2050.
- 18.2.13 Section 5.3.4 of EN-1 states that “All proposals for energy infrastructure projects should include a GHG assessment as part of their ES. This should include:
- *A whole life GHG assessment showing construction, operational and decommissioning GHG impacts, including impacts from change of land use.*
  - *An explanation of the steps that have been taken to drive down the climate change impacts at each of those stages.*
  - *Measurement of embodied GHG impact from the construction stage.*
  - *How reduction in energy demand and consumption during operation has been prioritised in comparison with other measures.*
  - *How operational emissions have been reduced as much as possible through the application of best available techniques for that type of technology.*
  - *Calculation of operational energy consumption and associated carbon emissions.*
  - *Whether and how any residual GHG emissions will be (voluntarily) offset or removed using a recognised framework.*
  - *Where there are residual emissions, the level of emissions and the impact of those on national and international efforts to limit climate change, both alone and where relevant in combination with other developments at a regional or national level, or sector level, if sectoral targets are developed.*

## National Policy Statement for Electricity Networks Infrastructure (EN-5)

- 18.2.14 The NPS for Electricity Networks Infrastructure (EN-5) (Ref 18.14) sets out the additional policy for energy infrastructures, including factors influencing site selection and design.
- 18.2.15 Paragraph 1.1.5 states that the “government has concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure”.

18.2.16 Section 2.9.59 to 2.9.64 discusses the impact of Sulphur Hexafluoride (SF<sub>6</sub>), which is a potent GHG. “Applicants should at the design phase of the process consider carefully whether the proposed development could be reconceived to avoid the use of SF<sub>6</sub>-reliant assets”.

18.2.17 Where SF<sub>6</sub>-reliant assets are proposed, Applicants “should design a plan for the monitoring and control of fugitive SF<sub>6</sub> emissions consistent with the Fluorinated gas (F-gas) Regulation and its successors.”

#### **Net Zero Wales Carbon Budget 2 (2021-2025) (Ref 18.15)**

18.2.18 The Plan provides a framework for achieving the second carbon budget for Wales (2021-2025), with a focus on accelerating decarbonisation efforts across sectors.

18.2.19 The policies include an objective to install 1GW of additional renewable energy capacity by 2025 and to increase the delivery of onshore renewable energy developments through the planning system provided by Future Wales.

18.2.20 The plan sets the vision for a decarbonised energy system which provides economic and social benefits for Wales. It publishes the aim to eliminate GHG emissions from power stations by 2035. Much of the change will be driven by greater electrification of heat and transportation and the flexible use of generating technologies, energy demand, storage and low carbon fuels. Meeting demand with a more localised, flexible and smart low carbon renewables-based system will be vital to meeting future emissions reduction targets.

18.2.21 At 7.3 MtCO<sub>2e</sub>, electricity and heat generation accounted for 19% of Welsh emissions in 2019 making it the second largest emitting sector.

#### **Planning Policy Wales (12<sup>th</sup> Edition) (2024) (18.16)**

18.2.22 The planning policy promotes sustainable development by providing a framework for land use planning in Wales, emphasising climate change mitigation and adaptation. The Planning Policy encourages all developments to contribute to reducing GHG emissions, supporting renewable energy, and increasing energy efficiency.

18.2.23 **Section 5.7.8:** An effective electricity grid network is required to fulfil the Welsh Government’s renewable and low carbon ambitions. An integrated approach should be adopted towards planning for energy developments and additional electricity grid network infrastructure. In certain circumstances, additional electricity grid network infrastructure will be needed to support the Pre-Assessed

Areas in Future Wales, but also new energy generating developments more generally.

- 18.2.24 **Section 5.7.9:** The Welsh Government's preferred position on new power lines is that, where possible, they should be laid underground. However, it is recognised that a balanced view must be taken against costs which could render otherwise acceptable projects unviable. Where undergrounding of lines is not possible or applicable, proactive engagement with energy companies and the public to mitigate the visual impact of any potential new transmission lines should take place.
- 18.2.25 **Section 5.7.10:** Planning authorities should plan positively for grid infrastructure. Development plans should facilitate the grid infrastructure required to support the renewable and low carbon energy potential for the area, particularly areas identified for such development. Planning authorities should support appropriate grid developments, whether or not the developments to be connected are located within their authority.

#### **The Future Wales: The National Plan 2040 (18.17)**

- 18.2.26 The Plan outlines the strategic direction for development and land use planning in Wales up to 2040, with a focus on sustainability and decarbonisation.
- 18.2.27 **Policy 17: Renewable and Low Carbon Energy and Associated Infrastructure:** The Welsh Government strongly supports the principle of developing renewable and low carbon energy from all technologies and at all scales to meet our future energy needs. The Welsh Government will work with stakeholders, including National Grid and Distribution Network Operators, to transition to a multi-vector grid network and reduce the barriers to the implementation of new grid infrastructure.

#### **Local Policy**

- 18.2.28 The Project is approximately 50km in length, crossing land within the jurisdiction of Powys County Council and Shropshire Council. Both local authorities are considered here.

#### **Powys County Council (2011) Powys Local Development Plan 2011-2026 (18.18)**

- 18.2.29 Adopted by Powys County Council on the 17th of April 2018, the Plan is applicable to all of Powys except the area of the Brecon Beacons National Park.

- 18.2.30 **Sustainable energy and resources:** All development must be located and designed to contribute to the achievement of sustainable development and climate change mitigation by demonstrating sustainable and efficient use of resources. This can be achieved by incorporating:
- Energy conservation and efficiency.
  - The supply of electricity and or heat from renewable and low carbon sources e.g. Building mounted Solar PV or water heating panels, Heat Pumps, Biomass (wood, pellet, etc.) or other appropriate renewable, low or zero carbon technologies.
  - Water conservation and efficiency, which may include use of grey water plumbing systems and sustainable drainage schemes (SuDS).
  - Waste reduction through re-use and recycling e.g. materials recovered from the site should be re-used.

18.2.31 **Objective 5:** To support the conservation of energy and water and to generate energy from appropriately located renewable resources where acceptable in terms of the economic, social, environmental and cumulative impacts.

18.2.32 **Objective 5, ii:** Deliver the county’s contribution to the national targets for renewable energy generation.

**Shropshire Council (2011) Shropshire Local Development Framework: Adopted Core Strategy (Ref 18.19)**

18.2.33 The core strategy sets out the Council’s vision, strategic objectives and the broad spatial strategy to guide future development and growth in Shropshire during the period to 2026.

18.2.34 **CS6; Sustainable Design and Development Principles:** Requiring all development proposals, including changes to existing buildings, to achieve applicable national standards, or for water use, evidence based local standards as reflected in the minimum criteria set out in the sustainability checklist. This will ensure that sustainable design and construction principles are incorporated within new development, and that resource and energy efficiency and renewable energy generation are adequately addressed and improved where possible.

18.2.35 **CS8; Facilities, Services and Infrastructure Provision:** Positively encouraging infrastructure, where this has no significant adverse impact on recognised environmental assets, that mitigates and adapts to climate change, including decentralised, low carbon and renewable energy generation, and working closely

with network providers to ensure provision of necessary energy generation networks.

### **Guidance**

#### **PAS2080: 2023 Publicly Available Standard 2080 Carbon Management in Buildings and Infrastructure (Ref 18.20)**

- 18.2.36 PAS 2080 is a globally applicable standard for managing carbon in buildings and infrastructure. It looks at the whole value chain and aims to reduce carbon and cost through intelligent design, construction and use.

#### **IEMA Greenhouse Gas Guidance (2022) - the IEMA Guide for 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (Ref 18.21)**

- 18.2.37 Republished in 2022 to assist with GHG emissions assessments, mitigation and reporting in statutory and non-statutory EIA. This guidance has informed the methodology of this assessment. This provides guidance on assessment and mitigation of GHG emissions within an EIA context and is the primary source of guidance for assessing GHG emissions. It includes a focus on proportionate and robust assessment.

#### **Energy Generation in Wales (2022) (Ref 18.22)**

- 18.2.38 The Report outlines commitments to new renewable energy targets for Wales. Aiming to generate renewable energy which fully meets energy needs by 2035. The Welsh Government has a target for Wales to meet the equivalent of 70% of its annual electricity consumption from Welsh renewable electricity generation by 2030, and 100% by 2035. In 2022, this figure stood at an estimated 59%, up from 55% in 2021.

## **18.3 Consultation and Engagement**

- 18.3.1 The scope of the assessment has been informed by the Scoping Opinion provided by the Planning Inspectorate on behalf of the Secretary of State, following the submission of the EIA Scoping Report.
- 18.3.2 Engagement will be undertaken with the relevant local authorities, Powys County Council and Shropshire Council, to agree the assessment methodology and approach to significance throughout the EIA process.

- 18.3.3 The comments included in the EIA Scoping Opinion in relation to Greenhouse Gases and subsequent responses to this EIA Scoping Opinion are outlined below in Table 18-1.

Table 18-1 – Scoping Opinion from the Planning Inspectorate

ID	Matter	Inspectorate's Comment	Project Response
3.1.2	Greenhouse gas (GHG) emissions – construction and operation	<p>The Inspectorate does not consider that sufficient information has been provided to justify the scoping out of GHG emissions. The ES should provide an assessment of impacts from GHG emissions during construction (and operation, where relevant) where significant effects are likely to occur. The ES should clearly set out the approach to defining significance of effect and contextualising the Proposed Development emissions, with reference to relevant guidance. The calculation of GHG emissions should take account of emissions across the full project lifecycle including, where relevant, any emissions arising through land use change, and direct and indirect emissions associated with the construction phase including embodied carbon emissions from materials required. The Scoping Report highlights the presence of peatland within the Scoping Corridor. The GHG emissions assessment should consider the loss of peat. The Applicant's attention is drawn to the Inspectorate's comments in Table 2.2 above regarding SF6 in relation to the GHG assessment.</p>	<p>The assessment of impacts of Greenhouse Gases arising from the Project has been scoped into the preliminary assessment and will be included within the ES.</p> <p>The scope of the GHG emissions assessment includes the construction phase, the impact of land use change, including the disturbance of peatland and operational emissions.</p> <p>Operational emissions are considered in terms of maintenance, refurbishment and replacement over the lifespan of the Project, as well as the use of SF6 in switch gear equipment.</p> <p>Decommissioning is scoped out, due to the lifespan of the Project. There are currently no specific plans to decommission the Project, and it is expected that the transmission of electricity would continue for as long as there is a business case.</p>



ID	Matter	Inspectorate's Comment	Project Response
3.1.3	Climate impacts relevant to adaption – construction and operation	<p>The Scoping Report states that the Proposed Development will be designed to withstand the extremes of the UK climate (including climate change predictions). The Scoping Report proposes that climate impacts relevant to adaption will be considered within relevant environmental topic chapters in the ES, where applicable (eg the vulnerability of the Proposed Development to climate change in terms of flood risk will be considered in the Water Resources ES Chapter and in the Flood Risk Assessment (FRA)). The Inspectorate is content with the proposed approach and agrees that no further assessment of climate impacts relevant to adaptation is required in the ES.</p>	<p>Climate impacts relevant to adaption and climate change resilience have been scoped out, except where it is dealt with in specific topic chapters.</p> <p>Chapter 12: Water Resources details the future baseline for flood risk and drainage, drawing on predicted effects of climate change on rainfall intensities and peak river flows. These future conditions will be considered to factor in climate change resilience into the Project design.</p> <p>In relation to extreme heat and weather-related hazards, as set out in the Major Accidents and Disasters report, it is concluded in the Scoping Report that the Project would be designed to withstand the extremes of the UK climate (including climate change predictions) and therefore external impacts upon the Overhead Line (OHL) infrastructure are not considered likely to be significant.</p> <p>This is considered sufficient to meet Paragraph 2.3.3 of EN-5.</p> <p>An in-combination climate change impact (“ICCI”) assessment, conducted as part of the climate impacts assessment, has also been scoped out.</p>

18.3.4 Additional comments from other organisations and Project responses are outlined below in Table 18-2.

*Table 18-2 – Comments from Relevant Organisations and the Project Response*

Organisation	Comment	Response
Kinnerley Parish Council	<p>As the scoping request is essentially for the OHL only then the EIA should include its effects on climate change and greenhouse gas emissions.</p> <p>Furthermore, if the EIA is truly to assess the full environmental effects of the proposal, then its scope should not be limited just to the study area. It should also include the environmental effects, both nationally and internationally, of producing all materials to be used in the project.</p>	<p>The assessment of GHG emissions has been scoped into the PEIR and ES and will be assessed as part of the EIA. The GHG assessment will include a whole life carbon assessment, including the impact of material sources, as stated within the Study Area.</p>

## 18.4 Assessment Methodology and Significance Criteria

18.4.1 This methodology should be read in conjunction with Chapter 5: Environmental Assessment Methodology, which sets out relevant information on the design parameters for the PEIR.

### Study Area

18.4.2 The GHG assessment is not restricted by geographical boundaries, instead it includes any increase or decrease in emissions as a result of the Project. However, the study area can be defined by the following:

- Direct emissions arising from the construction and operation within the Project’s draft Order Limits.
- Indirect emissions arising from transport of materials to site, transport and management of waste off-site which can occur regionally or nationally, for

both construction and during operation for maintenance, repair and replacement.

- 18.4.3 For the purposes of the assessment, as referenced in Chapter 1: Introduction, the Project is approximately 50km in length, crossing land within the jurisdiction of Powys County Council and Shropshire Council.

### **Baseline Data Collection**

- 18.4.4 The current baseline has been established through a desk study of the current emissions emitted from the local region of Powys and Shropshire, the West Midlands and East Wales for the most recent year of available data, which is 2022 (Ref 18.23). The Department for Business, Energy & Industrial Strategy publishes annual emissions arising within a district, county and the UK as a whole. The baseline emissions are therefore considered to be the local region within which the Project will occur.
- 18.4.5 The UK carbon budgets are effectively a future baseline of national GHG emissions necessary to achieve net zero. The Climate Change Act 2008 (Ref 18.5) sets a 100% carbon reduction target (net zero) by 2050. It is the duty of the Secretary of State to set for each succeeding period of five years (beginning with the period 2008 – 2012) an amount for the net UK carbon account (the ‘carbon budget’) and to ensure the net quantity of emissions does not exceed the carbon budget. For this reason, it is reasonable to use these targets as an indicator of likely future baseline GHG emissions. The future baseline scenario, without the Project occurring, considers the UK Carbon Budgets (Ref 18.7) and Welsh carbon budgets (Ref 18.12).

### **Desk Study**

- 18.4.6 Baseline conditions of the study area were established during a desk study using the following sources:
- UK local authority and regional greenhouse gas emissions statistics: 2005-2022 (Ref 18.23).
  - UK Carbon Budgets (Ref 18.7).
  - Welsh carbon budgets (Ref 18.12).

### **Site Visits and Surveys**

- 18.4.7 No site visits or surveys have been undertaken for the assessment of Greenhouse Gases.

## Environmental Impact Assessment Methodology

- 18.4.8 The assessment methodology is based on application of IEMA's EIA Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance ('IEMA guidance') (Ref 18.21).
- 18.4.9 The approach to quantifying the GHG emissions associated with the Project will consider the whole infrastructure life cycle of the Project. The infrastructure life cycle phases as described within the PAS 2080: Carbon Management in Infrastructure will be used. The assessment considers the construction and operation phases of the Project. Decommissioning is scoped out, due to the lifespan of the Project.

Table 18-3 – Lifecycles In Scope of the Greenhouse Gases Chapter

Project Phase	Project Life Cycle	Scope of Assessment
Construction	A0 Pre-construction	<p>Scoped out</p> <p>GHG emissions related to office-based activities as part of the pre-construction stage are not expected as part of the Project.</p>
	A1-A3 Product	<p>Scoped in</p> <p>GHG emissions associated with the materials used to construct the Project elements.</p>
	A4 Construction Transport	<p>Scoped in</p> <p>Transport of construction materials resources and equipment from point of purchase to the work sites.</p>
	A5 Construction Process	<p>Scoped in</p> <p>Emissions associated with construction and installation processes of the temporary works, ground works, landscaping and permanent works.</p> <p>Emissions associated with site water demand.</p> <p>Emissions associated with land use change, including disruption of peatland.</p>
Operation	B1 Use Stage	<p>Scoped in</p> <p>Emissions associated with SF<sub>6</sub> will be considered.</p>

Project Phase	Project Life Cycle	Scope of Assessment
	B2-5 Maintenance, repair, replacement and refurbishment	<p>Part scoped in</p> <p>GHG emissions associated with the refurbishment of permanent structures of the Project have been considered within the GHG assessment.</p> <p>GHG emissions from traffic associated with operation and maintenance has been scoped out of the ES, due to the likely low number of trips required.</p>
	B6 Operational energy use	<p>Scoped out</p> <p>The Project transmits rather than uses energy. There would be some minimal energy uses, for example lighting used within control buildings at the substations. The GHG emissions associated with this has been scoped out on the basis that they are less than 1% of the total GHG emissions associated with this Project.</p>
	B7 Operational water use	<p>Scoped out</p> <p>Consumption of water is not expected during operation of the Project.</p>
Decommissioning	C1-C4 End of Life	<p>Scoped out</p> <p>There are currently no specific plans to decommission the Project, and it is expected that the transmission of electricity would continue for as long as there is a business case. Typically, conductors have a 40-year lifespan, and these are to be replaced as required.</p>

- 18.4.10 The assessment considers the mitigation measures embedded into the design, determining whether further mitigation is required to reduce residual emissions. The assessment then determines the level of effect on the climate that the residual emissions arising from the construction phase of the Project will have and whether this is significant in terms of local and national carbon budgets.

### **Construction**

- 18.4.11 The assessment for GHG emissions during the construction phase considers the GHG emissions emitted through the materials used to construct the Project, their transportation to site and construction activities associated with the Project.
- 18.4.12 In line with IEMA's guidance, the approach taken in this assessment is to quantify GHG emissions resulting from the construction phase of the Project and to evaluate these emissions in the context of baseline GHG emissions from the Project's draft Order Limits, local authority's (i.e. Powys County Council and Shropshire Council administrative area), as well as the future carbon budgets proposed for Wales and the UK.
- 18.4.13 The construction phase emissions have been quantified based on a preliminary design provided by the design team. The list of materials and waste produced during the construction phase have been provided as estimated quantities accurate at the stage of assessment. The material quantity or activity data is multiplied by a GHG emissions factor to provide the GHG emissions value.
- 18.4.14 OneClick LCA (Ref 18.24) software, an Industry Standard Whole Life Carbon tool, has been used to assess the whole life carbon emissions arising from the materials used, their transportation and waste. Where items were not accounted for in OneClick LCA, these were calculated using the UK Government Conversion Factors (Ref 18.25). OneClick LCA software uses Environmental Product Declarations (EPDs) to assign a carbon emission factor to materials.
- 18.4.15 RICS Whole Life Carbon Assessment Methodology (Ref 18.26) assumptions for transport distances and waste rates have been applied where necessary.

### **Operation**

- 18.4.16 Operational GHG emissions can arise from the leakage of SF<sub>6</sub> used in switchgear equipment. The total weight of SF<sub>6</sub> expected to be used will be assessed as information becomes available. National Grid report that: "Closed pressure systems such as those used for high voltage switchgear typically have design

leak rates in the range 0.1%-1.0% per annum” (Ref 18.27). Therefore, a worse case leakage factor of 1.0% of SF<sub>6</sub> lost per annum will be applied across the 60-year lifespan. The GWP of SF<sub>6</sub> will be obtained from the IPCC’s AR5 Climate Change 2013: The Physical Science Basis (Ref 18.28).

- 18.4.17 Operational GHG emissions associated with the Project include those which arise from maintenance and refurbishment activities. A lifespan of 40 years has been estimated for conductors and it is likely that all components will be replaced within the lifespan of the Project. Therefore, the GHG emissions associated with the embodied carbon of the permanent structures has been included again to represent the GHG emissions associated with refurbishment and repairs works during the operation stage of the Project, as well as standard maintenance estimated throughout the lifespan.

### **Land Use Change**

- 18.4.18 GHG emissions arising from land use change will be quantified by measuring the difference between:
- A ‘Do-minimum’ scenario (baseline), where the Project does not take place and baseline habitats are retained.
  - A ‘Do-something’ scenario (the Project), where the Project is implemented.
- 18.4.19 The assessment will utilise habitat extent mapping to quantify net change in habitat types, extracted from the Biodiversity Net Gain calculations which will be produced as an appendix to the ES. Carbon emission factors for habitats will be sourced from Natural England (Ref 18.29). This will allow the quantification of GHG emissions released from the disturbance of peatland, which has been identified within the Project’s draft Order Limits, as well as the land changes throughout the 60-year lifespan of the Project.

### **Significance criteria**

#### **Assigning Value**

- 18.4.20 As GHG emissions are not defined by geographical boundaries, the global atmosphere is the receptor of the Greenhouse Gases assessment. All global cumulative GHG sources are relevant to the effect on climate change, and this should be taken into account in defining the global atmosphere as being of ‘high’ sensitivity to further emissions.



### **Assigning Magnitude of Impact**

18.4.21 The magnitude of impact has been considered as the change experienced from the current baseline conditions to the future conditions with the Project. As no agreed significance criteria is available for evaluating GHG emissions in EIA, the magnitude of change is determined by the consistency with policy requirements to net zero and the degree to which the Project has sought to mitigate its emissions.

18.4.22 A saving in carbon emissions will provide a beneficial impact.

### **Assigning Significance**

18.4.23 IEMA Guidance states a project's significance is "not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".

18.4.24 To meet the 2050 carbon reduction targets for Wales and England as set out in the Climate Change Act (Ref 18.5) and the Environment (Wales) Act (Ref 18.11), action is required to reduce GHG emissions from all sectors. The assessment presented considers whether and how the Project will contribute to the achievement of these targets. The Project will be assessed in consideration of the UK Carbon Budgets, keeping on track towards net zero by 2050 with at least a 78% reduction by 2035 (Ref 18.6) as well as Welsh Carbon Budgets that require a 63% reduction by 2030 (Ref 18.12).

18.4.25 The significance of Greenhouse Gases is assigned by assessing the relationship between the sensitivity of the receptor, which is considered high in all scenarios, and the magnitude of change in residual emissions, after mitigation, against the baseline emissions. The categorisation of significance is shown in Table 18-4.

Table 18-4 – Significance Categories for Assigning Significance

Significance Category	Description
Major adverse	<p>A large increase in GHG emissions relative to baseline emissions and/or future carbon budgets.</p> <p>The Project’s GHG impacts are not mitigated in line with a science based 1.5 trajectory, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK’s trajectory towards net zero.</p>
Moderate adverse	<p>A medium increase in GHG emissions relative baseline emissions and/or future carbon budgets.</p> <p>The Project’s GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK’s trajectory towards net zero.</p>
Minor adverse	<p>A small increase in GHG emissions relative to baseline emissions and/or future carbon budgets.</p> <p>The Project’s GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK’s trajectory towards net zero.</p>
Negligible	<p>A negligible increase in GHG emissions (&lt;1%) relative to baseline emissions and/or future carbon budgets.</p> <p>The Project’s GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well ‘ahead of the curve’ for the trajectory towards net zero and has minimal residual emissions.</p>
Beneficial	<p>A decrease in GHG emissions relative to the baseline and/or future carbon budgets.</p>

Significance Category	Description
	The Project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

- 18.4.26 A Project is deemed to be significant if it follows a business as usual or do minimum approach, therefore, any major adverse or moderate adverse results will be significant. Minor adverse and negligible effects are considered to be not significant.
- 18.4.27 The assessment of potential significant effects has been conducted for the GHG emissions arising from construction and operation activities based on the above criteria. The assessment then considers residual effects, following the identification of mitigation measures that will be implemented throughout the Project.

### **Assumptions and Limitations**

- 18.4.28 The following limitations and assumptions have been identified:
- Uncertainty can arise from quality of data, study boundaries and period of assessment, and cannot be completely eliminated from a study. The assessment of GHG is as accurate as possible based on the data available at the time of the assessment.
  - The assessment of GHG and the determination of significance is based, in part, on professional judgement following relevant guidance.
  - Where information is not available, assumptions based on professional judgement have been made. These assumptions are consistent with those made by other topics for their assessments presented within the PEIR using industry guidance which is, where feasible, relevant to the scale of the Project. A worst-case approach will be taken where assumptions are made.
  - The local emissions sourced from 2022 used as a baseline to assess GHG emissions against are considered the best data available to represent the current 2024 baseline situation, as the most recent published data.
  - A like-for-like GHG assessment has been considered for the replacement of the Project, which may not reflect the market at the time of re-development. As such this is considered a worst-case scenario; and
  - As the design is in its early phases, details on essential mitigation measures to reduce embodied carbon is limited. It is anticipated that further mitigation will be implemented as the design progresses, and this will be reported within the Environmental Statement.

## 18.5 Baseline Conditions

### Existing Baseline

- 18.5.1 The existing baseline for the Project describes the current baseline environmental conditions without the Project in place. As land that is not currently developed for industrial use, GHG emissions produced within the Project’s Draft Order Limits are assumed to be zero.
- 18.5.2 The Welsh Government’s target for 100% renewable electricity by 2035, the UK’s net zero target by 2050, and the Welsh Government’s net zero target by 2050’s commitment establishes a context where current grid constraints present a challenge to achieving these objectives. The Project will aid in meeting these targets.
- 18.5.3 The most recent data on baseline GHG emissions for Powys County Council and Shropshire Council is presented in Table 4. This data, sourced from the UK Government’s Local Authority and Regional CO<sub>2</sub> Emissions Statistics (Ref 18.23), presents the emissions that were emitted in the annual period of 2022 for each geographical area. These baseline emissions contextualise GHG emissions from the Project to determine the magnitude of change.

*Table 18-5 – Baseline GHG Emissions (2022) by Local Authority*

Geographical Area		2022 Emissions (tCO <sub>2</sub> e)
Local Authority	Powys County Council	1,615,800
	Shropshire Council	2,587,000

### Future Baseline

- 18.5.4 The future baseline describes the reasonably foreseeable baseline conditions that are anticipated in the future without implementation of the Project. The UK carbon budgets are effectively a future baseline of national GHG emissions necessary to achieve net zero. For this reason, it is reasonable to use these targets as an indicator of likely future baseline GHG emissions. The appropriate carbon budgets have been used within the assessment of the construction and operation of the Project, to assess the contribution and subsequent likely significance of effect.

- 18.5.5 The UK’s Sixth Carbon Budget was implemented in April 2021, enshrining in law a new target to reduce GHG emissions by at least 78% by 2035 (Ref 18.5). The Environment (Wales) Act 2016 sets Carbon Budgets for Wales, with a reduction of 63% required by 2030 (Ref 18.11).
- 18.5.6 All carbon budgets that have been legislated, or are under draft legislation, have been considered in the GHG assessment. The timescale of these budgets covers the construction period and some of the operational period only since the carbon budgets extend only to 2050. The total UK budgets, expressed in the form of million tonnes of carbon dioxide equivalent (million tCO<sub>2e</sub>), are detailed in Table 18-6.

*Table 18-6 – Carbon Budgets for the UK and Wales that fall within the Construction Period*

Carbon Budget Source	Carbon Budget Period	Carbon Budget Cap (MtCO <sub>2e</sub> )
UK Carbon Budget	Fourth Carbon Budget: 2023 – 2027	1,950
	Fifth Carbon Budget: 2028 – 2032	1,725
	Sixth Carbon Budget: 2033 – 2037	965
	2050 Target	Net Zero
Welsh Carbon Budget	Second Carbon Budget: 2021 – 2025	35.5
	Third Carbon Budget: 2026 – 2030	23.7
	2050 Target	Net Zero

- 18.5.7 The construction phase is anticipated to take place from Q4 2027 until Q4 2029, with enabling works in 2027. As only enabling works are anticipated in Q4 of 2027, the fifth carbon budget is used to assess significance of the construction phase emissions.

- 18.5.8 GHG emissions from the operation phase of the Project (60 years lifespan) will fall into the fifth and sixth carbon budgets, and subsequent future budgets once set through from 2038 and beyond.
- 18.5.9 Consideration is also given as to whether GHG emissions are appropriately mitigated and compliant with relevant policy.

## 18.6 Preliminary Mitigation Measures

- 18.6.1 Recommended mitigation to be implemented, in relation to GHG emissions, are detailed below.

### **Embedded Mitigation Measures**

- 18.6.2 Embedded measures have been integral in reducing the GHG emission effects of the Project.
- 18.6.3 An Outline Construction Environmental Management Plan (OCEMP) will be prepared for the Project with an outline document provided as part of the development consent order (DCO) application with the final document secured through the DCO.
- 18.6.4 The OCEMP incorporates industry best practices such as dust suppression, waste management, and minimisation of fuel use to reduce GHG emissions during Project construction. The OCEMP would outline sustainable construction practices where practicable, such as locally sourced building materials, low-emission construction machinery, minimised vehicle movements on-site, and any relevant additional aspects that contribute to a reduction to GHG emissions.

### **Good Practice Mitigation Measures**

- 18.6.5 The greatest ability to influence carbon reduction is in the early design phases. By encouraging the selection of lower embodied carbon materials, for example materials with a higher recycled content, and sourcing suppliers locally to a Project, GHG emissions during construction can be reduced.

18.6.6 The carbon reduction hierarchy would be applied throughout the construction detailed design process. This will work to either avoid, switch or improve carbon emissions. The carbon reduction hierarchy as outlined in PAS2080 (Ref 18.11) is as follows:

- **Avoid:** Align the outcomes of the project with the net zero transition to evaluate the basic need for the asset.
- **Switch:** Assess alternative solutions, adopting the ones that reduce emissions. This includes assessing the design approach, materials and transport options. For example, materials with lower embodied carbon would be prioritised throughout the design.
- **Improve:** Identify and adopt solutions and techniques that improve the use of resources and design life for an asset, including applying circular economy principles to assess materials in terms of their potential for reuse and recovery at the end of life.

18.6.7 Material recovery and material reuse during site clearance and construction will be prioritised to reduce embodied GHG emissions.

### Essential Mitigation Measures

18.6.8 As a result of the preliminary construction assessment, mitigation measures proposed within this chapter are considered suitable to reduce the effects of the Project. Further mitigation measures for the construction phase would be determined within the Environmental Statement. Essential mitigation measures are expected to follow local policy, for example those measures set out within Powys Local Development Plan 2011-2026 (18.18) and the Shropshire Local Development Framework (Ref 18.19).

## 18.7 Preliminary Likely Significant Effects

18.7.1 This section outlines the preliminary assessment of likely significant effects on Greenhouse Gases arising as a result of the Project during construction and operation phases. The total estimated GHG emissions arising from embodied carbon are presented below.

18.7.2 The receptor for Greenhouse Gases is the atmospheric concentration of GHGs, which is considered highly sensitive to all future emissions. This is detailed in Table 18-7.



Table 18-7 – Construction Phase – Preliminary Assessment of Potential Receptors

Receptor	Sensitivity of Receptor	Description of Potential Impact
The Global Atmosphere	An increase in GHG emissions is a long term, irreversible impact. All global cumulative GHG sources are relevant to the effect on climate change, and this should be considered in defining the receptor (the atmospheric concentration of GHGs) as being of 'high' sensitivity to further emissions.	GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit, resulting in global temperature rise above 1.5°C and resulting tipping points, such as extreme weather impacts.

- 18.7.3 The available data is limited at the current design stage. A more detailed quantitative assessment of emissions will be undertaken for the ES where data is available.

### Construction

- 18.7.4 The total estimated GHG emissions arising from embodied carbon, transportation of materials to site, and construction plant use are currently estimated to be 50,370 tCO<sub>2e</sub>. The calculations at this stage exclude the materials and transport required to build the control buildings at the Grug y Mynydd Collector Substation and the Lower Frankton Switching Station, as specific material information was not available at this time. These will be considered within the ES.

### Operation

- 18.7.5 Emissions associated with operation including the maintenance, refurbishment, replacement and repair of the Project materials are anticipated to be 51,560 tCO<sub>2e</sub>. This includes replacement of all equipment (50,370 tCO<sub>2e</sub>) and maintenance throughout the lifespan (1,190 tCO<sub>2e</sub>).
- 18.7.6 This excludes the impact of SF<sub>6</sub>, which at this stage are not known.

## Land Use Change

- 18.7.7 The GHG emissions associated with land use change, including carbon sequestration and loss of carbon biomass stock release, will be included within the Greenhouse Gases assessment for the ES. Disturbance to habitats has the potential to emit GHG emissions, whilst planting and addition of habitats will sequester GHGs over the lifespan of the Project.
- 18.7.8 Peatland is a carbon rich ecosystem that stores and sequesters more carbon than any other type of terrestrial ecosystem. Disturbance to peatland will cause a release of GHG emissions, thus it is important to capture the impacts of land use change as a result of the Project.
- 18.7.9 As noted in Chapter 7: Ecology, “No land shown on the peat land map of Wales lies within 200m of the Project’s draft Order Limits for the Welsh OHL section of the Project. However, the southern underground section passes close to areas of peat (as shown on Peat land of Wales map) to the north of Pen-y-Waen woodland and further south to the south of the proposed Grug y Mynydd Collector Substation. The underground route passes through three areas of peat up to 65cm depth and one area at the southern tip of 1.6m. Therefore, there will be a significant impact on peat in the underground section.”
- 18.7.10 The current extent of greenhouse gas emissions associated with land use changes will be assessed within the ES as part of the Greenhouse Gases Chapter, based on the Biodiversity Net Gain assessment.

## Summary

- 18.7.11 Table 18-8 presents the preliminary results of the GHG emissions assessment that was completed for the Construction and Operation phases. Transport emissions have been estimated using distances within industry guidance and should be revised as material sources become available. Preliminary construction transport routes are discussed within Chapter 10: Traffic and Transport and will be refined through the ES.

*Table 18-8 – Embodied GHG Emissions*

Stage of Project	Source	Emissions (tCO <sub>2e</sub> )
Construction	A1-A3 Material	45,600

Stage of Project	Source	Emissions (tCO <sub>2</sub> e)
	A4 Transport	2,470
	A5 Construction installation	2,300
Operation	B2-5 Maintenance, Replacement and Refurbishment	46,790
	<b>Total</b>	<b>101,930</b>

- 18.7.12 It is anticipated, subject to consent being granted, that access and construction of the Project would commence in 2027 with enabling works. Main construction works are expected to continue to 2029. Therefore, the carbon budgets relevant for the construction phase are UK Fourth and Fifth Carbon Budget, and the Third Welsh Carbon Budget.
- 18.7.13 Over a 2-year construction period, total emissions arising from the construction phase of the Project would constitute 1.6% of Powys baseline emissions annually or 1% of Shropshire’s baseline emissions annually for the two-year construction period. Emissions within each boundary have not been separated, as GHG emissions do not have geographical boundaries.
- 18.7.14 When considering the future baseline, the construction activities would contribute 0.21% to the Third Welsh carbon budget, in which construction is expected to arise.
- 18.7.15 It is not determined when maintenance events will occur over the 60-year lifespan of the Project, therefore it has been assumed that emissions will occur regularly across the period. This equates to 859 tCO<sub>2</sub>e per year.

Table 18-9 – Contribution of Emissions to the Current and Future Baseline

	Baseline Emissions	Emissions arising in period (tCO <sub>2</sub> e)	GHG Emissions Contribution (%)
Construction	Powys baseline	25,185	1.6%
	Shropshire baseline	25,185	1.0%

	Baseline Emissions	Emissions arising in period (tCO <sub>2</sub> e)	GHG Emissions Contribution (%)
	UK 4 <sup>th</sup> Carbon Budget (2023-2027)	25,185	0.0013%
	UK 5 <sup>th</sup> Carbon Budget (2028-2032)	25,185	0.0015%
	Welsh Carbon Budget (2026-2030)	50,370	0.21%
Operation	UK 5 <sup>th</sup> Carbon Budget (2028-2032)	4,297	0.0002%
	UK 6 <sup>th</sup> Carbon Budget (2033-2037)	4,297	0.0004%

18.7.16 It is concluded that the Project will not have a material effect on the UK Government meeting its carbon budgets or targets, based on the negligible impact on the UK Carbon Budgets (<0.01%) and minor contribution to the baseline year (<2%). In line with IEMA guidance, the Project will increase GHG emissions, but to a degree that will not significantly affect the ability to meet UK carbon budgets. When considered in terms of the receptor, which has high sensitivity, the Project would have a minor adverse impact on the Global Atmosphere, which would be considered to be Not Significant in the context of the EIA.

## 18.8 Preliminary Mitigation and Enhancement Measures

18.8.1 No essential mitigation or enhancement measures are currently proposed associated with the GHG assessment. Due to the nature of the Project, the preliminary avoidance and embedded mitigation measures set out in the above section are expected to be sufficient in addressing the impacts.

## 18.9 Next Steps

- 18.9.1 The PEIR is based on the latest design and construction parameters and baseline information. As such the findings of the preliminary environmental appraisal presented within our PEIR may be subject to change as the design progresses and as mitigation is further developed. The final assessment of effects undertaken as part of the EIA and reported within the ES will be based on the latest information available at that time.
- 18.9.2 Embodied emissions resulting from construction materials should be recalculated once the full material quantities and type are finalised at the stage of an ES being produced. Plant emissions should also be recalculated once plant type has been identified. Transport emissions for construction materials should be updated once material sourcing has been undertaken to account for actual transport distance.
- 18.9.3 Monitoring and reporting should be conducted throughout the design and construction process, to ensure that best practice and embedded mitigation is being followed. During the operation, emissions released as a result of the Project should also be monitored, including where relevant the impact of SF6 which is required to be monitored and reported.

### Consultation

- 18.9.4 Stakeholder engagement will be ongoing following statutory consultation. Section 4 of the PEIR details consultation that has been undertaken to date and details that consultation will continue as part of the ongoing development of the Project design.
- 18.9.5 Consultation will be undertaken prior to the commencement of the Environmental Statement. Consultation into the methodology will be undertaken with Powys County Council and Shropshire Council to agree the approach being taken.

### Surveys

- 18.9.6 No site visits or surveys are expected to be undertaken for the assessment of Greenhouse Gases.

## 18.10 References

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- Ref 18.16 Welsh Government. (2024). Planning Policy Wales (12<sup>th</sup> Edition) (online).
- Ref 18.17 Welsh Government. (2019). Future Wales: the national plan 2040 (online).
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- Ref 18.21 IEMA. (2022, February). Updated EIA Guidance on Assessing GHG Emissions. Retrieved from <https://www.iema.net/resources/blog/2022/02/28/launch-of-the-updated-eia-guidance-on-assessing-ghg-emissions>
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## 19 Socio-economics

### 19.1 Introduction

19.1.1 This Chapter provides the results of the preliminary assessment of the potential effects of the Project on Socio-economics, Recreation and Tourism, and describes:

- Legislation, Policy and Guidance.
- Consultation and Engagement.
- Assessment Methodology and Significance Criteria.
- Baseline Conditions.
- Preliminary Mitigation Measures.
- Preliminary Likely Significant Effects.
- Preliminary Mitigation and Enhancement Measures.
- Next Steps.

19.1.2 There are interrelationships related to the potential effects on Socio-economics, Recreation and Tourism and other environmental topics. Therefore, reference should also be made to the following chapters:

- Chapter 6: Landscape and Visual Amenity.
- Chapter 10: Traffic and Transport.
- Chapter 11: Noise and Vibration.
- Chapter 14: Air Quality.
- Chapter 16: Health and Wellbeing.

### 19.2 Legislation, Policy and Guidance

#### Legislation

19.2.1 This section provides a summary of legislation which is specific to Socio-economics, Recreation and Tourism.

#### **Countryside and Rights of Way Act 2000**

19.2.2 The Countryside and Rights of Way Act 2000 (CRoW Act) (Ref. 19.1) outlines the principal legislation governing the registration and protection of public footpaths, bridleways, byways open to all traffic and restricted byways. It also regulates public rights of way (PRoW) and open access land.



## Policy

- 19.2.3 This section provides a summary of the relevant national and local planning policies which are specific to Socio-economics, Recreation and Tourism.

### **Planning Policy Wales - Edition 12**

- 19.2.4 Planning Policy Wales (PPW) (Ref. 19.2) sets out the land use planning policies for Wales and includes aims relating to sustainable development and improving the social, economic, environmental and cultural well-being of Wales. The five national sustainable placemaking outcomes include 'Creating and Sustaining Communities', 'Growing Our Economy in a Sustainable Manner' and 'Facilitating Accessible and Healthy Environments'.
- 19.2.5 Paragraphs 4.4.1 to 4.4.3 relate to community facilities, including that 'Community facilities contribute to a sense of place which is important to the health, well-being and amenity of local communities and their existence is often a key element in creating viable and sustainable places... Local authorities should retain and protect existing allotment sites, particularly where they have an important green infrastructure or community value.'
- 19.2.6 Paragraph 4.5.3 states that 'Formal and informal open green spaces should be protected from development...'
- 19.2.7 Paragraph 5.5.5 states that 'Long-distance routes, rights of way, disused railways, waterways and other green infrastructure are important tourism and recreation facilities, both in their own right and as a means of linking attractions.'

### **Overarching National Policy Statement for Energy (EN-1)**

- 19.2.8 The overarching National Policy Statement (NPS) EN-1 (Ref. 19.3) sets out the overarching policy for energy infrastructure and states that energy projects may have socio-economic impacts.
- 19.2.9 Paragraph 5.13.5 of EN-1 states that 'Applicants should describe the existing socio-economic conditions in the areas surrounding the proposed development and should also refer to how the development's socio-economic impacts correlate with local planning policies.'

- 19.2.10 Paragraphs 5.13.9 to 5.13.11 state that ‘The Secretary of State should have regard to the potential socio-economic impacts of new energy infrastructure identified by the applicant and from any other sources that the Secretary of State considers to be both relevant and important to its decision.’

*‘The Secretary of State may conclude that limited weight is to be given to assertions of socio-economic impacts that are not supported by evidence (particularly in view of the need for energy infrastructure as set out in this NPS).’*

*‘The Secretary of State should consider any relevant positive provisions the applicant has made or is proposing to make to mitigate impacts (for example through planning obligations) and any legacy benefits that may arise as well as any options for phasing development in relation to the socio-economic impacts.’*

#### **National Policy Statement for Electricity Networks Infrastructure (EN-5)**

- 19.2.11 National Policy Statement EN-5 (Ref. 19.4) sets out additional policy for energy infrastructure, including factors influencing site selection and design.
- 19.2.12 Paragraph 2.9.17 states that ‘...the Holford Rules state that applicants should: ... approach urban areas through industrial zones, where they exist; and when pleasant residential and recreational land intervenes between the approach line and the substation, carefully assess the comparative costs of undergrounding.’

#### **The Powys Local Development Plan (2011-2026)**

- 19.2.13 The Powys Local Development Plan (Ref. 19.5) sets out the Council’s policies in relation to development and land use in Powys over a 15 year plan period from 2011 to 2026.
- 19.2.14 Policy DM1 Planning Obligations states that planning obligations will be sought to ensure that the development provides adequate infrastructure and significant adverse socio-economic and environmental impacts are addressed and mitigated.
- 19.2.15 Policy DM3 Public Open Space states that proposals located wholly or partially within existing areas of open space will only be permitted where *‘There is an excess of such provision in the area; there is no longer a requirement for that type of open space in the area; the site would not be suitable to provide an alternative type of open space for which there is a shortfall; or it can be*

*demonstrated that alternative provision can be made available that is of enhanced or equivalent community benefit in terms of its size, characteristics, location and accessibility...’.*

- 19.2.16 Policy DM11 Protection of Existing Community Facilities and Services states that proposals that will cause the loss of community facilities and indoor recreation should be justified.
- 19.2.17 Policy TD3 Montgomery Canal and Associated Development states that ‘Development proposals that support the restoration of the Montgomery Canal and preserve and enhance the role of the canal as a multifunctional resource, including off-line nature reserves and other appropriate canal-related development, will be supported. Proposals for development that would adversely affect the canal’s scientific and conservation designations or prejudice its sensitive restoration will be opposed.’

**Shropshire Local Development Framework: Adopted Core Strategy 2011**

- 19.2.18 The Core Strategy Development Plan Document (DPD) (Ref. 19.6) sets out the Council’s policies for the future use and development of land in Shropshire during the period to 2026.
- 19.2.19 Policy CS6 Sustainable Design and Development Principles states that ‘...development will be designed to a high quality using sustainable design principles, to achieve an inclusive and accessible environment...including safeguarding residential and local amenity...’
- 19.2.20 Policy CS13 Economic Development, Enterprise and Employment states that ‘...particular emphasis will be placed on...supporting the development and growth of Shropshire’s key business sectors and clusters, in particular: environmental technologies; creative and cultural industries; tourism; and the land based sector, particularly food and drink production and processing...In rural areas, recognising the continued importance of farming for food production and supporting rural enterprise and diversification of the economy, in particular areas of economic activity associated with agricultural and farm diversification, forestry, green tourism and leisure, food and drink processing, and promotion of local food and supply chains...’
- 19.2.21 Policy CS16 Tourism, Culture and Leisure states that ‘...Supporting development that promotes opportunities for accessing, understanding and engaging with Shropshire’s landscape, cultural and historic assets including the

Shropshire Hills Area of Outstanding Natural Beauty (AONB), rights-of-way network, canals, rivers and meres and mosses ...Supporting appropriate regeneration schemes and tourism development proposals that seek to enhance the economic, social and cultural value of canals and heritage railways including:...Shropshire Union Canal - Montgomery branch...Supporting schemes aimed at diversifying the rural economy for tourism, cultural and leisure uses that are appropriate in terms of their location, scale and nature, which retain and enhance existing natural features where possible, and do not harm Shropshire's tranquil nature...'

- 19.2.22 Pre-Submission Draft of the Shropshire Local Plan 2016 to 2038
- 19.2.23 The Pre-Submission Draft Shropshire Local Plan (Ref. 19.7) was submitted to the Secretary of State for Examination on 3 September 2021. Several hearings for the draft Local Plan have been undertaken since its submission in 2021 up to October 2024.
- 19.2.24 The draft Local Plan sets out a high-level objective for the Council in relation to achieving sustainable development.
- 19.2.25 Policy DP10 Tourism, Culture and Leisure states that '...Supporting development that promotes opportunities for accessing, understanding and engaging with Shropshire's landscape, cultural and historic assets including the Shropshire Hills AONB, rights-of-way network, canals, rivers, meres and mosses... Supporting schemes aimed at diversifying the rural economy for tourism, cultural and leisure uses that are appropriate in terms of their location, scale and nature, which retain and enhance existing natural features where possible, and do not harm Shropshire's tranquil nature...'
- 19.2.26 Policy DP15 Open Space and Recreation states that 'Existing open space, sports and recreational buildings and land, including playing fields, should not be built on unless: a) an assessment has been undertaken which clearly shows the open space, buildings or land to be surplus to requirements; or b) the loss resulting from the proposed development would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location; or c) the development is for alternative sports and recreational provision, the benefits of which clearly outweigh the loss of the current or former use.'

## Guidance

- 19.2.27 There are no published guidelines or specific guidance for assessing Socio-economics, Recreation and Tourism impacts as part of an Environmental Impact Assessment (EIA). However, the following guidance and standards have informed this PEIR and will inform the assessment within the Environmental Statement (ES).

### **HM Treasury Green Book**

- 19.2.28 The Green Book (Ref. 19.8) provides place-based employment multipliers for the assessment of employment impacts.

### **Additionality Guide**

- 19.2.29 The Additionality Guide (Ref.19.9) provides guidance for composite multipliers (i.e. the combined effect of indirect and induced multiplier effects), displacement and leakage rates to guide the assessment of employment impacts.

### **Design Manual for Roads and Bridges (DMRB) LA 112 Population and Human Health**

- 19.2.30 Whilst the DMRB standard LA 112 (Ref. 19.10) is specific to highway infrastructure, the guidance provides context for assessing impacts on land use from linear infrastructure, including on community land and recreational routes. The Socio-economics, Recreation and Tourism assessment is not however intended to be DMRB compliant.

## 19.3 Consultation and Engagement

- 19.3.1 Following the submission of the Scoping Report (Ref. 19.11), the comments included in the EIA Scoping Opinion from the Planning Inspectorate (PINS) (Ref. 19.12) and subsequent responses are outlined in Table 19.1.

Table 19-1 – Summary of EIA Scoping Opinion and Subsequent Responses for Socio-economics, Recreation and Tourism

ID	Matter	Inspectorate’s Comments	Project Response
3.1.7	Socio-economics ES aspect assessment	<p>The Scoping Report proposes to scope out a specific socio-economic assessment from the ES and instead, submit a ‘Socio-economic Information’ document accompanying the DCO application. The Scoping Report states that the ES will (by the nature of other factors that are scoped into the assessment) consider “aspects relevant to potential socio-economic impacts on people” within the following ES assessments: Traffic and Transport; Landscape and Visual; Noise; and Air Quality. The Scoping Report sets out the Applicant’s view that the EIA Regulations make no clear requirement for an applicant to consider socio-economic factors. Whilst the Inspectorate considers the referenced aspect chapters would largely cover the potential socio-economic impacts, sufficient baseline information has not been provided to allow the scoping out of a socio-economics ES aspect assessment at this stage. The Inspectorate notes the Applicant’s position on whether socioeconomic factors are a</p>	<p>A separate Socio-economics, Recreation and Tourism chapter (Chapter 19 of this PEIR) will be produced to capture potential Socio-economics, Recreation and Tourism effects.</p> <p>The assessment covering impacts on agricultural land holdings has been scoped into Chapter 15: Agriculture and Soils of the PEIR. Hence, this assessment will not be repeated in the Socio-economics, Recreation and Tourism chapter, but appropriate signposting will instead be provided.</p> <p>Assessment and proposed mitigation related to the following topics will be included in the Socio-economics, Recreation and Tourism chapter:</p> <ul style="list-style-type: none"> <li>• Potential effects during construction on economy and employment within the local planning authority areas through which the Project passes during construction.</li> <li>• Potential effects on community facilities within the Project’s draft Order Limits from potential</li> </ul>

ID	Matter	Inspectorate's Comments	Project Response
		<p>requirement of the EIA Regulations. The Inspectorate draws the Applicant's attention to Section 5.13 of the Overarching National Policy Statement for Energy (EN-1) in this regard, which requires the Applicant to undertake an assessment of socio-economic impacts at local and regional levels as part of the ES. The ES should provide an assessment of socio-economic impacts during construction and operation where significant effects are likely to occur. Effort should be made to agree the scope of the assessment with relevant consultation bodies. As set out in Table 3.10 below (Soils and Agriculture), the assessment should include impacts on farming operations where significant effects are likely to occur. The assessment should also assess impacts on tourism where there is potential for LSE to occur, given the number of tourist destinations in proximity to the Scoping Corridor. The ES should describe any mitigation or compensation agreements which are relied upon to address LSEs with evidence of agreement</p>	<p>land take and severance during construction and operation.</p> <ul style="list-style-type: none"> <li>• Potential effects on businesses within 1km of the Project's draft Order Limits where visual impact is likely to be an economic consideration during construction and operation.</li> <li>• Potential effects on recreation and tourism assets within the Project's draft Order Limits from potential land take and severance during construction and operation.</li> <li>• Potential effects on visitor accommodation within the local planning authority areas through which the Project passes due to the presence of a construction workforce.</li> </ul> <p>The scope will be agreed with the relevant consultation bodies as requested.</p>

ID	Matter	Inspectorate's Comments	Project Response
		reached with the relevant affected parties. If the assessment is not presented in a standalone Socio-Economics ES chapter, the ES should provide clear cross-referencing to where the relevant impacts are considered.	

19.3.2 The subsequent stakeholder responses to the EIA Scoping Opinion are outlined in Table 19.2.

Table 19-2 – Subsequent Stakeholder Responses to the EIA Scoping Opinion

Scoping Opinion	Applicant Response
<p>Llansantffraid &amp; Deytheur Community Council</p> <p>Economic effect on multiple businesses that provide holiday accommodation, lodges and caravans, most of which are directly affected by the proposed routes. People stay in this area for the beauty of the countryside and to get away from city life.</p>	<p>The Socio-economics assessment will cover potential impacts on businesses where visual impact may be an economic factor, for example visitor accommodation. However, consideration of financial effects would be the subject of individual landowner negotiations and are not appropriate for consideration within an EIA.</p>
<p>Llanymynech and Pant Parish Council</p> <p>Millions of pounds and tens of thousands of hours have been poured into restoring the canal and supporting the cultural heritage of the canal and the additional jobs and boost to the</p>	<p>Assessment on potential effects on tourism attractions, including the Montgomery Canal, will be assessed in the Socio-economics, Recreation and Tourism chapter.</p>



economy that restoration will provide. Restoration is critical to ensure the sustainable long-term future of the canal with tourism revenues essential to ensure the canal can be better managed and protected, saving it from falling into disrepair that in turn would be harmful to the protected flora.

The special designation of the Montgomery Canal as a Site of Special Scientific Interest and as a Special Area of Conservation is a protected and fundamental pillar of the canal's restoration. Indeed, a special conservation plan agreed by over a dozen organisations including Powys County Council, Shropshire Council and Natural Resources Wales, which includes bringing more of the canal back to navigation, is a key part of securing both the canal's future and its protected environmental status.

No consideration has been given to the dangers to aviation in this area which are very real. The present proposed route passes right through Civil Aviation Authority (CAA) recognised and designated hot-air balloon launch fields and will render them unusable. Secondly the area of North Shropshire and the Welsh Borders around Kinnerley, Crickheath, Pant and Llanymynech is a designated military aviation training area for RAF Shawbury helicopter activities. These lines would be a major hazard and almost certainly in breach of CAA regulation.

Potential effects on aviation activities, including hot-air balloon activities and businesses, will be assessed in the Socio-economics, Recreation and Tourism chapter.

<p>Powys County Council</p> <p>Socio-Economics has been scoped out of the EIA and PCC has no comments in this respect.</p>	<p>Scoping Opinion noted.</p>
<p>Whittington Parish Council</p> <p>The Parish Council expressed concerns about the protection and restoration of the Montgomery Canal (Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC)) which provides jobs and boosts the economy. The Parish Council also raised concerns over the aviation, recreation and tourism industry, including CAA for hot-air balloon launch fields and defence aviation industry.</p>	<p>Assessment on potential effects on tourism attractions within the study area, such as the Montgomery Canal, will be assessed in the Socio-economics, Recreation and Tourism chapter.</p> <p>Potential effects on aviation activities, including hot-air balloon activities and businesses, will be assessed in the Socio-economics, Recreation and Tourism chapter.</p>

A summary of all engagement undertaken to date in relation to Socio-economics, Recreation and Tourism is outlined in Table 19.3.

*Table 19-3 – Summary of Engagement undertaken for Socio-economics, Recreation and Tourism*

Engagement	Outcome
<p>A Socio-economics, Recreation and Tourism Technical Note outlining the approach to assessment has been shared with stakeholders, including:</p> <ul style="list-style-type: none"> <li>• Powys County Council.</li> <li>• Llansantffraid and Deytheur Community Council.</li> </ul>	<p>Responses to the Technical Note awaited, pending agreement on consultation approach with Powys County Council and Shropshire Council.</p>

- Llanymynech and Pant Parish Council.
- Shropshire Council.

Whittington Parish Council.

## 19.4 Assessment Methodology and Significance Criteria

### Study Area

19.4.1 The Socio-economics, Recreation and Tourism assessment considers the potential effects within three study areas, as shown on Figure 19.1. These are detailed in Table 19.4.

Table 19-4 – Study Area and the Associated Topics

Study Area	Description	Topic
Local Study Area	This comprises the Project’s draft Order Limits. The Project’s draft Order Limits represent the area in which temporary and permanent works have the potential to affect Socio-economics, Recreation and Tourism receptors directly.	<ul style="list-style-type: none"> <li>Community facilities</li> <li>Recreation and tourism assets including PRow</li> </ul>
1km Study Area	<p>For the assessment of potential effects on businesses where visual effects are an economic consideration (for example, visitor accommodation, wedding venues), businesses are considered where they fall within 1km of the Project’s draft Order Limits / local study area.</p> <p>Based on professional judgement, effects on businesses situated beyond 1km of the Project’s draft Order Limits / local study area are deemed to be not significant if visual effects were to occur.</p>	<ul style="list-style-type: none"> <li>Businesses (where visual impact is likely to be an economic consideration)</li> </ul>
Wider Study Area	<p>This comprises the spatial extent of the local authority areas through which the Project route passes (i.e. Powys County Council and Shropshire Council).</p> <p>This extent is informed by professional judgement and experience from other grid connection projects. The primary purpose of defining this Wider Study Area is to</p>	<ul style="list-style-type: none"> <li>Economy and employment</li> <li>Visitor accommodation due to the presence of non-local construction workforce</li> </ul>

Study Area	Description	Topic
	assess potential impacts relating to employment and the Project's implications on the local economy.	

- 19.4.2 The purpose of having three study areas is to capture potential effects on receptors at three different spatial scales, including:
- Direct and indirect effects on receptors located within the Project's draft Order Limits.
  - Direct and indirect effects on businesses particularly where visual effects are an economic consideration.
  - Wider effects on the local economy and employment.

### Baseline Data Collection

- 19.4.3 This section details the method of baseline data collection undertaken for this PEIR chapter.

### Desk Study

- 19.4.4 Baseline conditions for the study areas were established through desk-based analysis using the following sources:
- Local Economy and Employment:
    - Census data (2021), annual population survey, economic data, labour market data and qualification data (Ref. 19.13).
    - English and Welsh Indices of Deprivation (Ref. 19.14) (Ref. 19.15).
    - Population projections (Ref. 19.13) (Ref. 19.16) (Ref. 19.17).
  - Community Facilities:
    - Existing community facilities (Ordnance Survey (OS) Mapping).
  - Businesses, Recreation and Tourism Assets:
    - Built assets (OS Mapping) (Ref. 19.18).
    - Recreational land (OS Mapping) (Ref. 19.19).
    - Recreational routes (Ref. 19.19) (Ref.19.20) (Ref. 19.21) (Ref. 19.22) (Ref. 19.23).
    - Visitor accommodation bedspace capacity (Ref. 19.16) (Ref. 19.24).

## Site Visits and Surveys

- 19.4.5 No site-specific surveys have been, or will be, undertaken for the Socio-economics, Recreation and Tourism assessment.

## Environmental Impact Assessment methodology

- 19.4.6 The preliminary Socio-economics, Recreation and Tourism assessment determines if effects arising from the Project, following the implementation of mitigation, are likely to be beneficial, adverse, or neutral together with predicting if effects are likely to be significant. All conclusions and assessments are, by their nature, preliminary. All assessment work has applied, and continues to apply, a precautionary approach, in that where limited information is available (in terms of the proposals for the Project), a realistic worst-case scenario is assessed.
- 19.4.7 The assessment has drawn on a combination of professional judgement and experience of previous projects. A high-level economic and employment effect assessment has been undertaken due to the stage of the Project, where construction employment numbers are subject to change and will be confirmed in the ES.
- 19.4.8 DMRB LA 112: Population and Human Health (Ref. 19.10), whilst not specific to electricity infrastructure, has also provided useful context for assessing land use and accessibility effects associated with linear infrastructure. The assessment has drawn on the guidance detailed in Section 19.2 above to determine preliminary residual effects.

## Significance criteria

- 19.4.9 The significance of environmental effects will be determined by taking into account the sensitivity of the receptor and the magnitude of the impact. The proposed approach to define receptor sensitivity, magnitude of impact and significance of effect are presented in Tabel 19.5, Table 19.6 and Table 19.7 respectively.

Table 19-5 – Sensitivity of Receptor and Description

Sensitivity	Description
High	<p><u>Local economy and employment:</u></p> <ul style="list-style-type: none"> <li>The area has a shortfall or constrained supply of appropriate labour and skills when compared to regional and national averages. Changes in the area could lead to labour market pressure and distortions (i.e. skills and capacity shortages, import of labour, wage inflation).</li> </ul> <p><u>Community facilities:</u></p> <ul style="list-style-type: none"> <li>The level of use is very frequent (daily/weekly).</li> </ul> <p><u>Business, recreation and tourism assets:</u></p> <ul style="list-style-type: none"> <li>Are of international or national importance; or</li> <li>For which annual visitor numbers exceed 100,000; or</li> <li>A business for which loss of employment or closure would be deemed a nationally important issue (for example a strategic business or major employer).</li> </ul>
Medium	<p><u>Local economy and employment:</u></p> <ul style="list-style-type: none"> <li>The area has a low/limited supply of labour and skills. Changes in the area could lead to labour market pressure or distortions.</li> </ul> <p><u>Community facilities:</u></p> <ul style="list-style-type: none"> <li>The level of use is reasonably frequent (monthly).</li> </ul>

Sensitivity	Description
	<p><u>Business, recreation and tourism assets:</u></p> <ul style="list-style-type: none"> <li>• Are of regional importance; or</li> <li>• For which annual visitor numbers are between 10,000 and 100,000; or</li> <li>• A business for which loss of employment or closure would be a regionally important issue.</li> </ul> <p>This level of sensitivity could also be applied where the loss of employment or closure of multiple small businesses within an area could be deemed a regionally important issue.</p>
Low	<p><u>Local economy and employment:</u></p> <ul style="list-style-type: none"> <li>• The area has a readily available labour force. Changes in the area are unlikely to lead to labour market pressure or distortions.</li> </ul> <p><u>Community facilities:</u></p> <ul style="list-style-type: none"> <li>• Level of use is infrequent (less frequent than monthly).</li> </ul> <p><u>Business, recreation and tourism assets:</u></p> <ul style="list-style-type: none"> <li>• Are of local importance; or</li> <li>• For which annual visitor numbers are less than 10,000; or</li> <li>• A business for which loss of employment or closure would be deemed a locally important issue.</li> </ul>
Very Low	<p><u>Local economy and employment:</u></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>



Sensitivity	Description
	<p><u>Community facilities:</u></p> <ul style="list-style-type: none"> <li>• alternative facilities are available within the same community; or</li> <li>• the level of use is very infrequent (a few occasions yearly).</li> </ul> <p><u>Business, recreation and tourism assets:</u></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>

Table 19-6 – Magnitude of Impact and Description

Magnitude of impact (adverse / beneficial)	Description
High	<p><u>Local economy and employment:</u></p> <ul style="list-style-type: none"> <li>• Number of employment opportunities is large in scale when compared to the combined local planning authorities (i.e. those within the Wider Study Area) total number of employees within the sector (for example the construction employment opportunities generated by the proposal represent a significant proportion of the number of employees in the construction sector generally within this study area).</li> </ul> <p><u>Community facilities:</u></p> <ul style="list-style-type: none"> <li>• Loss of resource and/or quality and integrity of resource; or</li> </ul>

Magnitude of impact (adverse / beneficial)	Description
	<ul style="list-style-type: none"> <li>• Severe damage to key characteristics, features or elements (for example direct acquisition and demolition of facility); or</li> <li>• Introduction of complete severance with no/full accessibility provision; or</li> <li>• Removal (beneficial effect) of existing complete severance.</li> </ul> <p><u>Business, recreation and tourism assets:</u></p> <ul style="list-style-type: none"> <li>• Where the extent of impacts on receptors is large in scale (for example loss of asset; or leads directly to closure).</li> <li>• Where the recreational route will be fully stopped up with no alternative access provision.</li> </ul>
Medium	<p><u>Local economy and employment:</u></p> <ul style="list-style-type: none"> <li>• Number of employment opportunities is moderate in scale when compared to the combined local planning authorities' (i.e. those within the Wider Study Area) total number of employees within the sector (for example the construction employment opportunities generated by the proposal represent around half of the total number of employees in the construction sector generally within this study area).</li> </ul> <p><u>Community facilities:</u></p> <ul style="list-style-type: none"> <li>• Potential loss of/damage to key characteristics, features or elements (for example partial removal or substantial amendment to access or acquisition of facility); or</li> <li>• Introduce severance with limited/moderate accessibility provision; or</li> <li>• Removal (beneficial effect) of existing severance.</li> </ul>

Magnitude of impact (adverse / beneficial)	Description
	<p><u>Business, recreation and tourism assets:</u></p> <ul style="list-style-type: none"> <li>• Where the extent of impacts on receptors may be moderate (for example substantial amendment or partial closure of an asset).</li> <li>• Where access to a recreational route will be affected but a diversion is in place.</li> </ul>
Low	<p><u>Local economy and employment:</u></p> <ul style="list-style-type: none"> <li>• Number of employment opportunities is small in scale when compared to the combined local planning authorities' (i.e. those within the Wider Study Area) total number of employees within the sector (for example the construction employment opportunities generated by the proposal will represent less than half of the total number of employees in the construction sector for this study area).</li> </ul> <p><u>Community facilities:</u></p> <ul style="list-style-type: none"> <li>• A discernible change in attributes, quality or vulnerability; or</li> <li>• Minor loss of, or alteration to one (maybe more) key characteristics, features or elements (for example amendment to access or acquisition of land resulting in changes to operating conditions that do not compromise overall viability of the community facility; or</li> <li>• Introduce (adverse) or remove (beneficial) severance with adequate accessibility provision.</li> </ul> <p><u>Business, recreation and tourism assets:</u></p>

Magnitude of impact (adverse / beneficial)	Description
	<ul style="list-style-type: none"> <li>• Where the extent of impacts on receptors is considered to be small (for example minor amendment to assets that do not compromise overall accessibility; or result in very minor reductions in annual visitor numbers, but this is considered to be within the parameters of normal annual variability).</li> <li>• Where access to a recreational route will only be affected in a limited way (for example a temporary closure) and appropriate mitigation arrangements are in place.</li> </ul>
Very Low	<p><u>Local economy and employment:</u></p> <ul style="list-style-type: none"> <li>• Number of employment opportunities is very small in scale when compared to the combined local planning authorities' (i.e. those within the Wider Study Area) total number of employees within the sector (for example the construction employment opportunities generated by the proposal will represent an insignificant number of the total number of employees in the construction sector).</li> </ul> <p><u>Community facilities:</u></p> <ul style="list-style-type: none"> <li>• Very minor loss or alteration to one or more characteristics, features or elements (for example acquisition of non-operational land or buildings not directly affecting the viability of the community facility); or</li> <li>• Very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision.</li> </ul> <p><u>Business, recreation and tourism assets:</u></p> <ul style="list-style-type: none"> <li>• Where there is no credible scenario whereby the proposal could affect the viability of recreational or tourism assets, visitor numbers, tourism opportunities or benefits and remains within the limits of annual variability.</li> <li>• Where there is no credible change to access to the recreational route.</li> </ul>

Table 19-7 – Significance of Effect Matrix

Magnitude	Sensitivity			
	High	Medium	Low	Very Low
High	Major Adverse/Beneficial (Significant)	Major Adverse/Beneficial (Significant)	Moderate Adverse/Beneficial (Significant)	Minor Adverse/Beneficial (Not Significant)
Medium	Major Adverse/Beneficial (Significant)	Moderate Adverse/Beneficial (Significant)	Minor Adverse/Beneficial (Not Significant)	Negligible (Not Significant)
Low	Moderate Adverse/Beneficial (Not Significant)	Minor Adverse/Beneficial (Not Significant)	Minor Adverse/Beneficial (Not Significant)	Negligible (Not Significant)
Very Low	Minor Adverse/Beneficial (Not Significant)	Negligible (Not Significant)	Negligible (Not Significant)	Negligible (Not Significant)

## Assumptions and Limitations

19.4.10 The following limitations and assumptions have been identified for the Socio-economics, Recreation and Tourism assessment:

- The assessment relies on, in part, data provided by third parties (e.g., OS Mapping, Nomis) which are the most up-to-date data available at the time of the assessment. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment for EIA purposes.
- The sensitivity of individual receptors has been assessed based on publicly available data (e.g., business webpages) and professional judgement where there is no such information in the public domain.
- The assessment aims to identify all potential receptors to the fullest extent possible based on information available in the public domain. It is conceivable that additional receptors may indeed exist, although their locations are not specifically indicated within the public domain.
- No site surveys have been undertaken for the purpose of this chapter. However, this is not considered to affect the robustness of the assessment due to baseline information being publicly available online.
- The assessment has been undertaken based on the preliminary Project design information as detailed in Chapter 2: Project Description and the consideration of preliminary conclusions from other related environmental topic assessments. This information is iterative and will be updated in the ES stage as the design evolves.
- All conclusions and assessments are, by their nature, preliminary. All assessment work has applied, and continues to apply, a precautionary approach, in that where limited information is available (in terms of the proposals for the Project), a realistic worst-case scenario is assessed;
- Potential visual effects have been based on the preliminary Zones of Theoretical Visibility (ZTV) produced for the PEIR in Figure 6.12: Preliminary Zone of Theoretical Visibility Collector Substation and Switching Station – Screening Features and Figure 6.13 Preliminary Zone of Theoretical Visibility Towers – Screening Features, in Volume II.
- Compensation matters are not addressed within the PEIR and will be dealt with separately as part of the application for development consent.

## 19.5 Baseline Conditions

### Existing Baseline

19.5.1 This section sets out the baseline condition for Socio-economics, Recreation and Tourism within the three study areas.

#### Population and Age Profile

19.5.2 As shown in Table 19.8, Powys has experienced minimal population growth since the 2011 Census (0.1%), significantly lower than Wales (1.4%), Shropshire (5.7%), West Midlands (6.2%), and the combined regions of England and Wales (6.3%).

19.5.3 Both Powys and Shropshire have a lower proportion of younger people (aged 15 and under) and working age population (aged 16 to 64) when compared to Wales, West Midlands and England and Wales as a whole.

19.5.4 Powys and Shropshire have older age profiles compared to Wales, the West Midlands, and England and Wales overall. Powys, in particular, has the highest proportion of residents aged 65 and over.

Table 19-8 – Population and Age profile by Geographic Area in 2021

	Powys	Shropshire	Wales	West Midlands	England and Wales*
Population	133,170	323,606	3,107,493	5,950,758	59,597,542
Percentage change since 2011 Census	+0.1%	+5.7%	+1.4%	+6.2%	+6.3%
Aged 15 years and under	15.5%	15.9%	17.7%	19.3%	18.5%
Aged 16-64 years	56.6%	58.9%	61.0%	61.9%	62.9%

	Powys	Shropshire	Wales	West Midlands	England and Wales*
Aged 65+ years	27.8%	25.3%	21.4%	18.8%	18.5%
* The Census data for Great Britain is unavailable. Consequently, data for England and Wales has been utilised for the purpose of this table.					

Source: Nomis, 2024 (Ref. 19.13)

## Deprivation

- 19.5.5 The Welsh Index of Multiple Deprivation (WIMD) is a relative measure of deprivation in Wales. Although there is no local authority ranking, in Powys, 19 out of 79 Lower Layer Super Output Areas (LSOAs) were ranked within the 0% to 50% most deprived LSOAs in Wales in 2019 (Ref. 19.14).
- 19.5.6 The English Index of Multiple Deprivation (IMD) provides similar information for spatial areas in England. IMD analysis allows for the identification of levels of deprivation by ranking LSOAs from 1 (most deprived area) to 32,844 (least deprived area). Shropshire ranked 165 in 2019 out of 317 local authorities in 2019 (Ref. 19.15). This ranking places Shropshire in the middle range of the deprivation scale, indicating that it experiences some level of deprivation.

## Economic Activity and Employment

- 19.5.7 Based on data reported by Nomis, the economic activity rate in Shropshire (82.0%) is notably higher when compared to other geographies shown in Table 19.9. Both Powys and Shropshire have a higher economic activity rate when compared to their respective country or region, as well as the national average.
- 19.5.8 Both Powys and Shropshire have an unemployment rate of 3.3%, which is lower than the rates for Wales (3.7%), the West Midlands (4.4%), and Great Britain (3.7%).
- 19.5.9 These indicate a relatively high level of economic engagement in these areas compared to the broader regional and national context.



Table 19-9 – Economic activity rate by geographic area between January 2023 and December 2023

	Powys	Shropshire	Wales	West Midlands	Great Britain
Economic activity rate (aged 16-64)	77.9%	82.0%	77.0%	78.8%	78.8%
Unemployment rate (aged 16-64)	3.3%	3.3%	3.7%	4.4%	3.7%

Note: Economic activity rate is the proportion of working aged people (i.e., people aged 16-64) who are active or potentially active members of the labour market (i.e., people who are employed or unemployed). Examples of people who may not count as economically active include students, early retirees, carers and people with a long-term sickness or disability.

Source: Nomis, 2024 (Ref. 19.13)

- 19.5.10 Table 19.10 shows that both Powys and Shropshire have a higher proportion of individuals in managerial roles (12.2%) than is the case for Wales, the West Midlands, and Great Britain. Powys has a notably lower percentage of individuals in professional occupations (18.2%) compared to Wales (23.5%) and the national (26.9%) averages. Both Powys and Shropshire have a significantly higher proportion of individuals in skilled trades occupations (18.1% and 14.8% respectively), compared to Wales (9.4%), the West Midlands (9.3%), and Great Britain (8.7%).

Table 19-10 – Employment by Occupation by Geographic area between January 2023 and December 2023

	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	Great Britain (%)
Managers, Directors and Senior Officials	12.2	12.2	9.1	9.2	10.8
Professional Occupations	18.2	24.0	23.5	25.4	26.9
Associate Professional Occupations	16.1	11.9	14.4	13.8	15.2

	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	Great Britain (%)
Administrative & Secretarial Occupations	8.5	8.8	9.7	9.0	9.5
Skilled Trades Occupations	18.1	14.8	9.4	9.3	8.7
Caring, Leisure and Other Service Occupations	9.3	8.3	9.3	8.6	8.0
Sales and Customer Service Occupations	*	4.7	7.4	6.2	6.2
Process Plant and Machine Operatives	*	3.7	6.5	6.9	5.4
Elementary Occupations	9.1	11.5	10.3	11.3	9.2
* Sample size too small for reliable estimate.					

*Source: Nomis, 2024 (Ref. 19.13)*

- 19.5.11 Table 19.11 shows that both Powys and Shropshire have a slightly lower percentage of residents with higher education qualifications (RQF4+) at 42.0% and 43.0%, compared to the Great Britain average of 47.3%.
- 19.5.12 In terms of A-levels and equivalent qualifications (RQF3+), GCSEs and equivalent qualifications (RQF2+), and basic secondary education (RQF1+), Powys and Shropshire both surpass the regional and national averages.
- 19.5.13 Overall, Powys shows higher basic educational attainment and lower levels of residents with no qualifications when compared to the national averages, suggesting a robust educational foundation. Shropshire also shows a marginally higher basic educational attainment when compared to national averages, although it has a higher proportion of residents with no qualifications compared to Powys.

Table 19-11 – Qualifications by Geographic area between January 2023 and December 2023

	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	Great Britain (%)
People with RQF4+	42.0	43.0	43.2	42.5	47.3
People with RQF3+	68.5	67.2	64.6	63.6	67.8
People with RQF2+	90.2	86.6	84.9	84.3	86.5
People with RQF1+	91.1	89.6	87.5	87.5	89.0
Other qualifications	4.7	2.7	3.9	5.2	4.6
No qualifications	4.2	7.7	8.6	7.3	6.5

Source: Nomis, 2024 (Ref. 19.13)

19.5.14 Table 19.12 illustrates that the predominant industry in Powys by employment is ‘Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles’, representing 14.9% of total employment. In Shropshire, this sector accounts for 16.7% of jobs. However, the leading industry in Shropshire is ‘Human Health and Social Work Activities’, comprising 18.3% of employment, which is higher than both the regional (14.3%) and the national (13.5%) averages. In contrast, Powys has a lower proportion of its workforce in this sector (12.8%) compared to the averages for Wales and Great Britain but a higher proportion of employees in the ‘Financial and Insurance Activities’ sector (5.3%) when compared to Shropshire (1.2%), Wales (3%), West Midlands (2.5%), and Great Britain (3.3%).

Table 19-12 – Proportion of Total Employees in each Industry Sector in 2022

	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	Great Britain (%)
B: Mining and Quarrying	0.4	0.1	0.2	0.0	0.2
C: Manufacturing	12.8	11.1	10.8	11.3	7.6
D: Electricity, Gas, Steam and Air Conditioning Supply	0.2	0.2	0.5	0.5	0.4
E: Water Supply; Sewerage, Waste Management and Remediation Activities	0.7	0.8	1.0	0.8	0.7
F: Construction	4.8	4.8	4.9	4.1	4.9
G: Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	14.9	16.7	13.2	15.0	14.0
H: Transportation and Storage	4.8	4.0	4.2	6.6	5.0
I: Accommodation and Food Service Activities	9.6	8.7	8.8	6.3	8.0
J: Information and Communication	1.7	2.4	2.4	2.9	4.6
K: Financial and Insurance Activities	5.3	1.2	3.0	2.5	3.3
L: Real Estate Activities	1.0	3.2	1.5	2.6	1.9

	Powys (%)	Shropshire (%)	Wales (%)	West Midlands (%)	Great Britain (%)
M: Professional, Scientific and Technical Activities	6.4	7.1	5.2	7.4	9.1
N: Administrative and Support Service Activities	5.3	4.8	6.8	8.7	9.0
O: Public Administration and Defence; Compulsory Social Security	6.4	3.6	8.2	4.0	4.7
P: Education	7.4	8.7	9.1	8.3	8.6
Q: Human Health and Social Work Activities	12.8	18.3	15.4	14.3	13.5
R: Arts, Entertainment and Recreation	3.2	2.0	2.7	1.9	2.4
S: Other Service Activities	2.1	3.2	2.0	2.7	2.0

Source: Nomis, 2024 (Ref. 19.13)

- 19.5.15 Overall, the economy and employment status in Powys and Shropshire are broadly in line with the regional and national averages, with no significant shortages of labour.

### Community Facilities

- 19.5.16 Community facilities are grouped into several ‘asset classes’, including for example education facilities, libraries, hospitals, surgeries, pharmacies, community centres, sports halls, swimming pools and other sporting grounds/facilities, and places of worship. Other assets which may serve community purposes (such as public houses and private sports clubs) are considered elsewhere in this chapter under the business, recreation and tourism assets heading.

19.5.17 There is one community facility identified within the Local Study Area at the current design stage (see Table 19.13).

Table 19-13 – Community Facilities within the Local Study Area

Local Authority Area	Asset Category	Name/Description	Postcode
Powys	Allotment	Name of allotment not known: The allotment is located on Lletty Lane in Llansantffraid-ym-Mechain. The direct access for the allotment is located within the Project’s draft Order Limits. and the allotment is likely to be used on a daily basis and all year round.	SY22 6AT

### Businesses, Recreation and Tourism Assets

19.5.18 This section details the businesses, recreation and tourism assets that fall within the Local Study Area and 1km Study Area. The asset types are separated into four elements:

- Built assets.
- Recreational.
- Recreational routes.
- Visitor accommodation bedspaces.

#### Built Assets

19.5.19 The following types of assets have been considered under this heading:

- Public houses/restaurants/wedding or other event venues.
- Visitor accommodation including hotels, bed and breakfast accommodation, campsites/caravan parks, and self-catering accommodation.
- Sports/activities, for example rugby clubs, equestrian centres, golf clubs and outdoor activity providers.
- Tourist attractions.

19.5.20 Built assets identified within the Local Study Area are listed in Table 19.14, while those within the 1km Study Area are detailed in Table 19.15. These built assets are also shown in Figure 19.2: Businesses, Recreation and Tourism Assets.

Table 19-14 – Businesses, Recreation and Tourism Assets within the Local Study Area

Local Authority Area	Asset Category	Name/Description	Postcode
Powys	Sports – Rugby club	Cobra Rugby Club, Meifod A rugby club with three rugby pitches and with mens, ladies, youth and junior teams. It is assumed to operate on a regular basis all year round.	SY22 6DA
Powys and Shropshire	Sports – Water sports site	Montgomery Canal A water canal crosses England and Wales which is popular for canoeing and paddling. It crosses the Local Study Area southwest of Llanymynech (this section of the Montgomery Canal is a Site of Special Scientific Interest (SSSI)) and east of Maesbury Marsh.	N/a
Shropshire	Sports – Equestrian centre	Llanymynech Horse Trials (part of Radfords Equestrians) An equestrian centre with dressage, British Eventing, livery services, indoor and outdoor arenas for hire, clinic and schooling courses. The centre operates all year round. Alternative equestrian facilities at a similar scale are not available in the wider area.	SY22 6LG
Shropshire	Wedding venue/B&B	Bromwich Park Farm Weddings and Accommodation A wedding venue with visitor accommodation which operates all year round. The venue is capable of accommodating over 200 guests and using both indoor and outdoor facilities. Accommodation options include a cottage and a camping field for tents/caravans. Alternative wedding	SY11 4JQ



Local Authority Area	Asset Category	Name/Description	Postcode
		venues of a similar size with accommodation are available in the wider district. Visitor/user numbers are not available in the public domain.	
Shropshire	Tourist attraction	Shropshire Sculpture Park A paid tourist attraction (children admitted free). The Sculpture Park operates between Tuesday and Saturday (and is closed on Sunday, Monday and bank holidays, except Good Friday). It offers memberships and a loyalty system for visitors. The attraction has an outdoor area, indoor showroom, a café, a workshop and a nature trail. There are no similar assets within the local or wider area. Visitor numbers are not available in the public domain.	SY11 4JH

Table 19-15 – Businesses, Recreation and Tourism Assets within the 1km Study Area

Local Authority Area	Asset Category	Name/Description	Postcode
Powys	Quarry	HV Bowen and Sons Limited: A concrete and aggregates quarry that is likely to operate all year round.	SY21 0AN

Local Authority Area	Asset Category	Name/Description	Postcode
Powys	Sports – Outdoor activity provider	<p>The Red Ridge Centre</p> <p>An outdoor activity provider including onsite and offsite activities. The centre also provides accessible activities for people with special needs, such as wheelchair rafting and assisted walking. The centre operates all year round with 21 members of staff. Although there are other outdoor activity providers within the wider area, centres providing these specialist accessible activities are not available.</p> <p>User number information is not available in the public domain.</p>	SY21 0AZ
Powys	Visitor accommodation	<p>Tan y Wawr- Onnen/Davis.J.C: Sleeps two guests, includes hot tub facility. The accommodation operates all year round.</p>	SY21 0HB
Powys	Visitor accommodation	<p>Stag Lodge Pod: Sleeps two guests, includes hot tub facility. The accommodation operates all year round.</p>	SY21 0HY
Powys	Visitor accommodation	<p>Embden Pod at Banwy Glamping: Sleeps two guests, includes hot tub facility. The accommodation operates all year round.</p>	SY21 0HY
Powys	Holiday home/caravan park	<p>Dolgead Hall Caravan Park &amp; Lodge Park: Holiday home and lodge park that operates all year round. It has a fishing lake, golf course, bowling green, tennis court, games room and children play area.</p>	SY21 0HT
Powys	Visitor accommodation	<p>Brynglas Cottage: With hot tub facility and likely to operate all year round.</p>	SY21 0HU

Local Authority Area	Asset Category	Name/Description	Postcode
Powys	Visitor accommodation	Y Dderwen: With two bedrooms which operates all year round.	SY21 0HU
Powys	Visitor accommodation	Ty Newydd: With six bedrooms and indoor swimming pool which can accommodate up to 15 guests. The accommodation operates all year round.	SY21 0LN
Powys	Visitor accommodation	Ty Gwyn: With three bedrooms and hot tub that can accommodate up to five guests. The accommodation operates all year round.	SY21 0LA
Powys	Visitor accommodation	Llanoddian Isaf Holiday Cottages: Two cottages which accommodate five and six guests respectively. It is likely to operate all year round.	SY21 0JU
Powys	Visitor accommodation	The Secret Yurts - Luxury Hot Tub Glamping: Three yurts which accommodate two guests each, two of the three yurts also provide a hot tub facility. The accommodation operates all year round.	SY21 0JU
Powys	Holiday home/caravan park	Pen-Y-Pentre: Likely to operate all year round. Information in relation to facilities is not available online at the time of writing.	SY21 0JT
Powys	Visitor accommodation	Acorn Warren: With one bedroom which accommodates up to two guests. The accommodation operates all year round.	SY21 0JT

Local Authority Area	Asset Category	Name/Description	Postcode
Powys	Holiday home/caravan park	Fir View Tan Y Ffridd Holiday Park: A long-term stay caravan park which operates between February to November with facilities including a football pitch, bowling green, crazy golf course, all-weather tennis court and children's activity centre.	SY21 0LT
Powys	Visitor accommodation	Bwthyn Efyrynwy: Accommodation with two bedrooms which accommodates up to four guests and operates all year round.	SY22 6HS
Powys	Visitor accommodation	Maesnewydd Cottage: Sleeps up to four guests. The accommodation operates all year round.	SY22 6HP
Powys	Tourist attraction	Meifod Valley Alpacas: Visitor attraction with 11 alpacas. Visitor accommodation (Maesnewydd Cottage) is also present on site. The attraction operates all year round, except for Sundays and provides guided tours, workshops and a gift shop.	SY22 6HP
Powys	Visitor accommodation	Mid-Wales Farmhouse: With five bedrooms and an outdoor swimming pool which accommodates up to 14 guests. The accommodation operates all year round.	SY22 6HW
Powys	Visitor attraction	Dyffryn Hill Celtic Fort: A hiking area with a historic fort.	SY22 6HL
Powys	Visitor accommodation	King's Head Inn: With three bedrooms which could accommodate up to eight guests. The accommodation operates all year round.	SY22 6BY

Local Authority Area	Asset Category	Name/Description	Postcode
Powys	Visitor accommodation	Pentrego Isaf: Sleeps up to eight guests and operates between March and December.	ST22 6DH
Powys	Visitor accommodation	Sunny Lea: With two cabins which operate all year round.	SY22 6YA
Powys	Visitor accommodation	Meifod Valley Lodges/Meadow View: With hot tub facility which sleeps up to four guests. The accommodation operates all year round.	SY22 6XZ
Powys	Holiday home/caravan park	Valley View Holiday Park: A short-term and long-term stay caravan park which operates all year round with facilities including a play area, games room, picnic area, swimming pool and tennis court. This is a dog friendly caravan park.	SY21 9DL
Powys	Visitor accommodation	Tan Y Graig B&B: With two bedrooms which could accommodate up to two guests each and operates all year round.	SY22 6BP
Powys	Visitor accommodation	Coed ty: Sleeps up to two guests and operates all year round.	SY22 5LP
Powys	Visitor accommodation	Collfryn Farm Cottages: A complex of five cottages with accommodate between four and six guests each. The accommodation is likely to operate all year round.	SY22 6TQ
Powys	Visitor accommodation	Vyrnwy Valley Lodges: With five lodges which accommodate up to four guests per lodge. The lodges operate all year round.	SY22 6XS

Local Authority Area	Asset Category	Name/Description	Postcode
Powys	Visitor accommodation	The Old Beams at Pont y Forwyn: With one bedroom which accommodates up to two guests. The accommodation operates only on Saturdays.	SY22 6UA
Powys	Hotel	The Lion Hotel: With five bedrooms and operates all year round.	SY22 6AQ
Powys	Visitor accommodation	Spoonley Apartment (in Llansantffraid-ym-Mechain): With one bedroom which could accommodate up to two guests and operates all year round.	SY22 6FB
Powys	Holiday home/caravan park/campsite	Bryn Vyrnwy Holiday Park: A caravan park and visitor campsite which operates all year round with a child play area and angling activity available along the River Vyrnwy.	SY22 6AY
Powys	Visitor accommodation	Le-Gro Barns: With six bedrooms which accommodate up to 12 guests. The accommodation operates all year round.	SY22 6AZ
Powys	Event venue/ Visitor accommodation	Bryn Tanat Hall: A visitor accommodation and event venue which includes gym, spa, tennis, archery, laser clay shooting, laser tag, boules, croquet, fishing and hot tub facilities. It has five properties which could accommodate up to 50 guests in total and which operate all year round. It also offers the option for lodge purchase.	SY22 6BA
Powys and Shropshire	Holiday home/caravan park	Tanat Holiday Park: A short-term and long-term stay visitor accommodation with both cabins and caravan options. It offers fishing activities on the River Tanat and the option for caravan purchase. The accommodation is open between March and November.	SY22 6LH

Local Authority Area	Asset Category	Name/Description	Postcode
Powys	Holiday home/caravan park	Trederwen Caravan Park: A long-term stay visitor accommodation with activities, children play area and multi-function room with a bar / lounge. It also offers the option for caravan purchase. The facility operates between April and October.	SY22 6SY
Powys	Holiday home/caravan park	Woodside Holiday Park: A long-term stay visitor accommodation with bar, coffee shop, angling and bowling green facilities. It also offers the option for caravan purchase. The facility operates between March and January.	SY22 6SY
Powys	Holiday home/caravan park	Vyrnwy Caravans Ltd: A short-term and long-term stay visitor accommodation which also offers fishing activities on the River Vyrnwy. It offers the option for caravan purchases. The fixed caravan section is likely to be open all year round, with the motorhome section operating between April and September.	SY22 6SY
Powys	Tourist attraction	Montgomery canal aqueduct: It includes the disused aqueduct which forms part of the Offa's Dyke Path.	SY22 6PG
Powys	Visitor accommodation	Maes Offa Stays: With a caravan which accommodates up to two guests and a further three spaces for motorhomes. The accommodation is likely to operate all year round.	SY22 6RA
Powys	Visitor accommodation	Tŷ Llew: With three bedrooms which could accommodate up to seven guests in total. The visitor accommodation is likely to operate all year round.	SY22 6RB

Local Authority Area	Asset Category	Name/Description	Postcode
Powys	Visitor accommodation	Dolphin Inn: With three bedrooms which accommodate up to six guests. The accommodation operates all year round.	SY22 6ER
Powys	Visitor accommodation	Rhandregynwen Hall: With eight bedrooms which accommodate up to 18 guests and include a hot tub facility. The accommodation operates all year round.	SY22 6SN
Shropshire	Hotel	The Bradford Arms Hotel: With five bedrooms with a restaurant and a bar. The accommodation operates all year round.	SY22 6QZ
Shropshire	Hotel	The Cross Keys: With four bedrooms and which operates all year round.	SY22 6EA
Shropshire	Visitor attraction	Llanymynech Wharf Visitor Centre: A free entry visitor centre that operates between April to September during Saturday and Sunday afternoons, as well as Bank Holiday Mondays and Fridays. The centre also offers canal boat trips along the Montgomery Canal.	SY22 6EZ
Shropshire	Visitor accommodation	The Coach House: With three bedrooms which accommodate up to six guests and include a hot tub facility. The accommodation is likely to operate all year round.	SY22 6LQ
Shropshire	Sports – Equestrian centre	Plas Cerrig Equestrian: An equestrian centre with accommodation services (i.e., Plas Cerrig Barn).	SY22 6LQ



Local Authority Area	Asset Category	Name/Description	Postcode
Shropshire	Visitor accommodation	Plas Cerrig Barn: With four bedrooms which accommodate up to eight guests and include a hot tub facility. The accommodation operates all year round.	SY22 6LQ
Shropshire	Sports – Equestrian centre	Radford Equestrian: An equestrian centre with dressage, British Eventing, livery services, indoor and outdoor arenas for hire, clinic and schooling courses. The centre operates all year round. Alternative equestrian facilities at a similar scale are not available in the wider area.	SY22 6LG
Shropshire	Restaurant/public house	The Black Horse, Maesbrook: A restaurant and public house with outdoor seating area which operates on Sunday.	SY10 8QG
Shropshire	Campsite	WildconTENTment: A campsite with both grass pitch camping rental and glamping facilities for rent. The campsite is likely to operate all year round.	SY10 8RT
Shropshire	Visitor accommodation	Bumble Lodge: With two bedrooms which could accommodate up to seven guests in total. There are barbecue facilities and the visitor accommodation is likely to operate all year round.	SY10 8BT
Shropshire	Visitor accommodation	Woolston lodge: With one bedroom, hot tub and other facilities. It is likely to operate during summer months only.	SY10 8HY
Shropshire	Visitor accommodation	Maesbury Manor: With five bedrooms and operating all year round.	SY10 8JA

Local Authority Area	Asset Category	Name/Description	Postcode
Shropshire	Restaurant/public house	The Navigation Inn: A restaurant and public house with outdoor seating area which operates all year round.	SY10 8JB
Shropshire	Visitor accommodation	The Stables: With two bedrooms and likely to operate all year round.	SY10 8JB
Shropshire	Sports – Golf club	Oswestry Golf Club: The golf club operates all year round on both a visitor and membership basis. It has an 18-hole golf course, a golf shop and clubhouse facilities. The golf club also offers coaching services. There are other golf clubs at a similar scale elsewhere in the area.  User / membership numbers are not available in the public domain.	SY11 4JJ
Shropshire	Sports – Archery club	Croesoswallt Archers: An archery club which likely operates all year round on both a visitor and membership basis. It provides courses for beginners, taster sessions and tournament.	SY11 4JH

- 19.5.21 There are no active airfields or hot air balloon launch sites identified within the Local Study Area or 1km Study Area.

#### **Recreational Land**

- 19.5.22 Recreational land includes Registered Common Land/CRoW (land designated within The Countryside and Rights of Way Act), National Trust open access woods, Natural Resources Wales open access woods, National Nature Reserves, Local Nature Reserves and other publicly accessible recreational space.

- 19.5.23 There is no recreational land identified within the Local Study Area.

#### **Recreational Routes**

- 19.5.24 Recreational routes located within the Local Study Area are listed in Table 19.16 and shown in Figure 19.3 Recreational Routes. The different categories of routes include PRow, National Trail / other long-distance path and circular or themed walks.

Table 19-16 – Recreational Routes within the Local Study Area

Local Authority Area	Route category	Description
Powys	PRoW	There are 103 PRoWs located within the Local Study Area, including 72 footpaths, 13 bridleways and 18 restricted byways.
Powys	National Trail	Glyndŵr's Way: A National Trail of 217km in length. The trail connects Knighton in Powys to Welshpool in Powys. It crosses the Local Study Area southeast of Meifod.
Powys	National Trail / long distance path	The Offa's Dyke: A national walking trail of 285km in length. The trail connects various settlements from Sedbury in England through to Prestatyn in north Wales. It crosses the Local Study Area south of Llanymynech.
Powys and Shropshire	Long distance path	Montgomery Canal: A long distance route along the Montgomery Canal of 56km in length, although certain sections of the towpath are not suitable for cycling. The route connects Newtown in Wales to the south west of Ellesmere in England. It crosses the Local Study Area southwest of Llanymynech and east of Maesbury Marsh.
Shropshire	PRoW	There are 21 PRoWs located within the Local Study Area, including 17 footpaths, two bridleways and two restricted byways.

Local Authority Area	Route category	Description
Shropshire	Long distance path	The Shropshire Way: A walking path of 320km in length. The route links Shrewsbury with the historic towns and villages of Bishop's Castle, Clun, Ludlow, Much Wenlock, Ironbridge and Wellington. It crosses the Local Study Area south of Llanymynech and at Maesbury Marsh.
Shropshire	Circular walk	Watts Dyke – Queens Head Circular: A circular walking route of 10km in length. It connects several settlements and towns located southeast of Oswestry. It crosses the Local Study Area east of Maesbury Marsh and west of Queens Head.
Shropshire	Circular walk	Oswestry Round: A circular walking route of 53km in length. It combines Offa's Dyke Path to the west and the Montgomery and Llangollen Canals to the east to create a circular walk around the border town of Oswestry. It crosses the Local Study Area east of Maesbury Marsh.

*Source: Powys County Council, 2024 (Ref. 19.20); Shropshire Council, 2024 (Ref. 19.19); Shropshire's Great Outdoors, 2024 (Ref. 19.21); Walk Offa's Dyke, 2024 (Ref.19.22); LDWA, 2024 (Ref. 19.23)*

## Local Visitor Accommodation Bedspaces

- 19.5.25 Numbers of bedspaces (both serviced and non-serviced accommodation) across the Wider Study Area is presented in Table 19.17. The table includes comparative geographic areas (Wales, West Midlands and England).
- 19.5.26 According to visitor accommodation occupancy survey data released by the Welsh Government and Visit England, visitor accommodation reached their highest occupancy rate of approximately 80% on average across serviced and non-serviced accommodation in August 2023 in Wales, and 80% in June 2023 in the West Midlands. In contrast, the lowest occupancy rate was approximately 37.3% in January or October 2023 in Wales, and 63% in January 2023 in the West Midlands.
- 19.5.27 When applying the 2022 Wales and 2016 England bedspace numbers in the Wider Study Area to the 2023 bedspace occupancy rate, this suggests there were likely approximately 30,507 and 17,450 surplus bedspaces during peak season in Powys and Shropshire respectively.

*Table 19-17 - Bedspaces in Serviced and Non-Serviced Accommodation (2022 for Wales and 2016 for England)*

Type of Accommodation	Powys	Shropshire	Wales	West Midlands	England
Hotels and similar establishments	6,038	10,709	70,585	137,307	1,788,011
<b>Total serviced accommodation</b>	<b>6,038</b>	<b>10,709</b>	<b>70,585</b>	<b>137,307</b>	<b>1,788,011</b>
Holiday dwellings and other collective accommodation	7,398	2,968	100,340	23,881	486,416
Caravans and campsites	24,698	8,136	434,286	18,067	921,491
<b>Total non-serviced accommodation</b>	<b>32,096</b>	<b>11,104</b>	<b>534,626</b>	<b>41,948</b>	<b>1,407,907</b>

Type of Accommodation	Powys	Shropshire	Wales	West Midlands	England
<b>Total serviced and non-serviced accommodation</b>	<b>38,134</b>	<b>21,813</b>	<b>605,211</b>	<b>179,255</b>	<b>3,195,918</b>

Source: Welsh Government, 2024 (Ref. 19.16); Visit Britain, 2024 (Ref. 19.24).

## Future Baseline

19.5.28 The future baseline encompasses anticipated changes to the Socio-economics, Recreation and Tourism topics.

### Socio-economic Profile

19.5.29 Table 19.18 details the projected population changes across various geographic locations based on the 2018 population estimates. Shropshire is expected to experience a higher rate of growth exceeding the national average in 2027 and 2029, whereas the population in Powys is expected to have a slight decrease. In contrast, the Welsh Government anticipates an increase in population in 2027 and 2029.

Table 19-18 – Population Changes Projections

	2027	2029
Powys	-0.3%	-0.2%
Shropshire	+7.2%	+8.8%
Wales	+3.3%	+3.7%
West Midlands	+4.7%	+5.8%
England	-1.8%	-1.1%

Source: Nomis, 2024 (Ref. 19.13); StatsWales, 2024 (Ref. 19.17)

### Community Facilities

19.5.30 The future baseline in relation to community facilities is not considered likely to change materially from the baseline already described.

## **Businesses, Recreation and Tourism Assets**

- 19.5.31 Tourism levels and associated revenue are anticipated to fluctuate due to various external factors including economic conditions, foreign exchange rates, and weather patterns.

## **19.6 Preliminary Mitigation Measures**

- 19.6.1 Table 19.19 outlines the preliminary mitigation measures in relation to the Socio-economics, Recreation and Tourism assessment.



Table 19-19 – Preliminary Mitigation Measures in Relation to Socio-economics, Recreation and Tourism assessment

Receptor	Measures	Compliance Mechanism
<b>Embedded Mitigation Measures</b>		
Local residents Businesses Recreational users Visitors	<p>The routing and siting of the proposed towers, Overhead Lines (OHL), underground cable and substations have been considered carefully to avoid and reduce as far as practicable effects on identified environmental and health receptors.</p> <p>The Project has also aimed to avoid sensitive features such as centres of population and community, healthcare, and education facilities.</p> <p>Typical routing principles relevant to Socio-economics, Recreation and Tourism include:</p> <ul style="list-style-type: none"> <li>• Alignment avoiding constraints as much as possible.</li> <li>• Span lengths between towers are maximised as far as possible.</li> <li>• Tower positions avoid PRoWs as identified in open source data.</li> </ul>	Design consideration
	<p>Where practical, construction compounds would be located to avoid or minimise impacts on sensitive receptors, provide the best access for personnel and deliveries in relation to major structures and worksites, and meet other construction requirements for the Project.</p>	Work plans

Receptor	Measures	Compliance Mechanism
	Further preliminary measures are detailed in Chapter 6: Landscape and Visual Amenity; Chapter 10: Traffic and Transport; Chapter 11: Noise and Vibration; and Chapter 14: Air Quality.	Design consideration
<b>Good practice mitigation measures</b>		
Local residents Recreational users Visitors	<p>PRoW will be managed in discussion with Powys County Council and Shropshire Council PRoW officers.</p> <p>PRoW access disruptions will be minimised where possible. A closure of PRoW would be the last resort if a safe diversion cannot be provided. Should temporary closures be unavoidable, temporary diversions will be clearly marked at both ends with signage explaining the diversions and the duration of the diversion, and a contact number for any concerns.</p>	Outline Construction Environment Management Plan (OCEMP) (to be provided as part of the application for a DCO))
Local residents Businesses Recreational users Visitors	Further mitigation measures, including construction best practise to be implemented are detailed in Chapter 6: Landscape and Visual Amenity; Chapter 10: Traffic and Transport; Chapter 11: Noise and Vibration; and Chapter 14: Air Quality.	Outline Construction Traffic Management Plan (OCTMP) and OCEMP (to be provided as part of the application for a DCO)

## 19.7 Preliminary Likely Significant Effects

19.7.1 This section outlines the preliminary assessment of effects of the Project during the construction and operation phases.

### **Construction**

19.7.2 Table 19.20 and Table 19.21 summarise the potential Socio-economics, Recreation and Tourism preliminary effects from the construction activities.

Table 19-20 – Construction Phase – Preliminary Assessment of Potential Effects

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
<b>Local Economy and Employment</b>		
Local economy	Low	<p>A preliminary estimate of the number of construction jobs to be generated would be approximately 250 Full Time Equivalent (FTE) gross direct employees during the two-year construction period, resulting in a very low beneficial impact.</p> <p>Therefore, the direct construction employment generated by the Project is likely to have a potential temporary negligible effect (not significant) on the Wider Study Area economy. A detailed assessment will be undertaken and presented in the ES when further information is available.</p>
<b>Community Facilities</b>		
Allotments on Lletty Lane	High	<p>Direct access to the allotment is within the Project’s draft Order Limits where the proposed temporary access bellmouth is located. There will potentially be temporary access disruption arising from construction vehicles. Construction traffic management measures will be detailed in the OCTMP to ensure access to the allotments is maintained during construction, resulting in a potential very low adverse impact. With the application of the OCTMP, the residual effect is likely to be temporary minor adverse (not significant).</p>
<b>Business, Recreation and Tourism Assets (within the Project’s draft Order Limits)</b>		

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
Cobra Rugby Club	Low	<p>One of the three rugby pitches (i.e, the southern rugby pitch) is located between the proposed temporary access and pylon and overhead lines construction area. The construction works may affect users due to potential land take, access disruption, visual amenity, noise and air quality impacts arising from the construction vehicles and construction activities. Subject to restrictions and agreement between the rugby club and the construction contractor, there would continue to be safe access to the southern rugby pitch during construction. With the application of construction best practices to be detailed in the OCEMP, potential temporary impacts could be mitigated, resulting in a potential low adverse impact. Therefore, the residual effect is likely to be temporary minor adverse (not significant).</p>
Montgomery Canal	High	<p>There will potentially be very short term (e.g. likely to be one to two days) access disruption to the canal during the construction and demolition of the scaffolding at the banks of the canal in two small sections. However, access to the two small sections of the canal will not be affected in the large majority of the construction period once the scaffoldings are in place. Access to the large majority of the canal located beyond the Project's draft Order Limits will not be affected during construction. The construction works may affect users due to potential temporary visual amenity, noise and air quality impacts arising from the construction activities. With the application of construction best practices to be detailed in the OCEMP and access to the canal being maintained during</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
		the majority of the construction period, the residual adverse impact is likely to be very low. Therefore, the residual effect is likely to be temporary minor adverse (not significant).
Llanymynech Horse Trials (part of Radfords Equestrians)	Medium	There will potentially be temporary disruption due to vegetation clearance, and during construction of the pylons and overhead line. The construction works may affect users due to potential temporary land take, access disruption, visual amenity, noise and air quality impacts arising from the construction vehicles and construction activities. It is anticipated that access to approximately six out of the ten fields will be temporarily disrupted. Although construction best practice will be applied, there will be temporary land take from the business, resulting in a potential medium adverse impact. This matter will be the subject of engagement with individual landowners / businesses to understand how potential adverse effects could be mitigated. Where mitigation is not possible, it may be appropriate to consider compensation, although it is noted that this is not an EIA matter. The residual effect is likely to be temporary moderate adverse (significant). However, potential residual effects can likely be reduced should safe access or partial access be provided to minimise access disruption during construction.
Bromwich Park Farm Weddings and Accommodation	Low	There will potentially be temporary disruption during construction of the pylon and overhead line. The construction works may affect users due to potential temporary land take, visual amenity, noise and air quality impacts arising from the construction vehicles and construction activities. Although the proposed location of the vegetation clearance, temporary access and tower laydown area would avoid the indoor and outdoor venue

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
		<p>areas, and construction best practice will be applied, visual amenity may be affected, with a potential medium adverse impact. This matter will be the subject of engagement with individual landowners / businesses to understand how potential adverse effects could be mitigated. Where mitigation is not possible, it may be appropriate to consider compensation, although it is noted that this is not an EIA matter. Therefore, the residual effect is likely to be temporary minor adverse (not significant).</p> <p>However, potential residual effects can likely be reduced should mitigation (e.g. in a form of planting) be provided to minimise the visual impact.</p>
Shropshire Sculpture Park	Medium	<p>There will potentially be temporary short term disruption to divert two existing overhead lines. The construction works may affect users due to potential temporary land take, access disruption, visual amenity, noise and air quality impacts arising from construction vehicles and construction activities. Access to approximately three-quarters of the park is not anticipated to be affected during construction. With the application of construction best practices to be applied and detailed in the OCEMP and the proposed existing overhead lines diversion will be short term in duration, a medium adverse impact is anticipated. This matter will be the subject of engagement with individual landowners / businesses to understand how potential adverse effects could be mitigated. Where mitigation is not possible, it may be appropriate to consider compensation, although it is noted that this is not an EIA matter. The residual effect is likely to be temporary moderate adverse (significant).</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
		However, potential residual effects can likely be reduced should the proposed existing overhead lines diversion avoid business days (i.e. Tuesday to Saturday) and business hours (i.e. 09:00 to 16:00) to minimise access disruption for the business.
Recreational Land		
N/A	N/A	There is no recreational land within the Local Study Area. Therefore, no effect is anticipated during construction.
Recreational Routes		
103 PRowS in Powys and 21 PRowS in Shropshire	Low	<p>Temporary PRow diversions required during construction would be defined at the detailed design stage. Hence, a worst-case scenario has been assumed where safe access or diversion cannot be maintained or provided during construction, with potentially high adverse impacts. The residual effects are therefore anticipated to be temporary moderate adverse (significant).</p> <p>However, potential residual effects can likely be reduced should safe access, partial access or diversion be provided to minimise access disruption during construction.</p>
Glyndŵr's Way	High	Access to the majority of the National Trail would be maintained. A short section of the trail (between the A495 and Ffordd Glyndwr) falls within the Project's draft Order Limits and access to this section of the trail is likely to be temporarily affected during



Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
		construction. A large majority of the trail would not be affected during construction, the residual adverse impact is likely to be very low. Therefore, the residual effect is likely to be temporary minor adverse (not significant).
Offa's Dyke Path	High	Access to the majority of the National Trail would be maintained. A short section of the trail (PRoW 207/35(A)/2) falls within the Project's draft Order Limits and access to this section of the path is likely to be temporarily affected during construction. Provided that an appropriate temporary diversion is identified, users are not anticipated to be significantly affected during construction, resulting in a potential very low adverse impact. The residual effect is therefore anticipated to be temporary minor adverse (not significant).
Shropshire Way; Watts Dyke - Queens Head Circular; and Oswestry Round	Medium	Access to the majority of the long-distance paths and circular walks would be maintained during construction. Provided that appropriate measures are taken, including temporary diversions to short sections of those routes that fall within the Project's draft Order Limits, users of the routes are not anticipated to be significantly affected during construction, resulting in a potential very low adverse impact. The residual effects are anticipated to be temporary negligible (not significant).
Montgomery Canal	High	Access to the majority of the long-distance path would be maintained during construction. Provided that appropriate measures are taken, including temporary diversions to two short sections of the long-distance path that fall within the Project's draft Order Limits, users of the routes are not anticipated to be significantly affected during construction, resulting in a

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
		potential very low adverse impact. The residual effect is anticipated to be temporary minor adverse (not significant).
Local Visitor Accommodation Bedspaces		
Businesses and tourism assets	Low	<p>Based on experience from other overhead line developments, the Project is likely to employ both local and non-local workers to undertake the construction works.</p> <p>Local workers are likely to commute and are unlikely to require accommodation. Non-local workers would require temporary accommodation in the local area. Accommodation demand is likely to be hotels, B&amp;Bs, camping and caravan sites and short-term let properties. A worst-case scenario has been applied whereby approximately 250 FTE gross direct construction workers would be non-local workers and temporary accommodation would be required for all. Based on the findings in Section 19.5, there is a potential surplus of over 30,000 and 17,000 bedspaces in Powys and Shropshire respectively to accommodate the non-local workers for the Project during peak tourism season, without displacing bedspace for tourist requirements, resulting in a potential very low adverse impact during construction.</p> <p>Furthermore, the accommodation requirement from non-local workers is likely to benefit visitor accommodation businesses during construction from the increased level of business, with a very low beneficial impact during construction.</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
		Therefore, both temporary negligible (not significant) (for potential reduction in visitor accommodation bedspaces for visitors and benefits to visitor accommodation businesses) effects are anticipated in relation to the accommodation market during construction.

Table 19-21 – Construction Phase – Preliminary Assessment of Potential Effects on Business, Recreation and Tourism Assets beyond the Project’s draft Order Limits and within the 1km Study Area

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
HV Bowen and Sons Limited; and Radfords Equestrian	Medium	There is no land take anticipated for the receptors. Potential temporary access disruption is anticipated as a result of construction of the proposed overhead line in this location. With the application of best practice measures to be detailed in the OCEMP to maintain access during construction, the residual adverse impacts are likely to be very low. Therefore, the residual effects are likely to be temporary negligible (not significant).

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
The Red Ridge Centre	Medium	<p>There is no land take or access disruption anticipated for the receptor.</p> <p>The receptor would be located over 300m from the Project's draft Order Limits. Potential temporary visual amenity impacts are anticipated. Given that no land take or access is anticipated, the potential adverse impact is anticipated to be very low. The residual effects are likely to be temporary negligible (not significant).</p>
<p>Tan y Wawr- Onnen/Davis.J.C; Dolgead Hall Caravan Park &amp; Lodge Park; Y Dderwen; Ty Newydd;</p> <p>Llanoddian Isaf Holiday Cottages; The Secret Yurts - Luxury Hot Tub Glamping; Pen-Y-Pentre; Acorn Warren;</p> <p>Bwthyn Efyrynwy; Mid-Wales Farmhouse; Pentrego Isaf;</p> <p>Sunny Lea; Meifod Valley Lodges; Valley View Holiday Park; Coed ty; Collfryn Farm Cottages; Vyrnwy Valley Lodges; The Old Beams at Ponty Forwyn; Le-Gro Barns;</p> <p>Bryn Tanat Hall; Tanat Holiday Park; Trederwen Caravan</p>	Low	<p>There is no land take or access disruption anticipated for the receptors.</p> <p>The receptors would be located over 300m from the Project's draft Order Limits. Potential temporary visual amenity impacts are anticipated. Given that no land take or access is anticipated, the potential adverse impacts are anticipated to be very low. The residual effects are likely to be temporary negligible (not significant).</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
<p>Park; Woodside Holiday Park; Vyrnwy Caravans Ltd; Montgomery canal aqueduct;</p> <p>Maes Offa Stays; Tŷ LLEW; Rhandregynwen Hall;</p> <p>The Coach House; Plas Cerrig Equestrian;</p>		
<p>Bryn Vyrnwy Holiday Park; The Stables; The Navigation Inn; and Woolston lodge</p>	<p>Low</p>	<p>There is no land take or access disruption anticipated for the receptors.</p> <p>The receptors would be located over 200m from the Project's draft Order Limits. Potential temporary visual amenity and noise impacts are anticipated. With the application of best practice measures to be detailed in the OCEMP , the potential noise impact could be mitigated, with low adverse impacts. The residual effects are likely to be temporary minor adverse (not significant).</p>
<p>Stag Lodge Pod; Brynglas Cottage; Fir View Tan Y Ffridd Holiday Park; and Maesbury Manor</p>	<p>Low</p>	<p>There is no land take or access disruption anticipated for the receptors.</p> <p>The receptors would be located over 100m from the Project's draft Order Limits. Potential temporary visual amenity, air quality and noise impacts are anticipated.</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
		<p>With the application of best practice measures to be detailed in the OCEMP, the potential air quality and noise impact could be mitigated, with low adverse impacts. The residual effects are likely to be temporary minor adverse (not significant).</p>
<p>Embden Pod at Banwy Glamping; Ty Gwyn; Maesnewydd Cottage; Meifod Valley Alpacas; and Tan Y Graig B&amp;B</p>	<p>Low</p>	<p>There is no land take anticipated for the receptors. Potential temporary access disruption is anticipated on the direct access of the receptors to access and construct the proposed overhead line.</p> <p>The receptors are located within 100m of the Project's draft Order Limits. Potential temporary visual amenity, noise and air quality impacts arising from the construction vehicles and construction activities are anticipated. With the application of best practice measures to be detailed in the OCEMP and relevant controls to be outlined within the OCTMP, low adverse impacts are anticipated. The residual effects are likely to be temporary minor adverse (not significant).</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
<p>Kings Head Inn; The Lion Hotel; Spoonley Apartment; Dolphin Inn; The Bradford Arms Hotel; The Cross Keys; and Llanymynech Wharf Visitor Centre</p>	<p>Low</p>	<p>There is no land take or access disruption anticipated for the receptors.</p> <p>Given the receptors are situated within a relatively urban area, significant visual amenity, noise or air quality impacts are not anticipated from the proposed construction activities, resulting in potential very low adverse impacts. Potential residual temporary adverse negligible effects (not significant) may be experienced.</p>

## Operation

- 19.7.3 Table 19.22 and Table 19.23 summarise the potential Socio-economics, Recreation and Tourism preliminary effects from the operation of the Project.



Table 19-22 – Operation phase – Preliminary Assessment of Potential Effects

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
Local Economy and Employment		
N/A	N/A	The assessment has been scoped out of the EIA.
Community Facilities		
Allotments on Lletty Lane	High	Access to the allotments will not be affected during operation. Therefore, no permanent effect is anticipated.
Business, Recreation and Tourism Assets (within the Project's draft Order Limits)		
Cobra Rugby	Low	Access to all areas will be restored during operation. The proposed towers and overhead lines will likely be visible to the rugby club. However, visual amenity is considered not a key feature of a rugby club. There are also some existing power lines in the area. Therefore, no permanent effect is anticipated.
Montgomery Canal	Medium	No access disruption is anticipated during operation. There is the potential for permanent visual amenity effects on two small sections of the canal. However, the majority of the Montgomery Canal will not be affected,

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
		resulting in a very low adverse impact. Therefore, the potential effect on the Montgomery Canal is anticipated to be permanent negligible (not significant) effect.
Llanymynech Horse Trials (part of Radfords Equestrians)	Medium	<p>Access to the majority of the horse trails would be restored during operation, except for the immediate area around the proposed pylons where they might be fenced off for safety reasons.</p> <p>There is the potential for permanent visual amenity effects on the equestrian site. The proposed overhead line would be located close to an existing small scale overhead line, and the proposed large scale towers may potentially affect the current horse trials from a visual amenity perspective (in terms of perceived impact). However, visual amenity is not considered to be a key feature affecting the operation of an equestrian site. This matter will be the subject of engagement with individual landowners / businesses to understand how potential adverse effects could be mitigated. Given that the immediate area around the proposed pylons might be fenced off, access to those areas might be restricted, resulting in a low adverse impact. Therefore, a potential permanent adverse minor (not significant) effect is anticipated.</p>
Bromwich Park Farm Weddings	Low	<p>Access to all areas would be restored during operation.</p> <p>There is the potential for permanent visual amenity effects on the venue/visitor accommodation with the closest tower located approximately 80m northwest of the</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
and Accommodation		<p>venue/visitor accommodation. Although the proposed overhead line would be running close to an existing small scale overhead line, visual amenity is likely to be a key feature of the venue. Furthermore, there are limited existing vegetation that could screen the view of the proposed overhead lines and pylons, with a potential medium adverse impact. This matter will be the subject of engagement with individual landowners / businesses to understand how potential adverse effects could be mitigated. Therefore, a potential permanent adverse minor adverse (not significant) effect is anticipated.</p> <p>However, potential residual effects can likely be reduced should mitigation (e.g. in the form of planting) be provided to minimise the visual impact.</p>
Shropshire Sculpture Park	Medium	<p>Access to all areas would be restored during operation.</p> <p>Although the proposed large scale overhead line would be running in proximity to the existing small scale overhead lines, there is the potential for permanent visual amenity effects on the park. However, visual amenity is not considered to be a key feature of the sculpture park. Therefore, no permanent effect is anticipated.</p>
Recreational Land		
N/A	N/A	There is no recreational land within the Local Study Area. Therefore, no effect is anticipated during operation.

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
<b>Recreational Routes</b>		
Footpath 236/5/1 and Footpath 236/1/2	Low	<p>There is the potential to permanently divert two PRow located at the proposed Grug y Mynydd Collector Substation where a safe access to a section of the PRow would no longer be available.</p> <p>The proposed route for a permanent diversion would be included in the application for a DCO . Hence, a worst-case scenario has been assumed where permanent diversion is required for Footpath 236/5/1 and Footpath 236/1/2 within the Project's draft Order Limits. Provided that a diversion will be provided, a low adverse impact is anticipated during operation. The residual effects are therefore anticipated to be permanent minor adverse (not significant). Discussions with relevant stakeholders will be undertaken during statutory consultation to gather feedback on the potential permanent diversion route. The specific location is yet to be determined, and the assessment may be subject to change.</p>
Other recreational routes within the Local Study Area	Ranging from low to high	Access to all other recreational routes would be restored during operation. Therefore, no effect is anticipated during operation.
<b>Local Visitor Accommodation Bedspaces</b>		
N/A	N/A	The assessment has been scoped out of the EIA.

Table 19-23 – Operation Phase – Preliminary Assessment of Potential effects on Business, Recreation and Tourism Assets beyond the Project’s draft Order Limits and within the 1km Study Area

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
HV Bowen and Sons Limited; and The Red Ridge Centre	Medium	<p>Access to the receptors will not be affected during operation.</p> <p>No visual amenity is anticipated as this section would be an UGC.</p> <p>Therefore, no permanent effect is anticipated.</p>
Tan y Wawr- Onnen/Davis.J.C; Stag Lodge Pod; Dolgead Hall Caravan Park & Lodge Park; Y Dderwen; Ty Newydd; Llanoddian Isaf Holiday Cottages; The Secret Yurts - Luxury Hot Tub Glamping; Pen-Y-Pentre; Acorn Warren; Mid-Wales Farmhouse; Pentrego Isaf; Sunny Lea; Meifod Valley Lodges/Meadow View; Valley View Holiday Park; Coed ty; Collfryn Farm Cottages; Vyrnwy Valley Lodges; The Old Beams at Pont y Forwyn; Bryn Vyrnwy Holiday Park; Le-Gro Barns; Bryn Tanat Hall; Tanat Holiday Park; Trederwen Caravan Park;	Low	<p>The receptors are located beyond the Project’s draft Order Limits. There is the potential for permanent visual amenity effects on these receptors. However, they are located beyond the Project’s draft Order Limits with potential vegetation or buildings that could screen views, resulting in very low adverse impacts. Therefore, permanent negligible (not significant) effects are anticipated.</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
<p>Woodside Holiday Park; Vyrnwy Caravans Ltd; Montgomery canal aqueduct; Maes Offa Stays; Tŷ LLEW; Rhandregynwen Hall; The Coach House; Plas Cerrig Equestrian; Plas Cerrig Barn; The Black Horse, Maesbrook; WildconTENTment; Bumble Lodge; Woolston lodge; Maesbury Manor; The Navigation Inn; The Stables; and Oswestry Golf Club</p>		
<p>Embden Pod at Banwy Glamping; Brynglas Cottage; Ty Gwyn; Fir View Tan Y Ffridd Holiday Park; Bwthyn Efyrynwy; Maesnewydd Cottage; and Tan Y Graig B&amp;B</p>	<p>Low</p>	<p>The receptors are located beyond the Project's draft Order Limits. Access to individual businesses will not be affected during operation. However, there is the potential for permanent visual amenity effects on these receptors with limited opportunities for mitigation (for example potential vegetation or buildings that could screen views), resulting in potentially low adverse impacts. This matter will be the subject of engagement with individual landowners / businesses to understand how potential adverse effects could be mitigated.</p>

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
		Therefore, permanent minor adverse (not significant) effects are anticipated.
Meifod Valley Alpacas; and Croesoswallt Archers	Low	The receptors are located beyond the Project's draft Order Limits. There is the potential for permanent visual amenity effects on these receptors with limited opportunities for mitigation (for example potential vegetation or buildings that could screen views). Access to individual businesses will not be affected during operation. Visual amenity is not considered to be a key feature of either the alpaca attraction or the archery club, resulting in potentially very low adverse impacts. Therefore, permanent negligible (not significant) effects are anticipated.
King's Head Inn; The Lion Hotel; Spoonley Apartment; Dolphin Inn; The Bradford Arms Hotel; The Cross Keys; and Llanymynech Wharf Visitor Centre	Low	The receptor is located beyond the Project's draft Order Limits and within a relatively urban area. Although the proposed towers and OHLs are likely to be visible, surrounding buildings could likely screen views, resulting in potentially very low

Resource / Receptor	Sensitivity of Resource / Receptor	Description of Potential Effect / Change
		adverse impacts. Therefore, permanent negligible (not significant) effects are anticipated.



## 19.8 Preliminary Mitigation and Enhancement Measures

- 19.8.1 This section outlines the preliminary avoidance, mitigation and compensation measures which are likely to be required to address the potential impacts assessed in Section 19.7.
- 19.8.2 Further preliminary mitigation measures to those outlined in Table 19.18 includes:
- Ensure access to business, recreation and tourism assets is maintained where possible during construction. Should temporary closures be unavoidable, temporary diversions should be discussed and agreed upon with the relevant businesses and asset owners prior to construction. Access diversions will be clearly marked along the diversion.
  - An Outline PRow Management Plan would be agreed and submitted with the application for a DCO and will detail that closure of PRowS would be the last resort if a safe diversion cannot be provided.

## 19.9 Next Steps

- 19.9.1 The Socio-economics, Recreation and Tourism ES assessment will be further developed based on the findings from statutory consultation and further stakeholder engagement, where relevant, to be undertaken between the PEIR and ES stage. The ES will incorporate and draw on the results of survey data captured from Chapter 10: Traffic and Transport, as well as assessment findings from other chapters considered relevant to the Socio-economics, Recreation and Tourism assessment.

### Consultation

- 19.9.2 Statutory consultation will be undertaken to gather comments from stakeholders. Engagement with potentially affected businesses and recreational assets will also be undertaken, for example sports clubs, tourist attractions and hot air balloon businesses to understand the potential impact (for example the landing sites and flight paths for hot air balloon businesses).
- 19.9.3 Consultation with Powys County Council and Shropshire Council will be undertaken prior to the submission of the ES to reach an agreement on the

scope and methodology of the Socio-economics, Recreation and Tourism assessment.

- 19.9.4 Consultation with PRow officers will be undertaken along with Traffic and Transport specialists to reach an agreement on PRow to be assessed in the ES assessment. Discussions with relevant stakeholders will be undertaken to gather feedback on the potential permanent diversion of Footpath 236/5/1 and Footpath 236/1/2.

### Surveys

- 19.9.5 No surveys are required to be undertaken for Socio-economics, Recreation and Tourism in order to prepare the ES. The ES will draw on the results of survey data from other chapters considered relevant to the Socio-economics, Recreation and Tourism topic, including Traffic and Transport.

## 19.10 References

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## 20 Cumulative Effects

### 20.1 Introduction

20.1.1 This chapter details the preliminary Cumulative Effects Assessment (CEA) for the Project. Cumulative effects can occur when impacts caused by present and reasonably foreseeable activities combine to create an increased level of effect. A single environmental impact resulting from a development may not be significant on its own but cumulative effects can occur, and effects can become significant when combined with other environmental impacts or developments. Cumulative effects are the result of several impacts on environmental receptors or resources. The two categories of cumulative effects are 'intra-Project' and 'inter-Project' effects:

- Intra-Project effects relate to effects to a receptor from within the Project only e.g. the impact of residential visual amenity changes alongside the impact of noise from the construction and operation of the Project on a residential property.
- Inter-Project effects relate to the effects of the Project alongside the effects of other developments within the study area. E.g. the construction traffic of the Project in combination with the construction traffic of another development in the study area may lead to a temporary increase in traffic on the local road network.

### 20.2 Legislation, policy and guidance

#### Legislation

20.2.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) (Ref. 20.1) require that an EIA '*must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors—*

*(a) population and human health.*

*(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC(14) and Directive 2009/147/EC(15).*

*(c) land, soil, water, air and climate.*

*(d) material assets, cultural heritage and the landscape.*

*(e) the interaction between the factors referred to in sub-paragraphs (a) to (d).*

20.2.2 The effects referred to in paragraph (2) on the factors set out in that paragraph must include the operational effects of the proposed development, where the proposed development will have operational effects.'

20.2.3 The EIA Regulations (Schedule 4, Paragraph 5) (Ref. 20.1) requires that the ES should consider the 'The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development.'

### **Policy**

20.2.4 Paragraph 4.1.5 in NPS EN-1 (supported by NPS EN-5) (Ref. 20.2) states 'In considering any proposed development, in particular when weighing its adverse impacts against its benefits, the Secretary of State should take into account: ... its potential adverse impacts, including on the environment, and including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce, mitigate or compensate for any adverse impacts, following the mitigation hierarchy'.

20.2.5 Paragraph 4.2.12 in NPS EN-1 (supported by NPS EN-5) (Ref. 20.2) states that 'The cumulative impacts of multiple developments with residual impacts should be considered.'

### **Guidance**

20.2.6 Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Ref. 20.3) provides guidance on the process for undertaking cumulative effects assessments in the context of Nationally Significant Infrastructure Projects (NSIPs) under the Planning Act 2008. The guidance outlines a four-stage approach to assessment:

- Stage 1: Establishing the long list of other existing and, or approved developments.
- Stage 2: Establishing a shortlist of other existing and, or approved developments.

- Stage 3: Information gathering
- Stage 4: Assessment.

20.2.7 Further information on the approach that will be applied to this Project is included in Section 20.4.

## **20.3 Consultation and Engagement**

20.3.1 The scope of the assessment for cumulative effects has been informed by the Scoping Opinion provided by the Planning Inspectorate (PINS), on behalf of the Secretary of State (Ref. 20.4), following the submission of the Scoping Report (Ref. 20.5).

20.3.2 The Environmental Impact Assessment (EIA) Scoping Opinion from PINS and subsequent responses to this EIA Scoping Opinion are outlined in Table 20-1 below.



Table 20-1 - EIA Scoping Opinion from the Planning Inspectorate.

ID	Matter	Inspectorate's Comments	Project Response
3.12.1	Cumulative effects with Tier 2 and 3 Projects (as set out in the Inspectorate's Advice Note Seventeen: 'Cumulative effects assessment relevant to NSIPs')	<p>Paragraphs 1.38 and 4.18 of the Scoping Report suggest that other developments falling into Tiers 2 and 3 would not be included in the Cumulative Effects Assessment (CEA). However, paragraph 17.19 of the Scoping Report sets out a wider scope of other development types for inclusion, suggesting that Tier 2 and 3 Projects would be included. For the avoidance of doubt, the Inspectorate recommends that the CEA follows the methodology set out in Advice Note Seventeen and therefore does not agree that any relevant other developments in Tiers 2 and 3 can be scoped out of the CEA. Relevant other developments within Tiers 2 and 3, which fall within the Proposed Development's Zone of Influence (ZoI), should be identified. As set out in Advice Note Seventeen, an assessment should be provided for all Tier 1 and Tier 2 other developments, where possible. For other developments falling into Tier 3, the Applicant should aim to undertake an assessment where possible, although this may be qualitative and at a very high level. The assessment should be carried out with reasonable effort and should be clearly documented in the ES for example using the format presented in Matrix 2 of Advice Note Seventeen. Effort should be made to agree the specific other developments for inclusion in the CEA with relevant consultation bodies. In addition to local planning authorities, this should include Natural England, Natural Resource</p>	<p>This will be included within the cumulative effects assessment recorded within the ES.</p> <p>The methodology has been updated in line with the advice note and the methodology is clearly described in section 20.4.</p> <p>The listed developments have been added to the long list and an initial copy of the long list has been provided in Appendix 20.1.</p>



ID	Matter	Inspectorate's Comments	Project Response
		<p>Wales (NRW), the Environment Agency and National Grid. The list should include the connected Projects, other Mid Wales Energy Parks and their connections to the National Electricity Transmission System, where relevant.</p> <p>The Applicant's attention is drawn to the scoping consultation responses (Appendix 2 of this Opinion) which identify other developments which may be affected by the Proposed Development, including but not limited to:</p> <ul style="list-style-type: none"> <li>• The Montgomery Canal restoration Project.</li> <li>• Shropshire Groundwater Scheme.</li> <li>• SP Mid Wales (Electricity) Connections Project.</li> <li>• New substation to facilitate customer connections along the Legacy to Shrewsbury 400kV Overhead Line.</li> </ul> <p>The Inspectorate expects the ES to consider these Projects.</p>	
3.12.2	Transboundary effects	<p>"The Inspectorate on behalf of the SoS has considered the Proposed Development and concludes that the Proposed Development is unlikely to have a significant effect either alone or cumulatively on the environment in a European Economic Area State. In reaching this conclusion the Inspectorate has identified and considered the Proposed Development's likely impacts including consideration of potential pathways and the extent, magnitude, probability, duration, frequency and reversibility of the impacts. The Inspectorate considers that the likelihood of transboundary effects resulting from the</p>	This has been noted.

ID	Matter	Inspectorate's Comments	Project Response
		<p>Proposed Development is so low that it does not warrant the issue of a detailed transboundary screening. However, this position will remain under review and will have regard to any new or materially different information coming to light which may alter that decision.</p> <p>Note: The SoS' duty under Regulation 32 of the 2017 EIA Regulations continues throughout the application process. The Inspectorate's screening of transboundary issues is based on the relevant considerations specified in the Annex to its Advice Note Twelve, available on our website at <a href="http://infrastructure.planninginspectorate.gov.uk/legislation-andadvice/advice-notes/">http://infrastructure.planninginspectorate.gov.uk/legislation-andadvice/advice-notes /"</a></p>	

## 20.4 Assessment Methodology and Significance Criteria

- 20.4.1 This section describes the methodology and approach used to consider and assess the significance of potential intra-Project and inter-Project cumulative effects. It outlines what methods have been used for the Preliminary Environmental Information Report (PEIR) and what will be undertaken as part of the CEA in the Environmental Statement (ES).
- 20.4.2 The methodology to be used in the ES for cumulative effects will follow the PINS Advice on Cumulative Effects Assessment (Ref. 20.3). The significance criteria that will be used for the cumulative assessment will follow the policy and guidance documents outlined in Section 20.2 and the general EIA approach methods presented in Chapter 5: Methodology. Intra-Project combined effects and inter-Project cumulative effects that are categorised as moderate and above will be considered significant effects in relation to the EIA Regulations (Ref. 20.1).

### Study Area

- 20.4.3 The study area for the assessment of intra-Project and inter-Project cumulative effects is defined by the study areas of each of the preceding environmental chapters within this PEIR.

### Assessment Methodology

#### Intra-Project Cumulative Effects

- 20.4.4 The approach to the assessment of intra-Project cumulative effects considers the changes in baseline conditions at common sensitive receptors as a result of the Project. Representative groups and/or individual receptors, such as people, a watercourse, a group of listed buildings or protected species, will be identified for each aspect. These represent the receptors that are most sensitive to impact interactions as described in the relevant environmental chapters. The objective of the intra-Project cumulative effects assessment is to understand the overall environmental effect of the Project.
- 20.4.5 Due to the on-going design development of the Project, a robust assessment of combined effects will not be possible at this stage and has not been undertaken for the PEIR. Cumulative assessments are iterative, and as the technical assessment progress, the potential intra-Project cumulative effects will be identified by reviewing the conclusions of the technical topics and their effects on common sensitive receptors identified in the ES. Following this, the significance of the effects will be

determined using professional judgement and the conclusions of the technical topics and technical specialists.

### **Inter-Project Cumulative Effects**

20.4.6 The approach to the assessment of inter-Project cumulative effects considers the deviation from the baseline conditions at common sensitive receptors between the Project and one or more other development applications ('Other Developments').

### **Four-Stage Approach**

20.4.7 PINS Advice on Cumulative Effects Assessment (Ref. 20.3) sets out a four-stage approach to the assessment of cumulative effects:

- Stage 1: Establishing the long list of other existing and, or approved development.
- Stage 2: Establishing a shortlist of other existing and, or approved development.
- Stage 3: Information gathering.
- Stage 4: Assessment.

### **Stage 1: Establishing the Long List of Other Existing and, or Approved Development**

20.4.8 The inter-Project cumulative effects assessment involves establishing the Long List of committed developments.

20.4.9 The Stage 1 activities will focus on establishing the likely Zone of Influence (ZOI) associated with each of the environmental topics being assessed within the ES. The ZOI will be defined by considering relevant topic guidance and the geographic scope of any potential impacts. The preliminary ZOI is outlined in Table 20-2. The ZOI will be revisited in advance of preparing the ES to ensure they are still appropriate and proportionate.


*Table 20-1 – Preliminary ZOI*

<b>Topic</b>	<b>Study Area Boundary</b>
Soils and Agriculture	Red Line Boundary
Water Resources	250m.
Socio-economics	2 km.
Landscape and Visual Amenity	3 km.
Health & Wellbeing	2km.

Topic	Study Area Boundary
Ground Conditions, Geology and Hydrogeology	500 m.
Ornithology	2 km (20 km for wind farm and OHL development only)
Noise and Vibration	1km.

20.4.10 The criteria for assigning certainty for other developments to be included in the assessment of cumulative effects is described below in Table 20-3 which is based on PINS Advice on Cumulative Effects Assessment (Ref. 20.3). It is acknowledged that there will be a decreasing level of detail likely to be available from Tier 1 to Tier 3.

Table 20-2 – Criteria for Assigning Certainty for Other Developments

Tier	Factors Attributing to Degree of Certainty	
Tier 2	Projects on the Planning Inspectorate’s programme of Projects.	 Decreasing level of detail likely to be available.
Tier 1	<ul style="list-style-type: none"> <li>• Under construction.</li> <li>• Permitted applications under the Planning Act or other regimes but not yet implemented.</li> <li>• Submitted applications under the Planning Act or other regimes but not yet determined.</li> </ul> All refusals subject to appeal procedures not yet determined.	
Tier 3	<ul style="list-style-type: none"> <li>• Projects on the Planning Inspectorate’s programme of Projects where a scoping report has not been submitted.</li> <li>• Identified in the relevant Development Plan and emerging Development Plans, with appropriate weight given as they near adoption, recognising that there will be limited information available on the relevant proposals.</li> <li>• Identified in other plans and programmes, as appropriate, which set the framework for future development consents or approvals, where such development is reasonably likely to come forward.</li> </ul>	

20.4.11 The assessment will only consider those receptors that would experience a residual effect associated with the Project. For receptors where the Project's residual effects are deemed to be neutral/negligible it is considered that such receptors could not experience cumulative effects.

20.4.12 Further information on the initial Long List can be found in Section 20.5.

### **Stage 2: Establishing a Shortlist of other Existing and, or Approved Development**

20.4.13 Following the compilation of the Long List, the results will be filtered to identify suitable Projects to be taken forward to the inter-Project cumulative effects assessment. These filtered committed developments will form the Short List.

20.4.14 Each of the developments identified will then be evaluated to determine whether the following criteria are met:

- Temporal scope: The relative construction, operation and decommissioning programmes of the other existing and, or approved developments identified in the ZOI together with the NSIP programme, to establish whether there is overlap and any potential for interaction.
- Scale and nature of development: The scale and nature of the other existing and, or approved developments identified in the ZOI that are likely to interact with the proposed NSIP.
- Other factors: For example, the nature and, or capacity of the receiving environment, which could make a significant cumulative effect with the other existing and, or approved developments more or less likely.

20.4.15 The shortlisting process will also be informed by engagement with the relevant LPA's.

### **Stage 3: Information Gathering**

20.4.16 This stage will involve reviewing the available information relating to the shortlisted developments to establish the details of their likely environmental effects. This will consider factors including: the ZOI of environmental topics assessed the planned timescales for construction, operation and (where relevant) decommissioning; and details of their potential or likely significant effects.

### **Stage 4: Assessment**

20.4.17 Those developments which meet the criteria set out in the above stages shall be incorporated into the cumulative assessment. This will involve identifying where

effects are likely to occur and assessing the significance of those effects on environmental receptors and resources, considering any mitigation measures.

## 20.5 Baseline Conditions

### Long List of Other Developments and Local Plan Allocations

- 20.5.1 For inter-Project cumulative effects, an indicative draft long list of other developments within the study area has been identified and is outlined in Appendix 20.1 of the PEIR, Volume 3. This long list will continue to be developed between the PEIR and ES stages and engagement will be undertaken with the relevant LPA's.
- 20.5.2 To ensure transparency within the EIA process, the following limitations have been identified:
- The inter-Project cumulative effects assessment is based on publicly available data which is not possible to verify and is limited in some cases.
  - Other proposed developments which are assessed as part of both the intra- and inter-Project cumulative effects assessment may be based on a different methodology which is not consistent with this Project. This has the potential to cause variance and / or discrepancies.

### Intra-Project Baseline

- 20.5.3 The baseline conditions for each of the environmental aspects, including receptors, have been detailed in the respective chapters and appendices within this PEIR, as set out in Table 20.3, and are not repeated here.

*Table 20-3 – Environmental Topics and their Location within the PEIR*

Environmental Topics	Chapter where covered
Landscape and Visual Amenity	Chapter 6
Ecology	Chapter 7
Ornithology	Chapter 8
Cultural Heritage	Chapter 9
Traffic & Transport	Chapter 10
Noise and Vibration	Chapter 11
Water Resources	Chapter 12

Environmental Topics	Chapter where covered
Ground Conditions, Geology and Hydrogeology	Chapter 13
Air Quality	Chapter 14
Soils and Agriculture	Chapter 15
Health & Wellbeing	Chapter 16
Major Accidents and Disasters	Chapter 17
Greenhouse Gases	Chapter 18
Socio-economics	Chapter 19

## 20.6 Likely Significant Effects

- 20.6.1 At this stage of the assessment, it is not anticipated that any intra-Project cumulative effects will arise during the construction and operation phases of the Project. However, this assessment will continue to be developed and if likely significant cumulative effects are identified, appropriate mitigation measures will be outlined, and any residual effects will be described at the ES stage when sufficient detail is available.
- 20.6.2 Additionally, it is not anticipated that any major Projects will combine to produce significant effects along the Overhead Line (OHL) route. Particular emphasis will be provided on the impact of the Project combined with the impacts from the proposed National Grid Substation and the Switching Station near Lower Frankton at the Northern end of the Project's draft Order Limits, as well as any Bute Energy, Green GEN Cymru, and any other developers' Projects at the southern end of the Project's draft Order Limits.

## 20.7 Proposed Mitigation

### Intra-Project Cumulative Effects

- 20.7.1 Measures to avoid, prevent, reduce or offset any potential significant intra-Project cumulative effects will be identified and described in the ES. While the measures identified in other chapters within the PEIR would help to reduce potential impacts (therefore reducing the potential for the Project to contribute to cumulative effects), there may be a need for essential mitigation to further mitigate any significant cumulative effects.



## Inter-Project Cumulative Effects

- 20.7.2 Measures to avoid, prevent, reduce or offset significant inter-Project cumulative effects will be identified and described in the ES. While the measures identified in other chapters within the PEIR would help to reduce potential impacts (therefore reducing the potential for the Project to contribute to cumulative effects), there may be a need for essential mitigation. Where necessary, this is likely to require collaboration and cooperation with third-party developers to gain a better understanding of the proposed developments, the likely significant effects and the potential need for mitigation.

## 20.8 Next Steps

- 20.8.1 The cumulative effects assessment will undergo further development through the EIA process, implementing Project design updates, statutory consultation requirements, and stakeholder engagement. There will be ongoing engagement with Powys County Council, Shropshire Council, and surrounding local authorities in which planning applications overlap, to finalise the long list and short list of other developments. The final lists will be presented within the ES. The full cumulative effects assessment will be presented in the ES which will be submitted with the application for development consent.

## 20.9 References

- Ref. 20.1 Ministry of Housing, Communities, and Local Government (MHCLG) (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: <https://www.legislation.gov.uk/ukxi/2017/572/contents> [Accessed 19/11/2024].
- Ref. 20.2 Department for Energy Security & Net Zero (2023). Overarching National Policy Statement for Energy (EN-1). Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> [Accessed 19/11/2024].
- Ref. 20.3 Planning Inspectorate (2024). Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment. Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-Projects-advice-on-cumulative-effects-assessment#interrelationships-and-combined-effects> [Accessed 19/11/2024].
- Ref. 20.4 Planning Inspectorate (2024). Green GEN Vyrnwy Frankton Scoping Opinion. Available at: <https://infrastructure.planninginspectorate.gov.uk/Projects/wales/green-gen-vyrnwy-frankton/?ipcsection=docs> [Accessed 24/07/2024].

- Ref. 20.5 Green GEN Cymru (2024). Green GEN Vyrnwy Frankton Scoping Report. Available at:  
<https://infrastructure.planninginspectorate.gov.uk/Projects/wales/green-gen-vyrnwy-frankton/?ipcsection=docs> [Accessed 29/07/2024].



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