GREEN GEN VYRNWY FRANKTON

GREEN GEN CYMRU

Green GEN Vyrnwy Frankton Scoping Report

January 2024

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Introduction

Purpose of the Report

1.1 This document has been prepared by LUC on behalf of Green Generation Energy Networks Cymru Limited (Green GEN Cymru). It relates to proposals to construct and operate a new 132 kilovolt (kV) grid connection which at this stage is proposed to comprise an overhead line (OHL) supported on 'L7' steel lattice towers as well as a collector substation and a cable sealing end compound located in close proximity to the Llyn Lort Energy Park. This Project will be known as the Green GEN Vyrnwy Frankton Project (hereafter 'the Project') and an overview is provided below with further detail in **Chapter 3**.

1.2 The OHL will provide a connection between the proposed Llyn Lort Energy Park in Powys, Wales, (under development by Llyn Lort Energy Park Limited, a subsidiary of Bute Energy) and the existing National Grid 400kV electricity network in Shropshire, England. A new substation will be required to facilitate connection of the overhead line into the existing network and this will be subject to its own application and consent (via National Grid). As well as connecting the proposed Llyn Lort Energy Park into the electricity network, it will also provide the key infrastructure to enable other future renewable energy generation to be connected into the National Electricity Transmissions System (NETS), including a number of additional energy parks being developed by Bute Energy.

1.3 The location of the Llyn Lort Energy Park and the location of the area where the connection into the NETS in Shropshire (hereafter referred to as 'the National Grid substation search area') could be made, are shown in **Figure 1.1.** This substation will be consented by National Grid and therefore does not form part of the Project.

1.4 This report accompanies Green GEN Cymru's request for a Scoping Opinion which is being sought from the Planning Inspectorate which will examine the request and make recommendations to the Secretary of State (SoS) at the Department for Energy Security & Net Zero, in accordance with The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017[1] ('the EIA Regulations').

1.5 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 consultees to comment on the proposed methodologies, identify sources of baseline information and raise any specific issues that they consider require assessment.

The Applicant

Green GEN Cymru

1.6 Green GEN Cymru is a business in the Bute Energy Group which promotes and develops new grid infrastructure to distribute green energy in Wales.

1.7 Green GEN Cymru's approach aligns with the UK Government's Net Zero targets. Green GEN Cymru's approach also aligns with Future Wales[2] and the Welsh Government's ambitions for unlocking renewable energy generation in Wales.

1.8 Green GEN Cymru will follow best practice in working with local communities throughout the development of its proposals, ensuring that communities have a strong voice in the process.

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[1]The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/571/contents/made (accessed 27.09.2023)
[2] Future Wales: The National Plan. Available at: https://www.gov.wales/sites/default/files/publications/2021-02/future-wales-the-national-plan-2040.pdf (accessed 15.09.2023)

1.9 Green GEN Cymru will invest millions of pounds directly into Welsh and English communities closest to its projects. A Community Benefit Fund will be established worth millions of pounds every year that will be spent in the local area.

1.10 Green GEN Cymru is also keen to work in partnership with the Welsh Government, UK Government, Local Authorities and the private sector to explore how others can use its infrastructure to the benefit of local communities.

Bute Energy

1.11 Bute Energy is set to become a leading developer of onshore renewable energy in the UK. It was established to help address the climate crisis by providing low cost, reliable power using proven technology. The mission is to help unlock the potential for onshore renewable power generation and bring benefits to local communities where energy parks are created. Bute Energy's aim is to be forward-thinking in everything it does, and it is passionate about finding better ways to deliver renewable energy.

1.12 Bute Energy is seeking to deliver a package of sustainable benefits and clean energy initiatives. Headquartered in and focused on Wales, the aim is to deliver a portfolio of new energy parks to deliver onshore renewable power generation in Wales.

Background and Needs Case

1.13 The Climate Change Act 2008 came into force in the UK in 2008 (the 2008 Act). Section 1, which was amended in 2019, requires the Secretary of State to ensure that the net UK carbon account for 2050 is at least 100% lower than the 1990 baseline. This is often referred to as the net zero target. The 2008 Act also requires the Secretary of State to set, at five year intervals beginning in 2008, legally binding carbon budgets, which place a restriction on the total amount of greenhouse gases the UK can emit over those five year periods. The underlying objective of these carbon budgets is to set a trajectory towards the achievement of the net zero target by 2050. The sixth carbon budget, which relates to the period 2033-2037, was made in 2021. The UK Government's October 2021 Net Zero Strategy sets out its policies and proposals for decarbonising all sectors of the UK economy in order to meet its net zero target by 2050.

1.14 The Environment (Wales) Act 2016 also requires the Welsh Government to reduce greenhouse gas emissions (GGEs) in Wales to net zero for the year 2050, with a system of interim emissions targets and carbon budgets. In 2017, the Welsh Government set out a target that at least 70% of Wales' electricity consumption would be met from renewable generation by 2030.

1.15 In April 2019, the Welsh Government declared a climate emergency. As part of its plan to tackle this emergency, the Welsh Government has brought forward policies to encourage innovative ways of creating energy that are sustainable, secure and cost effective. This includes Future Wales and the eleventh edition of Planning Policy Wales. As part of these new policies, the Welsh Government has confirmed that *"in determining planning applications for renewable and low carbon energy development, decision makers must give significant weight to the need to meet Wales' international commitments and our target to generate 70% of consumed electricity by renewable means by 2030 in order to combat the climate emergency".*

1.16 Onshore wind development will play a critical role in assisting the Welsh Government to meet its renewable targets. Pre-assessed Areas for Wind Energy are identified in Future Wales, which comprise those areas where 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, subject to the criteria in Future Wales Policy 18. Future Wales Policy 17 confirms that "*there is a presumption in favour of large-scale wind energy development … in these area*". Outside of these areas, Future Wales Policies 17 and 18 provide a positive policy framework for the consenting and development of largescale renewable energy projects and associated infrastructure.

1.17 It has long been acknowledged by the Welsh Government, energy generators and network operators that a key challenge with respect to delivering Wales' net zero obligations is the fact that the strongest renewable resources are generally in areas that have the lowest existing electricity network capacity, meaning that key strategic opportunities for renewable energy generation are currently sterilised. Without intervention, this lack of grid infrastructure across Wales is likely to have a detrimental impact on achieving the UK Government and Welsh Government's net zero targets. Future Wales notes "*The Welsh Government acknowledges the significant challenge that grid infrastructure and capacity will have on the potential for new on-shore and off-shore renewable energy development across Wales"* adding that the Welsh Government *"are committed to working with energy networks and developers to identify opportunities and barriers as well as working collaboratively to find*

solutions". There is therefore a clearly identified national need for the grid infrastructure required to connect new renewable energy development in England and Wales.

1.18 In addition to the Energy Parks that will be directly connected to the existing grid, Bute Energy is proposing to develop new Energy Parks that are geographically remote from existing high voltage (HV) electricity infrastructure.

1.19 Five of the proposed Energy Parks will be located in Mid Wales (referred to as the Mid Wales Energy Parks). The options considered for connecting these energy parks to the NETS, including the rationale for the preferred option, are outlined in the 'Green GEN Phase 2 Grid Connection Strategy'[3]. Additional Energy Parks would be located in South Wales and these are not discussed within this document (referred to as the South Wales Energy Parks). The most appropriate solution for connecting these South Wales Energy Parks to the NETS is the subject of separate consideration and documented within Green GEN Cymru Phase One Grid Connection Strategy[4]. The proposed Energy Parks, and associated connection infrastructure, provide a key opportunity to help to address the climate emergency in a timely manner by providing network connection capability for strategic renewable energy generation.

1.20 The Planning Act 2008 introduced the designation of National Policy Statements (NPSs), which set out the national policy against which Nationally Significant Infrastructure Projects (NSIPs), such as the Project, are assessed by the Planning Inspectorate. Of relevance to the Project is the Overarching NPS for Energy (EN-1)[5], which provides the key policy basis of the decision taken by the Secretary of State in accordance with Section 104 of the Planning Act 2008. An updated version of NPS EN-1 was designated on 17th January 2024, as part of a revision to the suite of NPSs published in 2011.

1.21 NPS EN-1 makes the case for many types of energy infrastructure, including low carbon infrastructure. It states that the UK Government has "*concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure"*. Low carbon infrastructure for the purposes of this policy means, "*for electricity grid infrastructure, all power lines in scope of EN-5 including network reinforcement and upgrade works, and associated infrastructure such as substations. This is not limited to those associated specifically with a particular generation technology, as all new grid projects will contribute towards greater efficiency in constructing, operating and connecting low carbon infrastructure to the National Electricity Transmission System*".

1.22 NPS EN-1 also notes that, "*as the electricity system grows in scale, dispersion, variety, and complexity, work will be needed to protect against the risk of large-scale supply interruptions in the absence of sufficiently robust electricity networks.* W*hile existing transmission and distribution networks must adapt and evolve to cope with this reality, development of new lines of 132kV (and over 2km) and above will also be necessary to preserve and guarantee the robust and reliable operation of the whole electricity system*". Furthermore, NPS-EN-1 states that "*it is recognised that the case for a new connection or network reinforcement is demonstrated if the proposed development represents an efficient and economical means of connecting a new generating station or storage facility to the network*".

1.23 Operation of infrastructure at 132kV voltage within England and Wales is classified as 'Electricity Distribution'. These assets are in the main owned and operated by licenced Distribution Network Operators (DNOs). However, to increase competition in the electricity distribution market, Ofgem, as the energy regulator for Great Britain, now licences Independent Distribution Network Operators (IDNOs). Once licenced by Ofgem, IDNOs are able to develop, operate and maintain electricity distribution networks. IDNOs connect their networks onwards into the local distribution network or transmission network.

1.24 Green GEN Cymru has applied for an IDNO Licence, and are anticipating a determination on the application in early 2024 This will enable Green GEN Cymru to move forward with its plans to design, develop and construct the most appropriate solution for connecting the new energy parks, ensuring the best solutions for the local area. It would also enable Green GEN Cymru to deliver efficient and reliable grid infrastructure in Wales, opening broader opportunities for connections in the future.

1.25 As with DNOs, an IDNO holds an electricity licence under Section 6(1)(c) of the Electricity Act 1989[6] (hereafter referred to as 'the Electricity Act'). DNO and IDNO licences also share the same Standard Licence Conditions. This places specific

[3] Green GEN Phase 2 Grid Connection Strategy. Available at: https://d141qvydpnmd03.cloudfront.net/Green+GEN+Phase+2+Grid+Connection+Strategy.pdf (accessed 26.09.2023).
[4] Green GEN Phase One Grid Connection Strategy. Available at: https://greengentowyusk.com/documents/Grid%20Connection%20Strategy%20Report.pdf (accessed 26.09.2023).
[5] Department for Energy Security & Net Zero (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 (accessed 18.01.2024).
[6] The Electricity Act 1989. Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents (accessed 26.09.2023).

requirements on an IDNO, including “the development, maintenance, and operation of an efficient, co-ordinated, and economical system for the distribution of electricity”.

1.26 With oversight of the development of both the connection infrastructure promoted by Green GEN Cymru as well as the energy parks, Bute Energy Group will be able to ensure effective coordination between these two elements, enabling collaboration regarding technical and environmental considerations and delivering the most appropriate solution. As a Welsh company, and a prospective IDNO licence holder, Green GEN Cymru will be able to play a proactive role in the progression towards achieving Net Zero. Bute Energy Group will support the development of proposed energy parks and, will also be able to support the efficient and timely connection of future renewable energy projects demonstrating the benefits of the IDNO framework.

Project Location

1.27 The Project will provide a connection between the proposed Llyn Lort Energy Park in Powys, Wales and the existing 400kV NETS network in Shropshire, England. It will also allow future renewable energy projects to connect to the existing network.

1.28 The Project is approximately 50km in length, spanning across land within the jurisdiction of Powys County Council and Shropshire Council.

1.29 The Project commences approximately 17km to the west of Welshpool at the Llyn Lort Energy Park collector substation (which will be consented as a separate project). The Project heads in a broadly north-east direction from Cefn Coch and passes to the south of Llansantffraid-ym-Mechain and Llanymynech. It crosses the A5 before terminating approximately 2km east of Oswestry at a new substation in Lower Frankton being consented separately by National Grid, which will likely be situated within the National Grid substation search area. An overview of the location of the Project including the Scoping Corridor is shown on **Figure 1.2**.

The Project

1.30 The Project will comprise of the following:

- New 132kV overhead electricity transmission line supported on L7 steel towers with an average height of 27m;
- Collector Substation;
- Cable Sealing End Compound;
- Approximately 5km of underground cable (to be routed through the proposed Llyn Lort Energy Park) to connect the Collector Substation to the Cable Sealing End Compound;
- Temporary works associated with the construction of the Project; and
- Potential diversion of third party utilities (where required).

1.31 The substation at the Shropshire end of the Scoping Corridor will be delivered by National Grid and therefore doesn’t form part of the Project, however this will be included in the cumulative assessment.

The EIA and Consenting Process

Legislative Requirements

1.32 Schedules 1 and 2 of the EIA Regulations, provide the criteria of a development for when EIA is required. An EIA is required for Schedule 1 developments and for when Schedule 2 developments are likely to have significant effects on the environment due to their nature, size or location.

1.33 Schedule 1, Regulation 3(1), Paragraph 20 states that an EIA is required for the *“construction of overhead electrical power lines with a voltage of 220 kV or more and a length of more than 15 km”*. The Project is not a Schedule 1 development under the EIA Regulations as the proposed voltage of the Project is 132 kV.

1.34 Schedule 2, Regulation 3(1), Paragraph 3b 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)"*. The Project has been determined as a Schedule 2 development under the EIA Regulations, due the Project transmission of electrical energy by overhead cables.

1.35 For Schedule 2 developments, an EIA is not mandatory, and professional judgement based upon the parameters provided in Schedule 3 of the EIA Regulations is required as to the likelihood of the Project resulting in significant effects on the environment. This depends on the nature, size and location of the proposal. Having considered the nature of the Project, and the receiving environment, Green Gen Cymru considers that the proposed grid connection has the potential to have significant environmental effects and therefore an EIA is required.

1.36 As a licence holder, Green GEN Cymru would be required to adhere to the Electricity Act. Paragraph 1 of Schedule 9 of the Electricity Act states that in formulating any relevant proposals, a person authorised to generate, distribute, supply or participate in the transmission of electricity shall:

- *"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 he 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."*

1.37 The EIA process will aim to avoid, reduce and where possible, mitigate likely significant environmental effects through an iterative design process for the OHL. The findings of the EIA will be presented within an Environmental Statement (ES) which will report on the effects of construction and operation of the Project.

1.38 The ES will also consider the cumulative effects of the Project with other development projects which share the Project Study Area and have progressed to the application stage of the development (or other projects that have been specifically requested by Statutory Consultees to be included).

Developing and Consenting Process

1.39 The Project will be a Nationally Significant Infrastructure Project (NSIP) under Section 14(1)(b) of the Planning Act 2008 as the project comprises "*the installation of an electric line above ground.* Section 16(1)(c) of the Planning Act 2008 provides that "*the installation of an electric line above ground is within section 14(1)(b) only if (when installed) the electric line will be – partly in England and partly in Wales*." The Project meets the criteria of Section 16 and is therefore an NSIP.

1.40 All NSIPs in England and Wales require a Development Consent Order (DCO). The applications for DCOs are submitted to the Planning Inspectorate which will examine the application and make recommendations to the appropriate Secretary of State (SoS). In this case the appropriate SoS is the SoS for the department of Energy Security & Net Zero who will make the decision whether to grant a Development Consent Order.

Purpose of the Scoping Report

1.41 Scoping is an important part of the EIA process and is used to determine which likely environmental effects are assessed and presented in the ES.

1.42 This Scoping Report sets out which environmental effects are considered likely to be significant allowing for the relevant baseline, emerging design proposals and mitigation options that are available. It also describes how the assessment will be undertaken and what methods will be used to identify and quantify the environmental effects. Where baseline surveys and consultation undertaken to date support the methodologies proposed, this evidence is presented. Relevant reports have also been referenced as appropriate.

1.43 It is recognised that the scope of an EIA is a continually evolving process and following receipt of the Scoping Opinion, or a change in the Project or the environmental baseline, then there may be a resulting change in the scope of the ES. This Scoping Report will be referenced, and the Scoping Opinion included as a technical appendix to the ES and a full audit trail, along with a suitable justification for all scope amendments, will be provided within the ES.

Scoping Requirements and Recommendations

1.44 The EIA Regulations state that the request for a Scoping Opinion should contain the following items presented in **Table 1.1.**

Table 1.1: Scoping Requirements and Recommendations

Scoping Requirements/ Recommendations	Location within the Scoping Report
A plan sufficient to identify the land.	**Figure 1.2**
A description of the proposed development, including its location and technical capacity	**Chapter 3: Project Description**
An explanation of the likely significant effects of the development on the environment.	**Chapters 7-17**
Such other information or representations as the person making the request may wish to provide or make.	**Chapters 1-6**

Structure of the Scoping Report

1.45 **Table 1.2** presents the different chapters of the Scoping Report and the relevant author company. Refer to **Appendix A** for the competent expert details.

Table 1.2: The Scoping Report chapters and the Relevant Author Company

Chapter	Relevant Author Company
Chapters 1 - 6: Introductory Chapters	LUC
Chapter 7: Landscape and Visual Amenity	LUC
Chapter 8: Ecology	LUC
Chapter 9: Ornithology	LUC
Chapter 10: Historic Environment	LUC
Chapter 11: Traffic and Transport	LUC
Chapter 12: Noise and Vibration	Hoare Lea
Chapter 13: Water Resources	Yellow Sub Geo
Chapter 14: Ground Conditions, Geology and Hydrogeology	Yellow Sub Geo
Chapter 15: Soils and Agriculture	Arcadis
Chapter 16: Air Quality	Arcadis
Chapter 17: Cumulative Effects	LUC

1.46 Each of the chapters are described in more detail below.

- **Chapter 2** provides a description on the main alternatives considered for the Project.
- **Chapter 3** provides a description of the Project, including outline construction and maintenance information.
- **Chapter 4** provides a description of the EIA approach and methodology.

- **Chapter 5** describes the relevant national and local planning policy relevant to the application and its determination for consent.
- **Chapter 6** describes the approach to the topics proposed to not be included in the EIA.
- **Chapters 7 – 16** provide an overview of the environmental baseline and describe the specialist environmental studies, consultation and assessment methodologies that are proposed to assess the potential effects of the Project on the environment.
- **Chapter 17** describes the approach to the identification of cumulative effects.

1.47 The following Appendices are also provided:

- **Appendix A**: Competent Expert Information
- **Appendix B**: Proposed Structure of the ES
- **Appendix C**: List of Proposed Consultees
- **Appendix D**: Figures

Chapter 2
Alternatives Considered

Introduction

2.1 Schedule 4, Regulation 14 (2), Paragraph 2 of the EIA Regulations states that the 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"*. There is no statutory requirement to include an assessment of alternatives in support of a request for a Scoping Opinion although this chapter does identify the processes that have been followed to date in studying reasonable alternatives.

Strategic Option Development

2.2 In late 2023 Green GEN Cymru undertook an appraisal of grid connection options to determine the most appropriate solution to connect the proposed Mid Wales Energy Parks[7] to the NETS. This was compiled into the Green GEN Phase Two Grid Connection Strategy[8].

2.3 The Green GEN Phase Two Grid Connection Strategy assessed and considered 10 potential connection options, within three broad geographical zones. These were in the North Zone (including the existing substations in Trawsfynydd and Ironbridge and new substations in Shrewsbury, Lower Frankton, Chirk and Gwyddelwern), the East Zone (including the existing substation in Bishops Wood) and the South Zone (including the existing substations in Rhigos and Rassau and a new substation in Carmarthen). The options were reviewed against how they each performed on technical and environmental grounds, against the identified need to develop an efficient, co-ordinated and economic system.

2.4 The appraisal process concluded that the most appropriate solution was to construct new OHL connections and substation in the Lower Frankton area in the North Zone. The Mid Wales Energy Parks will be connected to this new substation by 132kV grid connections.

2.5 The appraisal considered potential environmental impacts that the connection of the Mid Wales Energy Parks could have, as was available at that stage of the developments, with the measures that may be implemented to avoid, minimise or mitigate impacts.

2.6 Overall, the analysis concluded that a route to a new substation in the Lower Frankton area would offer the most appropriate solution having considered the likely environmental effects, technical constraints and financial cost.

Overview of the Routeing Process

2.7 Having identified that a 132kV connection to a new substation in the Lower Frankton area was the most appropriate solution, Green GEN Cymru undertook a routeing process to identify the most appropriate route for the overhead line connection. The methodology and findings of the routeing process were presented in the Green GEN Vyrnwy Frankton Routeing and Consultation Document (August 2023).[9]

2.8 The overall approach taken to routeing by Green GEN Cymru is based on the acknowledgement that the main effects of an OHL are landscape and visual. This is due to the scale of the OHL towers relative to the surrounding features in the landscape. As visual effects of OHLs cannot always be mitigated (for example via screening), careful routeing is the primary

[7] Five Energy Parks referenced in the Grid Connection Strategy.
[8] Green GEN Phase Two Grid Connection Strategy 2023. Available at: https://d141qvydpnmd03.cloudfront.net/Green+GEN+Phase+2+Grid+Connection+Strategy.pdf (accessed 25.09.2023).
[9] Green GEN Vyrnwy Frankton Routeing and Consultation Document. Available at: https://d141qvydpnmd03.cloudfront.net/RCD-with-appendicies.pdf (accessed 25.09.2023).

way in which visual effects may be reduced. Other environmental and technical constraints and effects need to be taken into account alongside, and balanced with, landscape and visual effects.

2.9 It is generally accepted across the electricity industry, and reflected within NPS EN-5[10], that the guidelines developed by the late Lord Holford in 1959 for routeing OHLs (known as the 'The Holford Rules') should continue to be employed as the basis for routeing high voltage OHLs. The Holford Rules therefore provided the basis for the approach that was taken to routeing the Project. An overview of the steps involved in routeing is shown in **Figure 2.1**.

2.10 The main environmental considerations taken into account during the routeing process reflect the Statutory duties imposed by Section 38 and Schedule 9 of the Electricity Act. These require licence holders to seek to preserve features of natural and cultural heritage interest, and to mitigate where possible, any effects which their proposals may have on such features. The construction and operation of an OHL will have potential effects on people and the environment, including potential effects on (in no hierarchical order):

- Cultural heritage including archaeology;
- Ecology and ornithology;
- Hydrology, hydrogeology, geology and water resources;
- Landscape character;
- Land uses including mineral operations, agriculture and forestry; and
- Visual amenity.

2.11 Some of these effects can be avoided or limited through careful routeing. Other effects are best mitigated through local deviations of the route, the refining of steel tower locations and/or specific construction practices. These are reviewed as part of the EIA process.

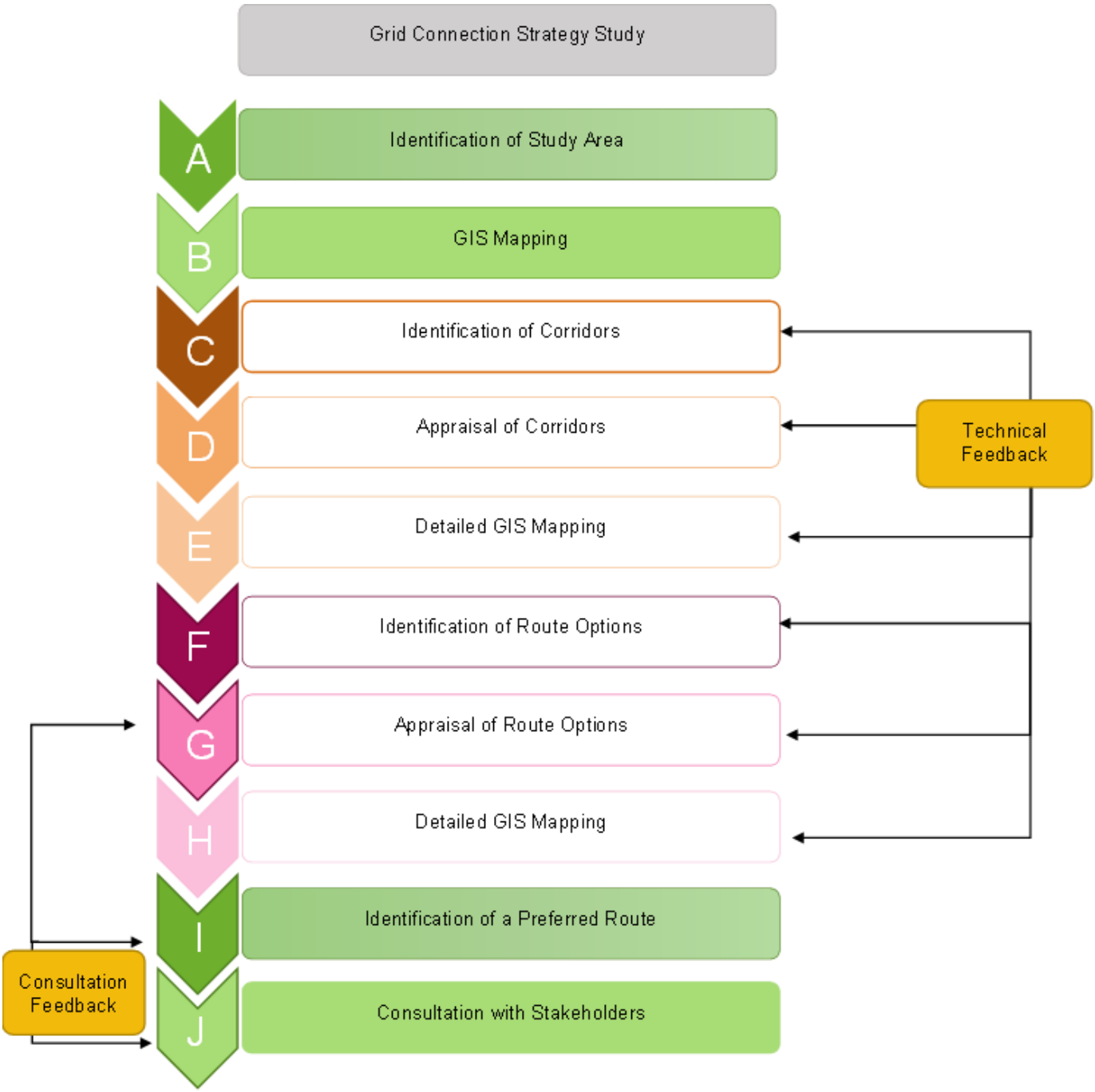
2.12 There are technical considerations which influence routeing which include the existing electricity transmission network, existing transport infrastructure such as railways, access requirements/opportunities, Ministry of Defence (MoD) safeguarding areas, slope gradient, altitude, waterbodies and wind farms.

2.13 Between 6 September 2023 and 18 October 2023, Green GEN Cymru consulted upon the preferred route option for the OHL. To ensure flexibility for the Project to develop following further planned stages of consultation, Green GEN Cymru considers that it is appropriate to seek a Scoping Opinion for the Project within a wider area than the preferred route that was subject to consultation. This is to allow Green GEN Cymru to consider alternative routes for the OHL within the Scoping Corridor that could deliver reduced impacts. As described **Chapter 1** and shown on **Figure 1.2** this comprises the Scoping Corridor.

2.14 The ES will include an 'Alternatives' chapter which will present a description of the process that Green GEN Cymru has followed to identify and develop the route and final design of the grid connection. As required by the EIA Regulations, it will also describe the main reasons for the selection of the final design along with the environmental considerations that have informed the decision.

[10] Department for Energy Security and Net Zero (2024) National Policy Statement for Electricity Networks Infrastructure (EN-5) Paragraph 2.9.16

Figure 2.1: OHL Routeing Process



Chapter 3
Project Description

Overhead Line Infrastructure

Steel Tower

3.1 The proposed OHL will be supported on a 'L7' tower (or similar), which is a steel lattice tower with six cross-arms (three on each side) as shown on **Figure 3.1**. The required voltage for the OHL is 132kV.

3.2 There are three types of L7 tower:

- Suspension towers- which are used to support OHLs along straight sections of the connection route.
- Tension towers- which are used to support OHLs at points where the route changes direction.
- Terminal towers- are used where the OHL terminates into a substation or onto an underground cable section via a separate cable sealing end compound or platform.

Tower Heights and Span Lengths

3.3 The standard height for an L7 tower is 27m, and the section of OHL between the towers is known as the 'span', with the distance between them being known as the 'span length'. The average span length is approximately 250m, but this can be increased or decreased depending on the requirements of the terrain or intermediate obstacles like water bodies. In these limited locations it may be necessary to have taller towers to accommodate these longer spans and the assessment in the ES will allow for this accordingly.

3.4 Tower heights can be increased for greater spans. The towers are used to regulate the statutory clearances required for conductor height, which is determined by the voltage of the OHL and the span length required between the towers.

Tower Colour

3.5 As towers are fabricated from galvanised steel it is not possible to colour the towers to camouflage them for all times of day or all the seasons. Where towers are viewed against the sky, the colour cannot be relied upon to diminish the visibility as the lighting characteristics of the sky varies. Towers will weather to a dull grey colour approximately 18 months after installation.

Collector Substation

3.6 The Green GEN Phase 2 Grid Connection Strategy explains that a collector substation is required to 'collect' the electricity generated from the five energy parks (Mid Wales Energy Parks), for onward transmission to the NETS.

3.7 The collector substation will be up to 200 x 200m in area and sited in a location to accommodate multiple incoming OHLs from additional proposed renewable energy sites. The collector substation will house circuit breakers, switchgear, busbars and a control building.

Cable Sealing End Compound (CSEC)

3.8 The connection from the collector substation to the CSEC will be underground to avoid interaction with the turbines forming part of the Llyn Lort Energy Park. Cables would be placed within a trench alongside the onsite access tracks of the Energy Park to prevent the need for additional ground disturbance.

3.9 The CSEC will be approximately 40 x 40m in size, will provide the connection between the underground cable and the 132kV OHL.

3.10 The proposed 132kV OHL will then travel in a north-easterly direction towards the new substation in Shropshire.

Underground Cabling Infrastructure

3.11 It is acknowledged by Green GEN Cymru that undergrounding of the cables could be appropriate along sections of the Scoping Corridor. However, the undergrounding of cable infrastructure, whilst reducing visual impacts in the most highly sensitive locations, does generate additional impacts due to ground disturbance that would otherwise not occur with an OHL. This is particularly pertinent for ecological, archaeological and hydrological receptors.

3.12 It is therefore essential that any proposals for undergrounding of the cable infrastructure include a detailed consideration of the likely significant effects associated with their construction to ensure that an appropriate balance is achieved that is consistent with planning policy.

3.13 At this early stage in the development of the Project it is not yet possible to identify where undergrounding could be considered appropriate, and this will be developed and proposed as the design progresses following further consultation with stakeholders.

3.14 In determining where along the Scoping Corridor it is appropriate to consider underground cables (UGC), Green GEN Cymru will identify those areas that are subject to the greatest visual impacts (or impacts upon setting of cultural heritage assets) before subsequently considering the capacity of the receiving environment.

3.15 UGC will be considered in the most sensitive landscape areas or where the presence of OHL will be particularly dominant and impactful upon visual receptors.

3.16 When it is deemed appropriate to consider UGC, Green GEN Cymru will consider and appraise the subsequent impacts that will arise from the construction and operation which could also include the visual impacts associated with vegetation clearance as well as the inherent loss of habitat and the time for re-instatement.

3.17 Undergrounding will only be proposed where the balance of effects is justified whilst similarly considering the increased cost and viability of the Project alongside technical considerations. Any justification will be clearly explained in the ES.

Ancillary Development

3.18 In addition to the proposed steel towers supporting the OHL conductors, ancillary development will be required to facilitate the construction of the OHL. Ancillary development will include working areas around towers, temporary access tracks, winching/pulling areas and construction compounds/laydown areas. This ancillary development will be temporary and will be removed and the ground re-instated following completion of construction of the OHL. Third party utility diversions or modifications may be required to facilitate construction and operation of the Project. Where this is required, details will be provided and assessed as part of the EIA and the findings presented in the ES.

Construction Features and Methods

3.19 The construction of OHLs can require temporary infrastructure such as temporary access to tower locations. All have minimal maintenance requirements and are subject to recognised procedures for dismantling and decommissioning.

Steel Tower Construction

3.20 The construction of the OHL will follow a sequence of activities outlined below.

Preparation of accesses

3.21 Prior to constructing the overhead line, temporary accesses will be constructed, as necessary, and laydown/storage areas established. Any trees which may impact on safety clearances will be removed or lopped. Existing entrances to fields will be used, where suitable, in preference to creating new entrances that may require vegetation removal.

3.22 Access for plant and equipment to every tower location will be required during construction and where it is not possible to use the existing highway, a haul road will be constructed alongside the OHL, or underground cable, route. This will involve the removal and storage of topsoil and the placement of suitable haul road forming materials.

Construction materials

3.23 At this stage it is anticipated that stone for access tracks will be sourced from a mix of existing local sources and imported stone from the wider area.

Excavation of foundation

3.24 The tower's foundations will be made of concrete beneath each leg position. The depth of foundation will depend upon site conditions and tower type but will typically range between 3m and 5m in depth.

Tower delivery

3.25 The towers will be delivered to the relevant construction area in sections by HGVs of standard size that will not require any abnormal load notification.

Erection of towers

3.26 The towers will be erected using a mobile crane. Construction would either start with the tower body, then the cross arms and finally the insulators or alternatively, partly assembled on the ground, before lifting it in sections.

Delivery of conductors and stringing equipment

3.27 The conductors and stringing equipment would be delivered to the construction area by HGVs in large rolls.

Insulator and conductor erection and tensioning

3.28 Once the towers have been erected the stringing of the conductors can begin, which needs temporary 'pulling/stringing' areas at tower locations approximately every 3-4km along the line. These temporary pulling areas are approximately 20m by 50m.

3.29 At each of the tower locations a winch and a tensioner will be set up at opposite ends of the stringing section. The wires are placed in blocks which hang from the insulators and the winch will pull the wires to allow the conductor to be drawn through that section. The tensioner is used to make sure there is constant tension, allowing this to be controlled without the conductor touching the ground, avoiding any damage.

Clearance and reinstatement

3.30 Following completion of construction, all compounds, haul roads and access tracks will be reinstated in accordance with the requirements of the DCO.

Collector Substation

3.31 In order to construct a substation a level site platform is required which is likely to involve ground levelling, a permanent access road constructed, equipment installed (switchgear), connections with the incoming and outgoing circuits constructed and a fence constructed (generally palisade) around the perimeter.

CSEC

3.32 As for a substation the area needs to be levelled, sealing end equipment installed, and a permanent access road constructed and a fence constructed (generally palisade) around the perimeter.

Underground Cabling Construction

3.33 For construction of an UGC (i.e. between the collector substation and the cable sealing end compound), the conductors would be encased in insulated material and buried in a backfilled trench, with an adjacent working area; resulting in a total excavation swathe of approximately 25m in width. Where underground cables connect back to the OHL, there is the likely need for the construction of a permanent fenced area for the terminal supports and cable sealing ends.

3.34 There are two standard techniques that can be used to install underground cables; opencut installation and trenchless installation and both may be required on the Project.

3.35 Open cut installation typically involves the following:

- Vegetation would be removed where necessary and topsoil would be stripped and stored for reuse;
- A temporary haul route would be installed along the length of each cable section to provide access for construction vehicles to the working areas; and
- A number of open trenches (typically six trenches each accommodating three cables) would be excavated for cabling to be installed and covered.

3.36 Trenchless installation (i.e. those involving no open excavations) could be necessary for crossing rivers, roads and railways and any other feature where engineering requirements prevent open excavation. The cable would be installed using a drilling/boring method to pass beneath features.

Access

3.37 Prior to construction of the OHL (or UGC), temporary accesses will be constructed (as needed) and laydown/ storage areas set up. The use of existing tracks and watercourse crossings will be maximised, with the upgrading of these if necessary.

3.38 The use of low ground pressure vehicles when taking temporary access is preferred. If access is required to be taken through sensitive areas, which are identified during the EIA process, other less intrusive methods can be applied such as temporary steel matting, or timber roadways.

3.39 Any trees which may have an impact on safety clearances will be removed or lopped. Following commissioning of the OHL, all equipment and temporary access of construction areas will be removed, and the land will be reinstated in consultation with the landowner and the local planning authority.

Temporary Working

3.40 Temporary working areas will be required for the duration of construction works. There is a requirement for temporary vehicular access to every tower location and to access the route of any UGC.

3.41 L7 tower locations have a typical working area of approximately 25m x 25m for standard towers and 50m x 50m for angle towers. In some circumstances, the shape/ size of the working area is controlled by the environmental/ land-use constraints that are located nearby.

3.42 The reinforced concrete foundations consist of 9-17 tonnes of concrete, dependant on the type (suspension or tension).

3.43 The weight of an L7 tower is between 5 and 9 tonnes of steel, dependant of the type and the height.

3.44 The 12 conductors and 1 earthwire required will have a combined weight of 12.8 tonnes per km.

3.45 If UGC is proposed it requires a corridor of 25m in width along which vegetation would need to be removed where necessary to allow sufficient working room.

3.46 The temporary working areas will be returned and restored to former conditions following the completion of the construction works.

Construction Timescales

3.47 The total duration of construction activity at any single tower site is approximately two weeks for tower foundations, a further two weeks for tower construction, and up to four weeks for conduction erection and stringing (this depends on the size of the tower and the number of conductors being strung). However, these timescales will not be consecutive as a gap of 4 weeks will be required for the foundation concrete to ‘cure’, a further gap will be required for all the towers in a section to be erected before any wiring works can commence. The total construction period at any one tower is expected to be approximately 4 months.

3.48 If proposed, UGC construction duration will be dependent upon ground conditions and the length of cable.

Forestry Felling

3.49 The felling of forestry will be required to construct the OHL and to maintain the required clearance for the safe construction and maintenance of the OHL. A standard clearance wayleave for 132kV OHL corridor of approximately 70m (within commercial woodland), comprising 35m either side of the centre of the OHL will be required to be maintained as open ground for the life of the Project.

3.50 The baseline of forestry will describe the woodland and timber crops existing at the time of preparation of the ES. This would include current species; the planting year (if known); and any felling and restocking plans; and other relevant woodland information. The baseline would be prepared from existing forest records, desk-based assessments, aerial photographs and site visits.

3.51 A felling and replanting plan will set out the forestry felling and management requirements, including any potential replanting, associated with the construction and operation of the Project.

3.52 The significance of any effects from forest felling will be assessed in the relevant chapters of the ES including Ornithology; Landscape and Visual; Hydrology, Geology and Hydrogeology; Ecology; and Traffic and Transport. Opportunities for re-planting within the wayleave corridor will be investigated as part of the EIA process to seek to deliver biodiversity net gain (BNG) and will be incorporated into the felling design plans were appropriate.

Operation and Maintenance

3.53 Most OHL components (including CSEC) are maintenance free, the exposed elements which suffer from corrosion, wear, deterioration and fatigue, will require annual inspection and periodic maintenance over the lifespan of the OHL. OHL conductors generally require refurbishment after approximately 40 years however the fittings and insulators may require replacing sooner (approximately 20-25 years).

3.54 Any felled wayleave areas would also be managed to maintain the required clearances whilst the connection remains active. Walkover surveys or flyovers would identify where there is requirement to clear wayleaves of new growth.

3.55 The collector substation will be relatively maintenance free, requiring sporadic inspections (6 months of annual) weeding and brush clearance and the equipment should only require intervention in the event of a fault. The underground cables are also generally maintenance free only requiring intervention when there is a fault.

3.56 Traffic movements associated with the operation and maintenance of the project will therefore be low.

Embedded Mitigation Measures

3.57 These are intrinsic to and built into the design and/or control the construction and operation of the Project, to avoid or minimise the level of significant effects that could be experienced during construction and operation of the Project.

3.58 As further consultation is carried out the design of the Project will evolve further. The emerging findings of the environmental assessment will continue to influence the design, to further avoid and minimise potentially significant effects. In addition to embedded mitigation through the design process, the ES will document all the mitigation measures that have been developed during the assessment.

Chapter 4
The EIA Approach and Method

Introduction

4.1 This chapter describes the EIA approach and methodology that will be adopted in the assessment of the Project and production of the ES to accompany the DCO application.

4.2 EIA is a process of systematically compiling, evaluating and presenting all the likely significant environmental effects, both positive and negative, of a proposed development, to assist the determining authority in considering the application for development consent, and reaching an informed decision. It enables the significance of these environmental effects, and the scope for reducing negative, or enhancing positive, effects to be clearly understood by the determining authority, as well as those consulted as part of the EIA process.

4.3 Relevant information compiled during this process will be presented within an ES that will accompany the application. The proposed structure of the ES is provided in **Appendix B**.

4.4 EIA is an iterative process and runs in tandem with the design of a project. During the process, as likely significant adverse effects are identified, the design of the Project, for example the positioning of the steel towers and ancillary infrastructure, can be adjusted to reduce or avoid the effects with mitigation measures subsequently proposed where appropriate.

4.5 The significance of an effect is usually derived from combining the value of the receptor (sensitivity) with the magnitude of the impact. A significant effect is usually considered to be an effect that is of moderate or major significance although a precise determination will always entail an element of professional judgement.

4.6 The EIA will be undertaken in accordance with current regulations, policy and guidance. More details on these are presented in **Chapter 5**.

Scoping

4.7 Scoping is important phase of the EIA process as it helps to focus the EIA on assessing the likely significant environmental effects that are relevant to the Project.

4.8 From the work that has been undertaken to date as part of the routeing and consultation stage, feedback received in response to the routeing and consultation report, professional judgment of the EIA team, experience from other similar projects, as well as policy and guidance, each topic section in this Scoping Report outlines the likely significant effects anticipated to arise from the construction and operation of the Project. These are the topics that are proposed for detailed consideration within the ES.

4.9 Environmental topics that are not likely to be significant are proposed to be 'scoped out' of the assessment. The justification for this is presented in **Chapter 6**.

4.10 Other objectives of this Scoping Report are to consult with Statutory Consultees to:

- Establish the availability of baseline environmental data;
- Define a survey and framework from which a comprehensive overall assessment can be produced;
- Agree the proposed assessment methodology (including cumulatively);
- Agree the way in which the findings are presented in the ES; and
- Identify any additional stakeholders who Green GEN Cymru should consult to inform the EIA.

4.11 A list of consultees who are invited to respond to this request for a Scoping Opinion to help inform the EIA is provided in **Appendix C**. The list has been informed through discussion with the Planning Inspectorate. Additional suggestions from stakeholders who may have an interest in the Project, and who may wish to be consulted for information to inform the EIA are invited as part of the Scoping process.

4.12 The Planning Inspectorate requires advance notice of intention to submit the Scoping request[11], therefore Green GEN Cymru has notified the Planning Inspectorate of the intention to submit a Scoping Request, including provision of a GIS Shapefile of the Project boundary (including the Collector Substation) as per the requirements of the Planning Inspectorate.

Existing Conditions

4.13 The EIA Regulations require that the aspects of the environment, which are likely to be significantly affected by the development, be defined within the ES. To achieve this each of the topic specialists will gather information on the environment, as it currently exists, i.e. 'baseline conditions'. This will be undertaken as the first step in the assembly of data for the ES through a combination of consultation with relevant stakeholders, field survey work and desk-based research.

Future Baseline

4.14 The EIA Regulations in Schedule 4 require an ES to outline how the baseline condition of the environment will evolve without the implementation of a project or development (the future baseline). The EIA Regulations acknowledge that this is subject to the availability of environmental information and scientific knowledge.

4.15 The ES will, therefore, set out within each specialist topic assessment, as it is appropriate and feasible to do so, the future baseline, which reflects likely changes to the baseline between now and construction of the Project which will be considered in the assessment.

Embedded and Standard Mitigation Measures

4.16 Mitigation measures that are 'embedded', that is those mitigation measures that are integrated within the design and standard good practice measures thatcontrol the construction and/or opertational management of the Project, will be clearly stated within the ES as appropriate. The subsequent assessment presented within that chapter will be undertaken on the basis that these measures are included and inherent within the Project. Where the assessment identifies likley significant effects, taking into account the embedded mitigation, additional mitigation measures will be identified to inform the assessment of residual effects.

Assessment of Effects (Including Cumulative Effects)

4.17 The assessment of the likely significant effects, using a range of appropriate methodologies, will take into account the construction and the operation of the Project in relation to the Study Area and its environs as well as intra-project effects (i.e. those where more than one environmental factor impacts upon the same receptor).

4.18 The cumulative assessment, will include other proposed projects which are at the following stages in the development process and which are of a scale and nature that they may result in significant cumulative effects upon the environment:

- Developments which are subject of applications for consent and which have been submitted to the relevant determining authorities but not yet determined (or are the subject of a valid appeal);
- Consented but not operational; and
- Under construction.

[11] Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-and-environmental-statements/#5 (accessed 28.09.2023).

Study Areas

4.19 The Study Area for each discipline will be defined separately to reflect the potential extent of likely significant effects associated with the Project. The Study Area for each discipline is not necessarily defined by the application boundary, with some survey areas being smaller and some larger depending on the nature of effects and taking into account guidance and professional judgement. Therefore, Study Areas will be defined separately for each topic assessed in the EIA to reflect the extent of likely significant effects.

Assessment Methodologies

4.20 In the interests of producing a focussed and concise report, which highlights clearly those issues of particular relevance to the Project,an overview of the specialist topic area assessment methodologies are presented in detail within this Scoping Report. Reference is clearly made, however, to where the text of the relevant guidance or methodology can be accessed.

Chapter 5
Planning Policy and Context

Introduction

5.1 This chapter presents an overview of the planning policy context for the Project. A summary of relevant policies will be included in a chapter within the ES and full details of the relevant policies will be provided in a Planning Statement.

5.2 This chapter, within the Scoping Report, is not intended to assess whether the Project will comply with the identified policies or give weight to the relevant material considerations.

5.3 The Project is located across land within the jurisdiction of Powys County Council and Shropshire Council. As outlined in **Chapter 1**, the application will be determined by the SoS at the Department for Energy Security & Net Zero, taking into account recommendations from the Planning Inspectorate. Powys County Council and Shropshire Council will be prescribed consultees for the application.

5.4 An overview of the relevant planning policy, from a national to local level, which will be considered as part of the EIA process, is provided below.

Review of the UK's Renewable Energy Targets

5.5 In August 2023 the UK Government pledged an extra £22 million for the government flagship renewables scheme, the Contracts for Difference Scheme. The scheme launched in 2014 and is the main system for supporting low-carbon electricity generation in the UK.

5.6 In 2022 renewables fuelled approximately 42% of the UK's electricity whereas in the first quarter of 2023, renewables generated approximately 48% of the UK's electricity. The UK Government is aiming to deliver decarbonised power sector by 2035 and net zero by 2050.

5.7 In January 2023 the Welsh Government consulted upon plans to formalise in policy that Wales generates the equivalent of 100% of its electricity consumption from renewable energy by 2035[12]. At present, the target in adopted policy is that 70% of electricity use is generated from renewable sources by 2030.

5.8 At present, Wales generates the equivalent of 55% of its own electricity from renewable sources and therefore further generation and distribution infrastructure is required in order to allow this policy commitment to be achieved.

National Planning Policy and Guidance

National Policy Statements

5.9 The Planning Act 2008[13] introduced the designation of National Policy Statements (NPSs), which set out the national policy against which NSIPs, such as the Project, are assessed by the Planning Inspectorate and SoS. Section 104 of the Planning Act 2008 states that the SoS must have regard to any relevant NPSs. Revised NPSs were designated on 17th January 2024, as part of a revision to the suite of NPSs published in 2011.

5.10 The relevant NPSs for the Project are:

- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a); and
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2024b).

[12] Welsh Government Review of Wales' renewable energy targets: Summary of Consultation Response. Available at: https://www.gov.wales/review-wales-renewable-energy-targets (accessed 17.01.2024)
[13] Planning Act 2008. Available at: https://www.legislation.gov.uk/ukpga/2008/29/contents (accessed 26.09.2023).

5.11 An overview of the key policies within the NPS's listed above that are relevant to the Project are described in more detail below.

National Policy Statement EN-1 – Overarching National Policy Statement for Energy

5.12 NPS EN-1 sets out the need for new nationally significant infrastructure to achieve energy security and reduce greenhouse gas emissions. The policy statement makes the case for many types of energy infrastructure, including a particular need for low carbon infrastructure.

5.13 Section 4.2 of NPS EN-1 states that the UK Government has "*concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure*". Low carbon infrastructure for the purposes of this policy means, "*for electricity grid infrastructure, all power lines in scope of EN-5 including network reinforcement and upgrade works, and associated infrastructure such as substations. This is not limited to those associated specifically with a particular generation technology, as all new grid projects will contribute towards greater efficiency in constructing, operating and connecting low carbon infrastructure to the National Electricity Transmission System*".

5.14 Paragraph 3.3.63 of NPS EN-1 states that "*the urgent need for CNP Infrastructure to achieving our energy objectives, together with the national security, economic, commercial, and net zero benefits, will in general outweigh any other residual impacts not capable of being addressed by application of the mitigation hierarchy. Government strongly supports the delivery of CNP Infrastructure and it should be progressed as quickly as possible"*.

5.15 NPS EN-1 also notes at paragraph 3.3.67 that, "*as the electricity system grows in scale, dispersion, variety, and complexity, work will be needed to protect against the risk of large-scale supply interruptions in the absence of sufficiently robust electricity networks. While existing transmission and distribution networks must adapt and evolve to cope with this reality, development of new lines of 132kV (and over 2km) and above will also be necessary to preserve and guarantee the robust and reliable operation of the whole electricity system*".

5.16 Furthermore, paragraph 3.3.78 of NPS-EN-1 recognises "*that the case for a new connection or network reinforcement is demonstrated if the proposed development represents an efficient and economical means of… connecting a new generating station or storage facility to the network*".

5.17 NPS EN-1 also sets out detailed polices in relation to topics such as air quality and emissions, biodiversity, dust and odour, flood risk, historic environment, landscape and visual, land use, noise and vibration, socio-economic, traffic and transport and waste management. The principles set out in this policy will be adhered to through the Environmental Impact Assessment (EIA) process.

National Policy Statement EN-5 – Electricity Networks Infrastructure

5.18 NPS EN-5 covers above ground electricity lines, with voltages that are expected to be 132kV or above. EN-5 sets out the factors that should be taken into account during site/route selection and the potential impacts that are specific to electricity networks infrastructure. The recently designated EN-5 also provides more detail on the role of strategic planning of networks, which considers the network as a whole, rather than just individual transmission projects.

5.19 The document sets out the considerations required to demonstrate good design and approach to mitigating potential adverse impacts. This includes the following considerations for biodiversity and landscape and visual matters which are of relevance to the routeing of the proposed OHL:

- Environmental and Biodiversity Net Gain: NPS EN-5 paragraph 2.5.1 recognises that the linear nature of electricity networks infrastructure can allow for excellent opportunities to "*reconnect important habitats via green corridors, biodiversity stepping zones, and reestablishing of appropriate hedgerows; and/or connect people to the environment, for instance via footpaths and cycleways constructed in tandem with environmental enhancements"*.
- Biodiversity: Sections 2.9 and 2.10 of EN-5 note the particular consideration that should be given to large birds such as swans and geese that may collide with OHLs. Paragraphs 2.10.2-2.10.4 outline mitigation that should be considered and addressed at an early stage in the development process, including careful siting of lines away from, or parallel to, known flight paths which can reduce the number of birds colliding with OHLs considerably;
- Landscape and visual: Paragraph 2.9.7 of EN-5 states that "*The Government does not believe that development of overhead lines is generally incompatible in principle with applicants' statutory duty under section 9 of the Electricity Act, to*

have regard to visual and landscape amenity and to reasonably mitigate possible impacts." EN-5 indicates that there is potential for OHL infrastructure to give rise to adverse landscape and visual impacts, with principal opportunities for mitigating these impacts provided at paragraph 2.10.5;

- Additionally, "*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 networks may also give rise to adverse landscape and visual impacts*", therefore cumulative assessment of all required infrastructure should be undertaken;
- EN-5 also clearly indicates that the Holford Rules should be followed by developers when designing proposed grid infrastructure routes; and
- With regards to undergrounding, paragraph 2.9.24 of NPS EN-5 states that the SoS "*must weigh the feasibility, cost, and any harm of the undergrounding… option against the adverse implications of the overhead line proposal, the cost and feasibility of re-routing overhead lines or mitigation proposals for the relevant line section, and the cost and feasibility of the reconfiguration, rationalisation, and/or use of underground… cabling of proximate existing or proposed electricity networks infrastructure*".

National Planning Policy Framework and Planning Practice Guidance (PPG)

5.20 The National Planning Policy Framework (NPPF)[14] sets out UK Government national planning policy. Although there are no specific policies relating to NSIPs, paragraph 157 states that "*the planning system should support the transition to a low carbon future in a changing climate… and support renewable and low carbon energy and associated infrastructure*".

5.21 The UK Government's Planning Practice Guidance (PPG) resource is updated periodically by the Department for Levelling Up, Housing and Communities (DLUHC) and provides supplementary guidance to the policies set out in the NPPF. Both the NPPF and PPG will be considered in each topic chapter where relevant to particular assessments or requiring consideration as part of the decision-making process.

Welsh planning policy and guidance

5.22 Whilst the National Policy set out above must be used by the Planning Inspectorate in reaching their recommendation and SoS in reaching a decision (in addition to national planning guidance as a material consideration) planning policy and guidance designated in Wales is also likely to be considered a relevant material consideration. The key elements of this which are likely to be considered in relation to the Proposed Development are set out below.

Future Wales: The National Plan 2040 (February 2021)

5.23 The Welsh Government launched the National Development Framework for Wales titled 'Future Wales: The National Plan 2040 ('Future Wales')[15]. This is the highest tier Development Plan in Wales and sets out the key national planning policy direction. Future Wales provides the spatial direction for development in Wales and the policy framework for Local Development Plans.

5.24 As the most recent expression of Welsh national planning policy, Future Wales is considered to have primacy in the planning policy hierarchy for planning applications and decisions in Wales. Its purpose is to ensure the planning system at all levels is consistent with, and supports the delivery of, Welsh Government strategic aims and policies (including those in Planning Policy Wales, the Wales Infrastructure Investment Plan and Regional Economic Frameworks). It was prepared with regard to various Welsh Government policy and legislation, including:

- Planning Policy Wales (Edition 11 February 2021);
- Well-being of Future Generations (Wales) Act 2015;
- Environment (Wales) Act 2016;

[14] Department for Levelling Up, Housing & Communities (2023) National Planning Policy Framework. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 (accessed 15.01.2024).
[15] Future Wales: The National Plan. Available at: https://www.gov.wales/sites/default/files/publications/2021-02/future-wales-the-national-plan-2040.pdf (accessed 06.07.2023).

- Prosperity for All: A Low Carbon Wales (March 2019); and
- Policy Statement: Local ownership of energy generation in Wales – benefitting Wales today and for future generations (February 2020).

5.25 Future Wales provides the spatial direction for development in Wales and the policy framework for Strategic Development Plans and Local Development Plans. These plans are required to conform to Future Wales and planning decisions at every level must be taken in accordance with the Development Plan.

5.26 Whilst NSIPs are considered against NPSs as the primary policy for decision-making, other policy documents may also be considered important and relevant. The weight attached to Future Wales policies in the final decision will broadly correlate to their conformity to the NPSs, given the Project's status as nationally significant infrastructure.

5.27 Within the document Policy 17: Renewable and Low Carbon Energy and Associated Infrastructure, is a relevant policy. It states that *"new strategic grid infrastructure for the transmission and distribution of energy should be designed to minimise visual impact on nearby communities"*. This highlights that the Welsh Government will work with the relevant stakeholders to transition to a multi-vector grid network and try to decrease obstacles for implementation of new grid infrastructure.

Planning Policy Wales (February 2021)

5.28 The Welsh Government published Planning Policy Wales (PPW) Edition 11 in February 2021[16]. This provides the key principles for the planning system in Wales and is a material consideration in the planning process. Updates to Chapter 6 of PPW were published in a Heads of Planning Letter on the 18th October 2023. The updated policy was published with immediate effect, in advance of the next iteration of PPW (Edition 12) due to be published imminently.

5.29 The overarching aim of PPW is to make sure that the planning system contributes to the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales. PPW, in Paragraph 5.9.19 is clear that the contribution that a project has towards cutting greenhouse gas emissions and meeting government targets should be considered by the determining authority.

5.30 Section 5.7 relates specifically to electricity grid infrastructure/ electricity grid networks. Paragraph 5.7.8 states that *"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."*

5.31 Additionally, Paragraph 5.79 states that *"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."*

5.32 However, the costs and environmental impacts associated with undergrounding could make the Project unviable and therefore OHL is considered to be the most appropriate technology type to be adopted, although as previously stated in **Chapter 3**, undergrounding may be considered in certain locations.

Technical Advice Notes

5.33 Technical advice notes (TANs) are used to supplement the PPW. The ones that are relevant to the application are:

- TAN 5: Nature Conservation and Planning (published 30th September 2009);
- TAN 6: Planning for Sustainable Rural Communities (published 30th July 2010);
- TAN 10: Tree Preservation Orders (published 31st October 1997);
- TAN 11: Noise (published 31st October 1997);
- TAN 13: Tourism (published 31st October 1997);

[16] Planning Policy Wales 2021. Available at: https://www.gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf (accessed 06.07.2023).

- TAN 15: Development and Flood Risk (published 30th July 2004, but last updated 24th November 2021);
- TAN 16: Sport, Recreation and Open Space (published 31st January 2009);
- TAN 18: Transport (published 31st March 2007); and
- TAN 24: Historic Environment (published 30th May 2017).

Local Planning Policy

5.34 Local planning policies have been considered for both Powys County Council and Shropshire Council, due to the Project being located in both councils' administrative areas. Whilst NSIPs are considered against NPSs as the primary policy for decision-making, regional and local policy documents may also be considered important and relevant. The weight attached to these policies in the final decision will broadly correlate to their conformity to the NPSs, given the Project's status as nationally significant infrastructure.

Wales

Powys Adopted Local Development Plan (2011-2026)

5.35 Powys County Council has its own development plan, the Adopted Local Development Plan (2011-2026)[17] which was adopted on 17th April 2018.

5.36 Overall, the plan focuses on Powys County Council's visions, objectives, policies and proposals for the sustainable development and use of land in Powys between 2011-2026.

5.37 Within Powys' Adopted Local Development Plan it states that *"utilisation of Powys' renewable energy resource and associated infrastructure should be supported where cumulative, environmental, socio-economic effects are acceptable"*. This aims to protect/ enhance the county's physical, social and cultural environment, including the natural landscape and historic environment.

5.38 Policy RE1- Renewable Energy within Powys Adopted Local Development Plan focuses mainly on renewable energy. Paragraph 4.10.13 states that *"all renewable energy proposals and associated infrastructure, such as power lines or battery storage facilities, must respect the existence and amenities of neighbouring residential and sensitive properties including approved development"*.

England

The Site Allocations and Management of Development Adopted Plan (SAMDev Plan)

5.39 Shropshire Council has its own development plan, the Site Allocations and Management of Development Adopted Plan (SAMDev Plan)[18], which was adopted on 17th December 2015.

5.40 The plan focuses on detailed policies on how to deliver sustainable development across Shropshire, as well as policies for the management of new developments. These complement the policies adopted in the Shropshire Core Strategy.

5.41 Policy MD8 within the development plan focuses on infrastructure provision. This policy splits infrastructure into existing infrastructure and new strategic infrastructure. There is an emphasis that community involvement should be considered an integral part of the development process for new infrastructure within Shropshire. For new infrastructure related to energy, transport, water management and telecommunications Policy MD8 suggests that consideration for potential impacts should be given to:

- Residential and other sensitive neighbouring land uses;
- Visual amenity;

[17] Powys LDP. Available at: https://en.powys.gov.uk/media/4256/Adopted-Powys-LDP-Written-Statement-April-2018/pdf/Adopted_Powys_LDP_Written_Statement_April_2018.pdf?m=1536134184070 (accessed 26.09.2023).
[18] Shropshire LDP . Available at: https://www.shropshire.gov.uk/media/8503/samdev-adopted-plan.pdf (accessed 26.09.2023).

- Landscape character and sensitivity, including impacts on sensitive skylines;
- Natural and heritage assets, including the Shropshire Hills AONB (Policies MD12 and MD13);
- The visitor and tourism economy including long distance footpaths, cycle tracks and bridleways (Policy MD11);
- Noise, air quality, dust, odour and vibration;
- Water quality and resources; ν Impacts from traffic and transport during the construction and operation of the infrastructure development; and
- Cumulative impacts.

Chapter 6
Our Approach to Topics Not to be Included in the EIA

Introduction

6.1 The purpose of this Scoping Report is to identify the scope of the EIA, the findings of which will be presented in the ES. Therefore, certain topics and/or effects associated with a particular environmental topic may be 'scoped out' or covered using an alternative approach where significant effects are considered unlikely, based on the nature of the Project and the work undertaken to date.

6.2 This chapter provides details of the topics and effects that are proposed not be included in the EIA and reported in the ES, provides information to justify this reasoning and outlines what alternative approach is proposed for some topics. Additional to whole topics being scoped out there may be effects which are proposed to be scoped out within in individual topics, this is outlined within the individual topic chapters.

6.3 During the course of the assessment and preparation of the ES, it may be necessary to revise and revisit the scope of the EIA as further detail on the Project and the baseline environment emerges. Should additional information identify a need to include, or justify the removal, of topics from the scope of the ES, following consultation wit the relevant stakeholders, the justification for doing so will be clearly presented along with any supporting information.

Our Approach to Electric and Magnetic Fields

6.4 An Electric and Magnetic Field (EMF) can occur naturally but they are also produced by any equipment that generates, distributes or uses electricity.

6.5 All equipment that generates, distributes or uses electricity produces electromagnetic fields (EMFs) which vary depending on the operating voltage of the equipment (which is measured in V/m, or volts per metre). The Project will operate at 132kv and therefore there is a maximum current that can be carried through the OHL, although it will typically operate at levels far below what it is capable of carrying (known as the 'typical' level).

6.6 The UK power frequency is 50Hz which is therefore the principal frequency of the EMFs produced, which are also known as Extremely Low Frequency (ELF) EMFs.

6.7 The strength of a magnetic field that is generated by an OHL is dependent on the electrical currents flowing, which vary according to the electrical power requirements at any given time and are measured in µT (microteslas). EMFs are present in all areas where electricity is in use (e.g. offices and homes), as they arise from all electric cabling and equipment. EMFs diminish rapidly with distance from the source and during a normal day, EMFs reduce to background levels approximately 45m from an OHL (background levels being typical to those in an average home in the UK).

6.8 Due to the designed voltages and currents, the maximum possible exposure directly underneath the proposed OHL is anticipated to be 38.9 microTesla (µT) which is a similar level of exposure to using a hairdryer or walking close to microwave when it's cooking.

6.9 There are limits in place for EMF exposure which have been established by independent scientific experts, who recommend safe levels of exposure for the public and workers. The exposure limit for members of the public is 360 microtesla[19], so even directly underneath the OHL the maximum EMF levels are just a small fraction of the limit. After many decades of research and hundreds of millions of pounds spent investigating the issue, there are no established health effects below the exposure limits.

[19] Electric and Magnetic Fields. Available at: https://www.nationalgrid.com/sites/default/files/documents/13791-Electric%20and%20Magnetic%20Fields%20-%20The%20facts.pdf (accessed 03.11.2023).

6.10 The Project will comply with the relevant exposure guidelines as specified by the Government and with other precautionary policies. It is therefore concluded that there would be no likely significant effects from EMFs and they are accordingly scoped out of the ES.

6.11 However, Green GEN Cymru recognise the public interest and concern regarding EMFs and will provide all of the relevant information in relation to EMFs as part of the application for consent. Comprehensive information on EMFs as they relate to the Project will be prepared provided as a separate document alongside the ES and other DCO application documents. The information provided will include details and information on how the Project will comply with relevant guidelines and codes of practice.

Construction

6.12 EMFs are only generated when electricity is flowing through the equipment and the assessment of EMFs can therefore be scoped out of the construction assessment.

Operation

6.13 All OHLs produce EMFs, with these tending to be highest directly under the OHL. It decreases to the sides of the OHLs and at increasing distance, with substations and cable sealing end compounds not producing significant EMFs outside their boundaries.

6.14 The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has developed health protection guidelines for both public and occupational exposure to EMF. The ICNIRP 2020 guidelines has set limits to ensure public protection from EMFs and it is the UK Government's policy that public exposure should comply with the ICNIRP guidelines and the electricity industry, including Green GEN Cymru has agreed to adopt this policy. As the siting of the OHL will therefore be undertaken to ensure that the ICNIRP guidelines are met, as is consistent with UK policy, it is accordingly concluded that the assessment of EMFs can be scoped out of the ES.

Our Approach to Climate

6.15 An assessment of Climate has two factors (as defined within the EIA Regulations):

- Greenhouse gas emissions; and
- Impacts relevant to adaptation.

Greenhouse Gas Emissions

6.16 The Project is proposing to connect multiple energy parks to NETS with an approximate generating capacity of 685MW of renewable energy. Information regarding the expected generating capacity of the proposed energy parks is available within the Green GEN Phase 2 Grid Connection Strategy Report.

6.17 Notwithstanding that the Project will facilitate the transfer of renewable low carbon energy produced at Llyn Lort Energy Park, as well as future energy park installations to export electricity to the NETS, the construction of the Project will have some inherent carbon cost associated with the materials that will be used.

6.18 The UK Government has set carbon budgets, aiming to decarbonise the power sector by 2035 and achieve net zero by 2050. Additionally, The Welsh Government has set carbon their own budgets for 2030, 2040 and 2050 in Planning Policy Wales with the overall aim of achieving net zero in 2050. Clearly the development of renewable low carbon energy will be an important contributor to that objective.

6.19 The construction of the Project will require steel and concrete to construct the towers, collector substation and CSEC as follows:

- Steel for use in towers will equate to approximately 1000-2000 tonnes;
- Concrete for use in tower construction will equate to approximately 2000- 4000 tonnes;
- Steel for use in the collector substation and the CSEC will equate to approximately 25 tonnes
- Concrete for use in the construction of the collector substation and CSEC will equate to approximately 42m^3.

6.20 Overall, in 2022 Wales produced approximately 373,000 tonnes of steel according to Welsh Government[20]. The Project will require between 1000-2000 tonnes of steel (based on approximately 220-230 towers) which is 0.27%-0.54% of the total steel produced in Wales in 2022.

6.21 Approximately 40 million tonnes of concrete are produced in the UK as published on Gov.UK[21]. the project will require between 2000 and 4000 tonnes of concrete (based on approximately 220-230 towers) which is 0.005% and 0.01% of the total concrete produced in the UK in 2022.

6.22 Where possible the design and construction methods to be deployed will seek to minimise emissions associated with steel and concrete production.

6.23 On the basis that the Project is required to facilitate the generation of renewable energy to 'achieve a science-based 1.5ºC aligned transition to net zero' by facilitating the contribution of 685MW of renewable energy towards the targets, significant adverse effects in relation to greenhouse gas emissions will not occur. Therefore effects associated with greenhouse gases during construction and operation are proposed to be scoped out.

Impacts Relevant to Adaptation

6.24 Consideration of this topic will be given within relevant environmental topic chapters in the ES where applicable. This includes the identification of the likely consequences on the following:

- Consequences of climate change for baseline conditions/assessment findings; and
- The resilience of mitigation measures to any projected changes in extreme weather, including heavy rainfall events.

Our Approach to Health and Wellbeing

6.25 The EIA Regulations state in Schedule 4 that an application that is EIA development needs to consider whether human health is a suitable factor for assessment within the ES. Guidance produced by IEMA in November 2022[22] states "*An EIA Report health chapter is required where:*

- *either other EIA technical topics have been scoped in to assess likely and potentially significant effects to human receptors, community amenities or services, and there are likely and potentially significant population health implications from such assessments;*
- *or there is likely to be a change due to the project in a wider determinant of health not covered by other EIA technical topics, and this change is potentially significant for population health*.

6.26 Reflecting this guidance, this assessment of health and wellbeing during construction is proposed to be scoped in, however the findings of the assessment not presented in a separate standalone ES chapter. This is due to the inherent consideration of the impacts upon health and wellbeing associated with other factors that will be included within the ES (i.e. noise, traffic, air quality, ground conditions (contaminated land) and residential visual amenity). 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 Project are likely due to the inherent lack of pathway from these impacts to human receptors during operation. The impacts of the operational phase of the Project upon human health and wellbeing are therefore proposed to be scoped out of the assessment.

6.27 It is proposed that health and wellbeing is covered within individual topics chapters in the ES namely **Chapters 7, 11, 12, 14 and 16**. **Chapter 7** will assess likely effects on residential visual amenity. **Chapter 11** will assess traffic and transport impacts, which will also consider the likely significant effects on Public Rights of Way (PRoWs), which could affect access to services. **Chapter 12** will consider impacts on noise and vibration, which could result in impacts on people's health during construction. **Chapter 14** will consider impacts on ground conditions, geology and hydrogeology in relation to contaminated

[20] Stats Wales. Available at: https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Economic-Indices/Indices-of-Production-and-Construction/ironandsteelproduction-by-year-measure-area (accessed 15.09.2023).
[21] Gov.UK. Available at: https://www.gov.uk/government/collections/building-materials-and-components-monthly-statistics-2012#2023-monthly-bulletins (accessed 15.09.2023).
[22] IEMA (2022) Effective Scoping of Human Health in Environmental Impact Assessment

land, analysing the impacts on the health of people through pollution of soil and water. Chapter 16 will assess effects on air quality (including dust) which could affect health during construction.

6.28 Where there are intra-project effects (where a single receptor is potentially affected by two or more sources of environmental impact), this would be considered in the intra-project cumulative effects assessment, and presented within a Human Health section within the cumulative effects chapter.

Our Approach to Major Accidents and Disasters

6.29 The EIA Regulations state in Schedule 4, Paragraph 8 that an EIA needs to consider the vulnerability of a development to major accidents and disasters as well as measures envisaged to prevent or mitigate the significant effects. For the purposes of this Scoping Report a major accident is defined as an occurrence that threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment and requires the resources beyond those of the Applicant or its contractors to manage.

6.30 The potential major accidents and disasters that could arise due to the proposal have been appraised from the definition of both man-made and natural hazards within the Major Accidents and Disaster in EIA IEMA Primer[23] as follows:

- Physical accidents during the construction of the Project e.g. crane topple;
- Electrical accidents associated with the commissioning of the infrastructure;
- Fire/ explosion during construction;
- Security threats;
- External interference; and
- Adverse weather.

6.31 Green GEN Cymru will apply a comprehensive risk management framework both during construction and operation of the Project to reduce risks and to ensure that the risk of significant effects are as low as reasonably practicable (ALARP) and not significant. The Project will also be designed to withstand the extremes of the UK climate (including climate change predictions) and therefore external impacts upon the OHL infrastructure are not considered to be likely to be significant.

6.32 Following the process in the flow chart provided in Figure 1 of the IEMA Primer it is not considered that any of the risks listed above cannot be mitigated through good working and construction practices to a level that is ALARP.

6.33 Therefore the likelihood of these potential major accident and disaster events is considered so low that the risks are considered to be not significant and it is appropriate to scope this topic area out of the ES.

Our Approach to Socio Economics

6.34 The Applicant considers that the most appropriate way to present all relevant socio economic aspects for consideration within the DCO process is to submit a separate 'Socio-economic Information' document that accompanies the application. This information will present as a minimum the following, and the Applicant will engage with stakeholders to draw upon any relevant information and data that they have:

- Construction investment;
- Construction employment demands;
- Temporary impact upon farming operations;
- Temporary accommodation requirements; and
- The Bute Energy Community Benefit Fund.

[23] IEMA Major Accidents and Disasters in EIA Guide. Available at: https://www.iema.net/resources/blog/2020/09/23/iema-major-accidents-and-disasters-in-eia-primer (accessed 25.09.2023).

6.35 The reason for our position that this is the most appropriate is that the EIA Regulations state in Schedule 4 the 'environmental factors' that are to be considered within the EIA process if they are likely to be significantly affected by a development. These are listed in Paragraph 4 of the Schedule as *"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."*

6.36 Paragraph 5 then continues to clarify that the ES needs to consider the likely significant effects upon the environment resulting from aspects of a development and its parameters and characteristics.

6.37 UK Government guidance provides a description on what the purpose of the EIA process is, which is to ensure 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. "*

6.38 The Institute of Environmental Management and Assessment (IEMA) in 2017 published a review of whether Environmental Statements were delivering their intended purpose. This review titled "Delivering Proportionate EIA; Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice" identified that there was a need to ensure that an ES was proportionate to the nature of the impacts and that every element within an ES needs to be justified and 'earn its place'.

6.39 It is considered more appropriate for the Applicant to submit socio-economic considerations in a separate document as part of the application as opposed to including it within the scope of the EIA process for two reasons. Firstly, there a tenuous connection between the inclusion of the word 'population' in Schedule 4 and the subsequent assumption that this requires an assessment of the impacts upon businesses and financial matters as these are not considered 'environmental' in nature. Secondly, there is a relative sparsity of guidance provided by either government or competent bodies such as the IEMA and National Highways (who in the DMRB publish the most comprehensive, detailed and broad compendium of methodologies for environmental assessments). If it was the intention of these bodies and regulators to ensure that socio-economics was included within the scope of the EIA process then, similar to other environmental factors, guidance would be available to ensure consistency and quality.

6.40 It is because of this sparsity of guidance that applicants have often been unable to incorporate socio economics within an ES in a robust and consistent manner that can be clearly aligned with EIA practices and approaches not least because the 'value' of a receptor can be a subjective and emotive issue and in that respect consistency between applications can be very challenging.

6.41 What is clear, therefore, from both the EIA Regulations and Government guidance, is that the EIA process is there to consider impacts upon the environment rather than other aspects of a project that may be material to the decision-making process and that the EIA regulations make no clear requirement for an applicant to consider socio economic factors.

6.42 The Applicant will therefore, consistent with the approach that the Planning Inspectorate has agreed to in other recent Scoping Opinions, present socio-economic information in a separate document to be submitted alongside the DCO application.

6.43 The ES will, however, by the nature of other factors that are scoped into the assessment, consider aspects relevant to potential socio-economic impacts on people as follows:

- Traffic and Transport; the effects upon road users and delays (including tourist visitors and local residents);
- Landscape and Visual; the view from footpaths and tourist attractions and effects on residential visual amenity;
- Noise; the impacts upon sensitive receptors will include tourist accommodation as well as residential dwellings; and
- Air Quality; construction dust assessments will consider impacts upon sensitive receptors in proximity to the Project.

Decommissioning

6.44 When the operational life of the Project ends, which is assumed to be 80 years, it is possible the OHL may be re-equipped with new conductors, insulators and refurbished. However, the OHL may also be fully decommissioned. Decommissioning would only occur when there is no longer a business case for the transmission of electricity and that decommissioning would therefore occur decades into the future. The activities involved in decommissioning the Project will broadly reflect those used for construction of the Project (with the exception of any felling which is likely to be 'replaced' with re-planted woodland areas and

other biodiversity net gain). At this stage, there are no specific plans formulated for decommissioning of the Project and it is expected that proposals for decommissioning would be subjected to separate consenting procedures, including environmental assessment taking account of the baseline as exists at the time of decommissioning.

6.45 It is therefore proposed that decommissioning is scoped out of the ES.

Proposed Scope of the EIA

6.46 **Table 6.1** provides a summary of the proposed scope of the EIA

Table 6.1: Proposed EIA Scope

Matter	Scoped In/Out
Landscape and Visual Amenity	Scoped In
Ecology	Scoped In
Ornithology	Scoped In
Cultural Heritage	Scoped In
Traffic and Transport	Scoped In
Noise and Vibration	Scoped In
Air Quality and emissions	Scoped In
Water resources	Scoped In
Ground conditions/ geology/ hydrogeology	Scoped In
Soils and Agriculture	Scoped In
Cumulative Effects	Scoped In
Health and Wellbeing	Scoped Out of the EIA as an individual topic chapter with information contained in appropriate chapters
Climate Change	Scoped Out of the EIA
Major Accidents and Disasters	Scoped Out of the EIA
EMFs	Information to be prepared and submitted as a separate document with the application but scoped out of the EIA
Socio-Economics	Information to be prepared and submitted as a separate document with the application but scoped out of the EIA

Questions for Consultees

Q6.1: Are the proposed topics to be scoped in/out appropriate?

Chapter 7
Landscape and Visual Amenity

Introduction

7.1 This chapter sets out the proposed approach to the assessment of the likely significant effects of the Project on landscape and visual receptors.

7.2 The purpose of Landscape and Visual Impact Assessment (LVIA) is to consider effects on:

- The landscape as a resource in its own right (caused by changes to the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape); and
- Views and visual amenity as experienced by people (caused by changes in the appearance of the landscape).

7.3 The LVIA will identify, predict and evaluate potential landscape and visual effects arising from the construction and operation of the Project. The scale and location of the Project is such that there is potential for effects on the landscape character of the local area, and on the visual amenity experienced by people. The LVIA will assess the likely significant effects on landscape receptors (character areas and landscape designations) and visual receptors (people) within the Study Area.

Study Area

7.4 Informed by the type and scale of steel lattice tower proposed (typical height of approximately 27 metres(m)), the LVIA Study Area for the purposes of EIA, will comprise a 3 kilometre (km) buffer on either side of the nominal centre line of the final alignment (incorporating the collector substation and CSEC). At this stage, the alignment of the proposed overhead line (OHL) is not confirmed.

7.5 As the extent of the LVIA Study Area cannot therefore be determined at this time, for the purposes of this Scoping Report, a 3km buffer has been applied to the Scoping Corridor, resulting in the 'Provisional LVIA Study Area' shown in **Figure 7.1: Provisional LVIA Study Area**. The final Study Area for the LVIA will be smaller and will be defined following confirmation of the final alignment.

7.6 Should the final alignment comprise sections of underground cabling (UGC), the LVIA Study Area for these sections will comprise a 1km buffer on either side of the nominal centre line of any undergrounded sections of the route.

7.7 Based on professional judgement and experience of assessing OHL infrastructure, significant effects on landscape character and visual amenity are unlikely to occur beyond the LVIA Study Area. However, more distant visual receptors and representative viewpoints up to 5km from the Project will be considered where there is the potential for significant visual effects to arise beyond the LVIA Study Area. 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 Zone of Theoretical Visibility (ZTV) mapping, which indicates the areas from which the OHL would be theoretically visible, supplemented by field work and will be agreed with consultees.

Existing Conditions

7.8 During the routeing stage a desk-based review of existing information was undertaken, including Ordnance Survey (OS) maps, the relevant Local Development Plans, LANDMAP, the National Landscape Character Assessment for Wales and England, the Powys Landscape Character Assessment and the Shropshire Council Landscape Character Typology. This was supplemented by field work and further informed by feedback received from stakeholders and the public.

7.9 The Scoping Corridor is located within both Shropshire Council and Powys County Council areas, comprising a rural landscape with smaller settlements and dispersed farmsteads. The Provisional LVIA Study Area extends north-east from the uplands near Foel Fawr and Cefn Coch, following the Dyffryn Meifod/Meifod Valley north, before heading curving to the east

around Llansantffraid-ym-Mechain and heading north again at Llanymynech, where it then passes through low-lying farmlands east of Oswestry.

7.10 The Provisional LVIA Study Area extends from the eastern edge of the Esgair Cwmowen upland plateau, down across the Afon Banwy valley and the rolling hills north of Llanfair Caereinion, extending to the eastern edge of the elevated landform of Moel Bentyrch in the north-west and the area near Rhiw-hiriaeth in the south-east. Further to the north-east, the Provisional LVIA Study Area includes the Dyffryn Vyrnwy/Banwy Valley at Mathrafal, near Llangyniew, and surrounding landform south-east of Pont Robert, in addition to the settlement of Meifod and the elevated landform of Allt y Main. The Provisional LVIA Study Area covers the northern section of the Dyffryn Meifod/Meifod Valley near the A490, in addition to the lower-lying and rolling landscape further north along the valley and the valley sides. The settlement of Llansanttfraid-ym-Mechain lies within the Provisional LVIA Study Area, along with the elevated landforms at Bryn Mawr to the south and Llanymynech Hill to the north, and the Afon Vyrnwy and Montgomery Canal. The Provisional LVIA Study Area then extends north-east of Pant through the broad and fertile lowlands east of Oswestry through Maesbury Marsh, and into the lowland moors south of Ellesmere near Lower Frankton and the Montgomery Canal.

Information Sources

7.11 The following information and data sources will be used to inform the LVIA:

- Ordnance Survey (OS) Maps;
- Aerial photography, Google Earth and Google Maps Street View;
- Natural Resources Wales (NRW) National Landscape Character Areas (NLCAs);
- Powys County Council (2022) Landscape Character Assessment;
- Natural England (NE) National Character Areas (NCAs);
- Shropshire Council (2006) Landscape Character Typology;
- NRW's LANDMAP maps and surveys (and associated guidance notes);
- National and local landscape designations and associated designation statements/management plans, including the Eryri/Snowdonia National Park Local Development Plan;
- Powys Local Development Plan (2011-2026); and
- Shropshire Council Local Plan (2016-2038).

Landscape Baseline

7.12 The Provisional LVIA Study Area extends across a number of landscape character areas (LCAs) in England and Wales, identified at national and regional level.

7.13 NRW's National Landscape Character Assessment defines LCAs across Wales[24]. National LCAs within the Provisional LVIA Study Area are shown on **Figure 7.2a** and include the following:

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

7.14 The Powys County Council Landscape Character Assessment[25] provides a more detailed classification of the landscape within the south-western half of the Provisional LVIA Study Area. Powys LCAs within the Provisional LVIA Study Area are shown on **Figure 7.2b** and include the following:

[24] Natural Resources Wales (2014). National Landscape Character Areas (NLCA). Available at: https://naturalresources.wales/evidence-and-data/maps/nlca/?lang=en (accessed 03.08.2023)
[25] Powys County Council (March 2022). Local Landscape Character Assessment for the Powys Local Development Plan Area. Available at: https://en.powys.gov.uk/article/13408/Replacement-Local-Development-Plan-Latest-Evidence (accessed 03.08.2023)

- Ffermdir Llanfyllin/Llanfyllin Farmlands LCA 7
- Ffermdir Hafren/Severn Farmlands LCA 8;
- Pont Logel LCA 9;
- Cegidfa/Guilsfield LCA 10;
- Tregynon LCA 12;
- Dyffryn Banwy/Banwy Valley LCA 14; and
- Esgair Cwmowen LCA 17.

7.15 NE's National Character Area Profiles define LCAs across England[26]. The singular LCA within the Provisional LVIA Study Area is shown on **Figure 7.2a** comprising NCA 63: Oswestry Uplands.

7.16 The Shropshire Council Landscape Character Typology[27] provides a more detailed classification of the landscape within the north-eastern half of the Provisional LVIA Study Area. Shropshire Landscape Character Types (LCTs) within the Provisional LVIA Study Area are shown on **Figure 7.2b** and include the following landscape types:

- Pasture Hills
- Upland Smallholdings
- Settled Pastoral Farmland
- Riverside Meadows
- Estate Farmlands
- Lowland Moors
- Enclosed Lowland Heaths
- Sandstone Hills
- Wooded Hills and Farmlands
- Timbered Plateau Farmlands
- Principal Timbered Farmlands

7.17 LANDMAP is an online resource which provides detailed information about the landscape, as well as detailed information about geology, habitats, historical and cultural elements. It comprises five themed datasets, known as 'aspects', comprising the following:

- Geological Landscape;
- Landscape Habitat;
- Visual and Sensory;
- Historic Landscape; and
- Cultural Landscape.

7.18 The LANDMAP aspect area citations note an 'overall evaluation' for each aspect area, which is based on a scale ranging from 'low' ('little or no importance') to 'outstanding' ('nationally important')[28]. The criteria which inform the overall evaluation

[26] Natural England (2023). National Character Area Profiles. Available online: https://nationalcharacterareas.co.uk/
[27] Shropshire Council (2006). Landscape Character Typology. Available online: https://www.shropshire.gov.uk/media/1803/the-shropshire-landscape-typology.pdf (accessed 14.08.2023)
[28] Natural Resources Wales (2017). LANDMAP Methodology Overview. Available online: https://naturalresources.wales/media/681752/landmap-methodology-overview-2017-eng.pdf (accessed 14.08.2023)

judgement for each aspect area are noted in the NRW LANDMAP methodologies for each respective aspect area[29]. LANDMAP[30] aspect areas and their respective 'overall evaluations' within the Scoping Corridor are shown on **Figures 7.3-7.7**.

7.19 The published national and regional landscape character assessments and LANDMAP provide a broad picture of the landscape character of the Provisional LVIA Study Area. Given the varying scales and sources of the published landscape character assessments and LANDMAP, a finer grain landscape character assessment of the LVIA Study Area will be undertaken to form the baseline for the landscape character assessment within the LVIA. The local landscape character assessment will draw on the published landscape character assessments and LANDMAP data, consolidating these sources to define local landscape character areas of a suitable scale for the LVIA. The approach to the local landscape character assessment will use LANDMAP specific guidance[31] as a starting point, as LANDMAP forms the basis of the National Landscape Character assessment in Wales. A filtering process, as advocated in the NRW guidance, will be undertaken to determine the relevant LANDMAP aspect areas to be considered within the LVIA, although the 'reporting units'[32] used within the LVIA will be based on the local landscape character areas.

7.20 The approach to local landscape character assessment will also take into account guidance and information from the Landscape Institute[33], Natural England[34] and NatureScot[35], as referenced by NRW[36].

Nationally designated landscapes

7.21 The Scoping Corridor is located over 14km from Eryri/Snowdonia National Park, as shown on **Figure 7.8**. Due to intervening distance, and the scale and nature of the proposed development, no effects are anticipated on the special qualities of the National Park.

7.22 The Scoping Corridor is located over 5km from the nearest Area of Outstanding Natural Beauty (AONB) in Wales and England (Bryniau Clwyd a Dyffryn Dyfrdwy AONB and Shropshire Hills AONB). Due to factors including intervening distance, intervening topography, and the scale and nature of the proposed development, no effects are anticipated on the special qualities of the AONBs.

Locally designated landscapes

7.23 The nearest Special Landscape Areas (SLAs) are in Wrexham County Borough Council, over 5km from the Scoping Corridor. Therefore, due to factors including intervening distance, intervening topography, and the scale and nature of the proposed development, no effects are anticipated on the special qualities of these SLAs. There are no SLAs in the Powys County Council or Shopshire Council areas.

Visual Baseline

7.24 There are a number of potentially highly sensitive visual receptors in the Provisional LVIA Study Area including those listed below.

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[29] Natural Resources Wales (2016). Cultural Landscape, Geological Landscape, Historic Landscape, Landscape Habitats, Visual and Sensory LANDMAP Methodology 2016. Available online: https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/evidence-to-inform-development-planning/landmap-the-welsh-landscape-baseline/?lang=en (accessed 14.08.2023)
[30] Natural Resources Wales (2016). LANDMAP – the Welsh landscape baseline. Available online: https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/evidence-to-inform-development-planning/landmap-the-welsh-landscape-baseline/?lang=en (accessed 03.08.2023)
[31] Natural Resources Wales Guidance Note 46 (December 2021) Using LANDMAP in Landscape and Visual Impact Assessments. Available online: https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/evidence-to-inform-development-planning/using-landmap-in-landscape-and-visual-impact-assessments-gn46/?lang=en (accessed 10.08.2023).
[32] Terminology as identified in NRW guidance.
[33] Landscape Institute (October 2015). Landscape Character Reading List Technical Information Note 05/2015. Available online: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2016/01/TIN5-15LandscapeCharacterReadingList30-10-2015.pdf (accessed 14.08.2023)
[34] Christine Tudor, Natural England (2014). An Approach to Landscape Character Assessment. Available online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/691184/landscape-character-assessment.pdf (accessed 10.08.2023)
[35] NatureScot. Landscape Character Assessment. Available online: https://www.nature.scot/professional-advice/landscape/landscape-character-assessment (accessed 14.08.2023)
[36] Referenced on the NRW National Landscape Character Areas (NLCA) website: https://naturalresources.wales/evidence-and-data/maps/nlca/?lang=en (accessed 14.08.2023)

- Residents of the area, both within settlements[37] and throughout the Provisional LVIA Study Area. Settlements within the Provisional LVIA Study Area identified using OS mapping include (but are not limited to) Cefn Coch, Llangyniew, Meifod, Llansantffraid-ym-Mechain, Four Crosses, Llanymynech, Pant, Maesbrook, Maesbury Marsh, West Felton, Queen's Head, Oswestry, and Lower Frankton.
- People engaged in outdoor recreation such as those using National Trails and other promoted routes (such as Offa's Dyke Path, Glyndwr's Way, Cross Britain Way or the Shropshire Way), Public Rights of Way (PRoW) and National Cycle Network (NCN) routes, or those at hill summits and promoted viewpoints;
- People at promoted tourist destinations and recreation areas such as the Montgomery Canal, Llanymynech Hill Camp, British Ironworks Centre, or Welshpool and Llanfair Light Railway, where views of the surrounding area are an important contributor to visitor experience;
- People staying at campsites, caravan parks and other holiday accommodation; and
- People travelling along the road and rail network, including (but not limited to) the A5, A458, A483, A490 and A495 as well as B roads, railways and other major and minor roads within the Provisional LVIA Study Area.

7.25 Table 7.1: Preliminary LVIA Viewpoints and **Figure 7.9: Visual Receptors and Preliminary Viewpoint Locations** set out a preliminary list of proposed representative viewpoints to be assessed in the LVIA. The viewpoint list will be built upon and/or amended following ZTV analysis and further engagement with consultees (including Powys County Council, Shropshire Council, Natural Resources Wales and Natural England) and will likely include approximately 17 representative viewpoints.

Table 7.1: Preliminary LVIA Viewpoints

VP No.	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
1	Waenglapiau	305130	305042	Representative of views experienced by visual receptors in nearby residential properties, users of the local road network, and recreational users of the public footpath network and areas of common ground close to the proposed Cable Sealing End Compound (CSEC).
2	Pen-tal-y-cefn	306604	307159	Representative of views experienced by visual receptors in nearby residential properties, users of the local road network, and recreational users of the public footpath network on elevated high ground with views towards Moel Bentyrch.
3	Moel Bentyrch	305741	309721	Representative of views experienced by recreational users of the public footpath network on elevated high ground at Moel Bentyrch, with long views over the Banwy valley.
4	A458 near Pentyrch	306819	308539	Representative of views experienced by visual receptors in nearby residential properties, users of A458 route into and out of Mid Wales, and recreational users of the public footpath network.
5	Ffridd Mathrafal	311450	310488	Representative of views experienced by recreational receptors accessing the footpath network at Ffridd Mathrafal and users of the holiday park.
6	B4389, MathrafalLlangyniew	312841	310453	Representative of views experienced by those using the local footpath network around Mathrafal, users of the B4389, and nearby residential properties.
7	Dyffryn Hill / Gwely Gwyddfareh at Meifod	314602	312928	Representative of views experienced by users of the footpath network at Dyffryn Hill / Gwely Gwyddfareh at Meifod, near Glyndwr's Way, with wide views across and along the length of the valley.

[37] As defined in the Powys County Council LCP (2011-2026) and Draft Shropshire Local Plan (2016-2038)

VP No.	Viewpoint Title	X (Easting)	Y (Northing)	Reason for selection
8	Broniarth Bridge, Meifod	315541	313006	Representative of views experienced by users of the footpath network at Meifod, including the Cross Britain Way, users of the Cobra Rugby Club, and nearby visual receptors (including residential) in the settlement at Meifod.
9	Alt y Main	316886	315277	Representative of views experienced by walkers using the network of footpaths from this elevated area looking across and along the Meifod valley.
10	Trewylan near Plas yn Dinas	321682	318697	Representative of views experienced by people using the footpath network and nearby holiday accommodation in proximity to Plas yn Dinas along the Afon Vyrnwy, and from nearby residential properties.
11	Llansantffraid Church and Conservation Area	322051	320357	Representative of views experienced by users of the footpath network and residential receptors in the Llansantffraid conservation area close to the church.
12	Carreghofa Locks	325607	320323	Representative of views experienced by recreational receptors on the Offa's Dyke Path at Carreghofa Locks on the Montgomery Canal, and also by nearby residential receptors and road users to the south-west of Llanymynech.
13	Llanymynech Hill / Golf Course / Rocks	326675	321834	Representative of the expansive views experienced by recreational receptors on Llanymynech Hill, including those using the network of footpaths (and Offa's Dyke path), users of the golf course, and visitors to the historic and natural assets on the hill. Views are also representative of settlement on the upper slopes of Llanymynech Hill.
14	Four Crosses / Llandysilio	326870	319189	Representative of views experienced by residential receptors on the edge of Four Crosses at Llandysilio, recreational users of Offa's Dyke Path and the local footpath network, road users on the A483 and visitors to the Church of Tysilio. This location is also representative of likely visibility between the proposed development and the Llanymynech Village Heritage Area.
15	Maesbury Marsh	331369	325010	Representative of views experienced by road users passing through Maesbury Marsh, recreational users of the Montgomery Canal and Shropshire Way, and residential receptors to the south-east of Maesbury Marsh.
16	Aston Park and Hall on the A5	332930	327475	Representative of views experienced by road users on the A5, recreational users of the local footpath network, visitors to Oswestry Golf Course, the British Ironworks Centre, residential receptors in nearby residential properties, and at Aston Park and Hall.
17	Montgomery Canal near Berghill	336573	330268	Representative of views experienced by recreational visitors to the Montgomery Canal and users of the footpath network (including the Shropshire Way), and residential receptors at the scattered residential properties near Berghill.

Future Baseline

7.26 Planned developments that are not yet present in the landscape but are at various stages in the developing and consenting process, could lead to changes in the current landscape and visual baseline within the LVIA Study Area. These changes are taken into account when considering the likely future baseline of the LVIA Study Area. The LVIA will therefore consider the cumulative effects of the Project in association with planned developments in the area, which will form part of the

future baseline. These will include wind farm proposals such as Llyn Lort Energy Park, Esgair Cwmowen, and the National Grid Electricity Transmission (NGET) substation in Shropshire.

7.27 The approach to cumulative assessment will reference guidance given in the Landscape Institute and the Institute of Environmental Assessment's (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition ('GLVIA3'), and the National Infrastructure Planning Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects (August 2019 - version 2). Projects will be included in the cumulative baseline where significant cumulative effects are considered to be likely, and where sufficient information is available to inform the assessment.

Data Collation and Assessment Methodology

7.28 Landscape and visual assessments are distinct, but interconnected, processes and the assessment will describe potential landscape and visual effects separately. The LVIA will consider potential effects on:

- Landscape as a resource in its own right (caused by changes to the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape); and
- Views and visual amenity as experienced by people (caused by changes in the appearance of the landscape).

Legislation and Guidance

7.29 The LVIA will be carried out in line with the following guidelines:

- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a);
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2024b);
- Landscape Institute and the Institute of Environmental Assessment (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition ('GLVIA3');
- Landscape Institute (2019) Advice Note 01/11 Photography and photomontage in landscape and visual impact assessment;
- Landscape Institute (2019) Technical Guidance Note 06/19 Visual Representation of Development Proposals;
- Landscape Institute (2019) Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19;
- NatureScot (2021) Assessing the cumulative impact of onshore wind energy developments[38];
- Natural Resources Wales (undated) Using LANDMAP in Landscape and Visual Impact Assessments GN46;
- Scottish Natural Heritage (2017) Visual Representation of Wind Farms, Version 2.2;
- The Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines (with National Grid Company plc (NGC) 1992 and Scottish Hydro-Electric Transmission plc (SHETL) 2003 Notes); and
- National Grid's Horlock Rules[39] (guidelines for the design and siting of substations – established by National Grid in 2009 in pursuance of its duties under Schedule 9 of the Electricity Act 1989).

Data Collection- Desk Based

7.30 The sources listed under the Information Sources section above will also be used for desk-based data collection to inform the LVIA.

[38] As no guidance exists for assessing cumulative impact of overhead grid connections, this guidance is considered applicable given the similar nature of tall vertical infrastructure introduced by wind farms (wind turbines).
[39] The National Grid Company: NGC Substations and the Environment: Guidelines on Siting and Design. Available at: https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf (accessed 02.11.2023).

Data Collection- Field Surveys

7.31 Further to the extensive field work undertaken to inform the routeing stage, surveys will be undertaken during summer and winter months to fully understand the maximum level of visibility as part of the landscape and visual baseline. Visual site surveys will be undertaken for agreed viewpoints, which represent a variety of receptor types and at a range of distances from the Project. Surveys will include viewpoint photography to assist in the creation of wireframes and photomontages. Where possible all viewpoint photography will be captured when trees are not in leaf (i.e., a worst case) (a list of indicative preliminary viewpoints can be found in **Table 7.1** and set out on **Figure 7.9**.

Assessment Method

Judging Levels of Effect and Significance

7.32 Judging the significance of landscape and visual effects requires consideration of the nature of the receptor and the nature of the effect on the receptor. GLVIA3 states that the nature of receptors, commonly referred to as their sensitivity, should be assessed in terms of the susceptibility of the receptor to the type of change proposed, and the value attached to the receptor. Sensitivity judgements would be recorded as high, medium or low. The nature of the impact on each receptor, commonly referred to as its magnitude, should be assessed in terms of size and scale; geographical extent; duration and reversibility. Magnitude of change would be recorded as high, medium, low or negligible.

7.33 Judgements of sensitivity and magnitude are then combined to form a judgement regarding the overall significance of effect. Levels of landscape or visual effect would 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 would be described as positive (beneficial), neutral or negative (adverse).

7.34 This determination requires the application of professional judgement and experience to balance the many different variables which need to be considered, and which are given different weight according to site-specific and location-specific considerations. Judgements of the potential landscape and visual effects which may arise from the Project, either individually or cumulatively when considered in combination with other existing, consented or proposed developments, are made on a case-by-case basis.

Residential Visual Amenity

7.35 Residential properties within the Scoping Corridor are shown on **Figure 7.10**. A key aim of the ongoing design of the Project will be to avoid the placement of individual structures in close proximity to dwellings. The routeing design stage for the Project seeks to avoid a 150m radius around all residential properties. Should the final alignment result in towers or other infrastructure closer to dwellings than this distance, a Residential Visual Amenity Assessment (RVAA) will be undertaken in accordance with the Landscape Institute's Technical Guidance Note[40].

7.36 For each property or group of properties within 150m of a tower, the RVAA will be informed by ZTVs, aerial photography, wirelines and fieldwork undertaken from publicly accessible locations within the vicinity to determine the scale of visual effects. Aspects such as successive effects and encirclement will be considered.

7.37 The RVAA will aim to determine whether visual effects on the property are considered to breach the 'residential visual amenity threshold'.

7.38 The methodology can be summarised as follows:

- Step 1: Identification of properties to be considered (defining the RVAA Study Area and scope);
- Step 2: Evaluation of baseline visual amenity from each property/ property group;
- Step 3: Assessment of likely change to visual amenity of properties; and
- Step 4: Formation of the RVAA judgement (the Residential Visual Amenity Threshold), in line with RVAA Technical Guidance Note 2/19.

[40] Landscape Institute (2019) 'Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19'. Available at: https://www.landscapeinstitute.org/technical-resource/rvaa (accessed 03.08.2023).

Viewpoints and Visualisations

7.39 **Table 7.1: Preliminary LVIA Viewpoints** and **Figure 7.9** set out a list of indicative preliminary viewpoints to be used in the LVIA. Additional viewpoints will be required to inform the assessment. These will be selected based on the developed route and will be the subject of further consultation with Powys County Council, NRW, Shropshire Council, and Natural England. Should the final route alignment of the Project comprise sections of underground cabling, some viewpoints noted in **Table 7.1** may not be necessary to inform the assessment. The selection of the final viewpoints will be informed by the ZTV analysis, field work, desk-based research on access and recreation, tourism including popular vantage points, and by the distribution of the different groups of visual receptors.

7.40 Wireframes and photomontages will be used to consider and illustrate changes to views during operation of the Project. Visualisations would be prepared in accordance with the Landscape Institute's TGN 06/19 Visual Representation of Development Proposals. A number of the viewpoint locations will be illustrated with photomontages. Photomontages show more detail than wireframes, including buildings, vegetation, colour, texture and lighting conditions.

Consultation

7.41 The Proposed consultees and bodies to be consulted with for the provision of information are detailed in **Appendix C.**

Likely Significant Effects

7.42 Sources of effects during the construction of the Project include:

- Introduction of construction activity and vehicular/personnel movements at the Collector Substation, CSEC, along the route and on local roads;
- Construction work associated with track upgrades and construction of temporary and new tracks;
- Construction of site compounds;
- Construction of the Collector Substation and cable sealing end compound;
- Construction of tower foundations and towers;
- Conductor stringing;
- Excavation and backfilling of trenches for any sections of UGC; and
- Forestry and woodland felling.

7.43 Sources of effects during the operation of the Project include:

- New 132kV overhead electricity transmission line (OHL) with associated L7 steel towers (pylons);
- Collector Station;
- Sections of UGC (if used);
- CSEC required to connect the OHLs to UGC; and
- Long-term presence of open wayleaves through woodland and tree belts.

Embedded and Standard Mitigation Measures

7.44 Reflecting IEMA guidance on delivering proportionate EIA (IEMA 2017), the scope and assessment assumes that relevant embedded, standard and additional measures are in place.

7.45 The mitigation of potential landscape and visual effects will be approached through the routeing, siting, and design of the proposed route. The Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines (with National Grid Company plc (NGC) 1992, National Grid's Horlock Rules (2009) and Scottish Hydro-Electric Transmission plc (SHETL) 2003 Notes) will be used to inform the siting and design process to minimise potential landscape and visual effects.

Potential Effects Scoped into the Assessment

7.46 Potentially significant landscape and visual effects that may arise during the construction and operation of the Project, and therefore scoped into the LVIA, are noted below.

Landscape Effects

- Effects during construction on landscape character and locally designated landscapes;
- Effects during operation on landscape character and locally designated landscapes;
- Effects on the special qualities of the nationally designated landscapes; and
- Cumulative landscape effects during operation with other existing or proposed developments.

Visual Effects

- Effects on the views and visual amenity of people within settlements and communities, including effects on residential visual amenity;
- Effects on views experienced by walkers and cyclists using PRoWs, NCN routes, promoted tourist and/or recreational routes, hill summits, visitors to promoted viewpoints/tourist destinations and recreation areas;
- Effects on people travelling along the road and rail network; and
- Cumulative visual effects associated with the Project seen in combined, successive or sequential views with other existing, consented or proposed developments.

Potential Effects Scoped Out of the Assessment

7.47 The following effects are unlikely to be significant, and so are proposed to be scoped out of the LVIA:

- Effects on receptors beyond 3km of the Project, with the exception of any very high sensitivity receptors up to 5km from the Project that are identified during the landscape and visual impact assessment; and
- Receptors that lie outside the zone of theoretical visibility of the project.

Approach to Additional Mitigation

7.48 The LVIA will inform modifications and refinements to the detailed design of the Project, including consideration of individual tower locations and a potential mix of technologies (e.g., overhead line or underground cable) during the design and assessment process, and the identification of any further appropriate mitigation measures to reduce potential residual effects.

7.49 Due to the nature of overhead power lines and the associated substation and compound, the Project is likely to give rise to effects on landscape and visual receptors that cannot be fully mitigated. In consultation with stakeholders, landscape enhancement measures will be developed where practicable to help to offset the effects of the Project.

Proposed Scope of the EIA

7.50 **Table 7.2** provides a summary of the proposed scope of the EIA.

Table 7.2: Proposed EIA Scope

Matter	Scoped in/out	Justification
Landscape character (including project-specific local landscape character areas (LCAs and LLCAs), which will be based on national and regional landscape character areas and LANDMAP aspect areas)	Scoped in	Direct effects on LCAs and LLCAs that intersect with Proposed Development and indirect effects upon LCAs and LLCAs in the LVIA Study Area from which potential visibility is indicated by Zone of Theoretical Visibility (ZTV) maps will be considered.

Matter	Scoped in/out	Justification
Eryri/Snowdonia National Park	Scoped out	Given intervening distance significant effects are considered unlikely. Not considered further.
Bryniau Clwyd a Dyffryn Dyfrdwy/Clwydian Range and Dee Valley AONB	Scoped out	Given intervening distance significant effects are considered unlikely. Not considered further.
Shropshire Hills AONB	Scoped out	Given intervening distance significant effects are considered unlikely. Not considered further.
Upper Dee Valley and Woodlands SLA	Scoped out	Given intervening distance significant effects are considered unlikely. Not considered further.
The Mosses SLA	Scoped out	Given intervening distance significant effects are considered unlikely. Not considered further.
Ceiriog Valley SLA	Scoped out	Given intervening distance significant effects are considered unlikely. Not considered further.
The Maelor SLA	Scoped out	Given intervening distance significant effects are considered unlikely. Not considered further.
Visual receptors within the 3km LVIA Study Area	Scoped in	Effects upon visual receptors within the LVIA Study Area, i.e., the people who may be affected by changes in views resulting from the Project will be considered. Theoretical inter-visibility with the Project would be described in the assessment and used as a means of identifying which visual receptors require assessment if significant effects are deemed likely. A list of indicative preliminary viewpoints can be found in **Table 7.1: Preliminary LVIA Viewpoints**. Further consultation will be sought to agree viewpoint locations and visualisation types.
Receptors beyond 3km of the Project (with the exception of any very high sensitivity receptors up to 5km from the Project that are identified during the landscape and visual impact assessment)	Scoped out	Given the intervening distance, significant effects on receptors that are not highly sensitive are considered unlikely beyond 3km.
Receptors that lie outside the zone of theoretical visibility of the Project.	Scoped out	Significant effects on receptors outside the zone of theoretical visibility on the Project are considered unlikely.
Residential visual amenity	Scoped in	A Residential Visual Amenity Assessment (RVAA) will be undertaken for all properties within a 150m radius from proposed permanent above-ground infrastructure.
Cumulative landscape and visual effects	Scoped in	The potential for significant cumulative landscape and/or visual effects with other operational, consented and proposed development of a similar type and scale will be considered. A list of developments to be considered in the cumulative LVIA will be agreed with consultees through the EIA process.

Questions for Consultees

Q7.1: Is the proposed LVIA Study Area (3km buffer on either side of the nominal centre line of the final alignment and 1km buffer on either side of the nominal centre line of any UGC sections) considered appropriate?

Q7.2: Is the proposed approach and scope for the assessment of effects on landscape character, based on a project-specific local landscape character assessment (drawing on LANDMAP in Wales), considered to be appropriate?

Q7.3: Is the proposed approach and scope for the assessment of visual effects appropriate?

Q7.4: Do consultees consider that the proposed viewpoints are appropriate to inform the visual assessment, subject to further viewpoints being agreed based on the developed route proposal, and that the suggested presentation of visualisations is appropriate?

Q7.5: Is the approach to inclusion of schemes within the cumulative assessment appropriate?

Q7.6: Is the approach to the assessment of effects on residential visual amenity appropriate?

Q7.7: Do consultees agree with the effects to be scoped out of the LVIA?

Chapter 8
Ecology

Introduction

8.1 This chapter sets out the proposed approach to the assessment of likely significant effects on ecology arising from the construction and operation of the Project.

8.2 The assessment of effects on ecology will be undertaken by competent experts at LUC.

8.3 An Arboricultural Impact Assessment (AIA) will be prepared and appended to the ES. The methodology for the approach to the AIA is also detailed in this chapter.

Study Area

8.4 The Study Area for biodiversity comprises the area that could be directly affected by the Project (assumed for the purpose of this chapter and the desk study, the Project comprises the Scoping Corridor) plus the field study buffer zones. These buffer zones are calculated from the Project, with the Project and corresponding buffers being updated as the design progresses, in line with species specific best practice guidelines. Distances reflect approaches accepted in Habitat Regulation Assessment (HRA) terms as well as the circumstances of the Project.

Desk study

- Internationally designated areas: 5 kilometres (km) for Special Areas of Conservation (SAC[41]) (buffer generally accepted in HRA terms);
- 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; and
- Areas of potentially nationally important peatland within the Scoping Corridor and up to 250m beyond: based on NatureScot/SEPA guidance on Ground Water Dependent Terrestrial Ecosystems (adopted by Welsh Government WG), and England approach[42] and data[43], which correlate with avoidance distances and actual baseline survey methods.

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[44] or wider in exceptional circumstances should survey data suggest that this is necessary;

[41] SPAs and bird surveys are addressed in the Ornithology Chapter
[42] Methodology for characterisation and classification of non-SSSI groundwater dependant wetlands Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/314653/Characterisation_and_classification_of_non-SSSI_groundwater_dependent_wetlands_-_report.pdf (accessed 06.11.2023).
[43] Groundwater Dependant Terrestrial Ecosystems (England Only). Available at: https://www.data.gov.uk/dataset/72a149a2-1be7-441f-bc37-94a77f261e27/groundwater-dependent-terrestrial-ecosystems-england-only (accessed 06.11.2023).
[44] Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Marine (Version 1.2 Updated April 2022). Available at: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf (accessed 15/08/2023).

8.5 For the purposes of this Scoping Report the Study Area for ecology is presented on **Figure 8.1**.

Existing Conditions

Information Sources

8.6 The baseline has been informed by the following information sources:

- Aerial Photography, (Google Earth 2023) - 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 (the country's largest collection of freely available biodiversity data[45]) and Natural Resource Wales (NRW's) Protected areas of land and sea online database;
- Habitats and species of principal importance in England[46];
- Multi-agency Geographic Information for the Countryside (MAGIC) (2023) including the location of statutory designated sites for nature conservation; ancient woodlands in England;
- Extent of Peatlands in England map[47];
- DataMapWales - Habitats of Principal Importance (Environment (Wales) Act 2016), Ancient Woodland, Peat Land Map of Wales and Habitat Networks; and
- As some biodiversity receptors are not always apparent on aerial photographs, relevant OS mapping has been studied to identify ponds, issues and/ or drains.

Baseline Conditions

8.7 Baseline ecological conditions to inform the design and assessment of the Project will be established through desk-based research and field studies.

8.8 A preliminary desk study has been undertaken to provide information to inform this Scoping Report.

8.9 The following international and national sites designated for nature conservation purposes potentially relevant to non-avian ecology, were identified within the relevant Study Area in relation to the Scoping Corridor. These are outlined in **Table 8.1** below.

Table 8.1: 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	Designated for floating water-plantain *Luronium natans* 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

[45] The database can be used with permission obtained accordingly
[46] Habitats and species of principal importance in England. Available at: https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england (accessed 06.11.2023)
[47] Reported in Natural England's publication England's Peatland - carbon storage and greenhouse gases (NE257).

Name of the Internationally and Nationally Designated Site	Notes
	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. The Scoping Corridor crosses the canal SAC once and passes within 2km of the SAC in its northern section.
Safleoedd Ystlumod Tanat ac Efyrnwy (Tanat and Vyrnwy Bat Sites) Special Area of Conservation (SAC)	This SAC is designated for its lesser horseshoe bat *Rhinolophus hipposideros*, population. Component parts lie just to the north of the Scoping Corridor across the A495 road and approximately 1.6km and 4.5km to the north elsewhere. This bat community could occasionally visit the route option; however, the habitats are primarily open grassland fields, which are of poor suitability for lesser horseshoe bats, which favour woodland habitats.
Granllyn SAC	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 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 *Triturus cristatus*. This is the largest known population of the species in central Wales. The SAC lies approximately 4.5km to the south- east of the Scoping Corridor.
Ramsar Sites	
Midland Meres and Mosses Ramsar	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 within 5km.**The Site of Special Scientific Interest (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.
Sites of Special Scientific Interest (SSSIs) within 1km	
Cors Cefn Llwyd SSSI Cors Ty-gwyn SSSI Gwaun Efail Wig SSSI Gweunydd Ger Fronhaul SSSI Glascoed, Meifod SSSI Coed Tŷ-Mawr SSSI Afon Banwy ger Mathrafal SSSI (geological) 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	Cors Cefn Llwyd SSSI is designated for its wet woodland. Habitat connectivity between the Scoping Corridor and the SSSI is limited due to the distance and presence of barriers such as roads. Cors Ty-gwyn SSSI is designated for its wet woodland and acid mire communities. Habitat connectivity between the Scoping Corridor and the SSSI is limited due to the distance and presence of barriers such as roads. Gwaun Efail Wig SSSI is designated for its mosaic of wet and dry grassland and swamp plant communities. Habitat connectivity between the Scoping Corridor and the SSSI is limited due to the distance and presence of barriers such as roads. Gweunydd Ger Fronhaul SSSI is designated for its unimproved lowland dry grassland and associated stands of rush pasture and woodland/scrub. Habitat connectivity between the Scoping Corridor and the SSSI is limited due to the distance and presence of barriers such as roads. Glascoed, Meifod SSSI is designated for its lesser horseshoe bat *Rhinolophus hipposideros*, maternity roost, and this bat community could occasionally visit the route option. However, the habitats are primarily open grassland fields, which are of poor suitability for lesser horseshoe bats, which favour woodland habitats. Coed Tŷ-Mawr SSSI is designated for its mixed deciduous woodland. Habitat connectivity between the Scoping Corridor and this SSSI is limited due to the distance and barriers such as roads.

Name of the Internationally and Nationally Designated Site	Notes
	Allt y Main Mine SSSI is designated for its Lesser horseshoe bat population, which could occasionally visit the route option (also designated as the Safleoedd Ystlumod Tanat ac Efyrnwy SAC). However, the habitats are primarily open grassland fields, which are of poor suitability for lesser horseshoe bats, which favour woodland habitats. Morton Pool and Pasture SSSI is designated for its waterbody, wet woodland and adjacent pasture (and comprises part of the Midland Meres and Mosses - Phase 2 Ramsar Site). Crofts Mill Pasture SSSI is designated for its damp peaty pasture. There is some habitat connectivity between the Scoping Corridor and this habitat, due to the presence of pasture and rivers. The Scoping Corridor crosses the Montgomery Canal, Aston Locks - Keeper's Bridge SSSI, however, this could potentially be avoided through spanning at the route alignment stage.

8.10 A total of 14 non statutory wildlife sites (13) or Local Nature Reserves (1) occur within 1km of the Scoping Corridor.

8.11 In addition, a number of areas of ancient woodland also occur within 200m of the Scoping Corridor, comprising:

- Nine areas of ancient semi-natural woodlands;
- One ancient woodland site of unknown category: and
- Three Restored ancient woodland sites.

8.12 In general, the Scoping Corridor allows sufficient scope to avoid these areas of ancient woodland and only three ancient woodland blocks may be crossed.

8.13 Some areas of peat shown on the peat land map of Wales lie within 500-1000m of the Scoping Corridor at the southern end near the Llyn Lort Energy Park. The Scoping Corridor includes an area of peatland (east of Morton and west of Rednal) at its northern end, as shown on the Extent of Peatlands in England map[48].

8.14 The designated areas/sites to be assessed may require to be revised in line with the final design submitted as part of the application should there no longer be connectivity with these sites, and therefore the potential for effects.

8.15 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. Large areas of coastal floodplain grazing marsh priority habitat in the River Vyrnwy floodplain also occur in the Scoping Corridor. Whilst the majority of the areas are likely to be of limited ecological value in themselves; they may support a varied assemblage of protected species or species of conservation interest.

Future Baseline

8.16 The future baseline relates to known or anticipated changes to the current baseline in the future. Large parts of land within the Scoping Corridor are located on agricultural land. The ecological conditions are unlikely to change materially in the short term as current agricultural practices are likely to be maintained, therefore the future baseline is likely to be the similar to the current baseline. Where changes arise from other future developments these would be considered in the cumulative assessment of the ES, as appropriate.

[48] Reported in Natural England's publication England's Peatland - carbon storage and greenhouse gases (NE257).

Data Collation and Assessment Methodology

Legislation and Guidance

8.17 The ecological assessment will be carried out in cognisance of the following relevant legislation and planning and biodiversity advice:

- The Wildlife and Countryside Act 1981;
- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a);
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2024b);
- National Planning Policy Framework[49]
- Environment Act 2021 (including Biodiversity Net Gain);
- The Environment (Wales) Act 2016;
- Natural Environment and Rural Communities (NERC) Act 2006;
- The Conservation of Habitats and Species Regulations 2017 (SI 2017/1012), as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (SI 2019/579) (i.e. the "Habitats Regulations");
- The Nature Recovery Plan 2020[50];
- Planning Policy Wales: Technical Advice Note 5: Nature Conservation and Planning[51];
- Addressing the nature emergency through the planning system: update to Chapter 6 of Planning Policy Wales 18 October 2023[52];
- The Powys County Council Local Biodiversity Action Plan (LBA)[53]; and Powys Nature Recovery Plan[54]; and
- Shropshire Biodiversity Action Plan[55]

8.18 The assessment will also have regard to the following guidance:

- Chartered Institute of Ecology and Environmental Management (CIEEM), Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Marine[56];
- Species specific survey guidelines as identified by CIEEM;
- Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and GWDTE; and
- Welsh Guidance on biodiversity net benefit and resilience of ecosystems duty[57].

Ecological Receptors

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

[49] Department for Levelling Up, Housing and Communities, Dec 2023
[50] Welsh Government (2020) The Nature Recovery Action Plan for Wales. Available at: https://gov.wales/sites/default/files/publications/2020-10/nature-recovery-action-plan-wales-2020-2021.pdf (accessed 15.08.2023).
[51] Welsh Government (2002) Planning Policy Wales Technical Advice Note 5: Nature Conservation and Planning. Available at: https://gov.wales/sites/default/files/publications/2018-09/tan5-nature-conservation.pdf (accessed 15.08.2023).
[52] https://www.gov.wales/addressing-nature-emergency-through-planning-system-update-chapter-6-planning-policy-wales
[53] Powys Biodiversity Partnership (2002). Our Partnership with Nature: A Local Biodiversity Action Plan for Powys. Available at: https://en.powys.gov.uk/article/2553/Local-Biodiversity-Action-Plan (accessed 06.11.2023).
[54] Powys Nature Recover Action Plan. Available at: https://en.powys.gov.uk/article/2573/Powys-Nature-Recovery-Action-Plan (accessed 06.11.2023).
[55]Biodiversity Action Plan. Available at: https://www.shropshire.gov.uk/environment/ecology-and-biodiversity/biodiversity-action-plan/ (accessed 06.11.2023).
[56] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal and Marine. Winchester: Version 1.2 - Updated April 2022. Chartered Institute for Ecology and Environmental Management, Romsey.
[57] Welsh Government. Biodiversity and resilience of ecosystems duty (section 6): guidance for public authorities. Available at: https://www.gov.wales/biodiversity-and-resilience-ecosystems-duty-section-6-guidance-public-authorities (accessed 15.08.2023).

- Statutory and non-statutory designated sites for nature conservation purpose (excluding ornithological designations);
- Habitats of conservation concern i.e. Ground Water Dependent Terrestrial Ecosystems (GWDTE), Habitats of Principal Importance in England ('NERC Section 41 habitats')[58]; Welsh Priority Habitats[59], Local Biodiversity Partnership Priority Habitats; and
- Protected species and notable species defined by: Conservation (Natural Habitats &c.) Regulations 1994 (as amended), Wildlife and Countryside Act 1981, Protection of Badgers Act 1992, Species of Principal Importance in England ('NERC Section 41 species') and priority species included within the Welsh Priority Species, Local Biodiversity Partnership Priority Species.

Data Collection- Desk Based

8.20 A desk study will be undertaken to inform field surveys and identify existing features of potential ecological importance within the Study Area of the Project. The desk study will include searches of the following sources to identify existing records for designated sites, habitats and protected species:

- Shropshire Ecological Data Network (SEDN);
- Defra MAGIC Map;
- Biodiversity Information Service (BIS) for Powys and Bannau Brycheiniog National Park;
- Natural Resources Wales (NRW): Designated Sites Search;
- National Biodiversity Network (NBN) Atlas; and
- Natural Resources Wales Ancient Woodland Inventory.

Arboriculture Impact Assessment Desk Based Data Collection

8.21 Desk based data to inform the AIA will be collected from the following sources;

- The National Inventory of Woodland and Trees held by Natural Resources Wales (NRW);
- Aerial imagery;
- Tree Preservation Order (TPO)/ Conservation Area Data Searches; and
- Existing datasets on Ancient/ Veteran Trees and Ancient Woodland.

8.22 The desk based study will enable to plotting of the location of trees using national tree maps, as well as enable the plotting of woodlands, known ancient and veteran trees, and trees that are protected via TPO or conservation area designation. Pre-classification the location, heights, and canopy spreads of arboricultural features will be undertaken using high resolution aerial imagery data for the proposed project.

Data Collection- Field Surveys

8.23 Field surveys will be undertaken within the defined Study Area in line with best practice guidelines endorsed by NRW and CIEEM[1] and will include the following:

Habitat Surveys (April to September)

- Extended Phase 1 habitat survey, to record broad habitat types and their suitability to support protected species.

[58] Habitats and species of principal importance in England. Available at: https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england (accessed 06.11.2023).
[59] Section 7 of NERC Act 2006. Welsh Government (WG) published a list of habitats and species in Wales that they consider are of key significance to sustain and enhance biodiversity the country. WG and other public bodies have a duty to take all reasonable steps to maintain and enhance these habitats and species [Environment (Wales) Act 2016]. This list (S7 list) is currently under review by WG and Natural Resources Wales.

- 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.

Protected Species surveys:

8.24 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) and following CIEEM guidance on survey methodology:

- Badger *Meles meles;*
- Otter *Lutra lutra ;*
- Hazel dormouse *Muscardinus avellanarius* (April-November);
- Static detector bat activity surveys (Spring, summer, autumn); and
- Habitat Suitability Index survey of ponds within 500m of the Project to assess their suitability for great crested newt *Triturus cristatus*.

Approach to bat surveys and assessment

8.25 The 2023 Bat Survey Guidelines[60] ('2023 Bat Guidelines') 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'. Reflecting the guidelines as well as established precedent elsewhere61, no bat roost surveys are proposed for individual trees to be removed during the construction phase as this would be considered a disproportionately high level of survey work relative to the value of the data they would yield.

8.26 Paragraph 6.3.4 (and box 6.1) of the 2023 Bat Guidelines also highlight 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. An assessment of the potential for woodland blocks to support bats will be undertaken. Woodlands with bat potential and likely flight corridors will be subject to static detector surveys where they are likely to be impacted. 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. Vegetation impacted below the line will be assessed for bat value. 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 Impact Assessment (EcIA) and all appropriate further surveys would be undertaken post consent and pre construction.

8.27 This is considered a proportionate approach due to i) the low risk to bats from OHL infrastructure, and ii) the low likelihood of encountering rare bat species along the route in terms of roosting bats in trees/woodland. This is explained further below.

8.28 There is a low risk to bats from OHL infrastructure compared to other linear projects. OHL infrastructure has less of an impact on bats that other linear infrastructure such as roads. Bats are impacted by roads in a number of ways - destruction, degradation and fragmentation of roosting, foraging and commuting habitat; mortality of bats through collision with vehicles; and disturbance from noise, lighting and air pollution associated with the road[62] . OHL schemes involve minimal land take so minimise habitat impact, have less impact on fragmentation of habitat corridors used by bats (such as hedges which are generally spanned), result in less in bat mortality and have little or no noise, lighting or air pollution impacts. Thus the relevant guidance in the 2023 Bat Guidelines[63] on linear infrastructure projects should be viewed with this in mind.

8.29 Recent research[64] 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 attracted to power for feeding on insect prey attracted to 'corona light'. However,

[60] Collins, J. (ed) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition). The Bat Conservation Trust, London
[61] For example, Kendoon to Tongland Reinforcement (60km strategic OHL upgrade Dumfries and Galloway), Erskine to Devol Moor OHL (15km grid connection in Central Scotland) and a further confidential OHL in Scotland.
[62] Bat Conservation Trust. Available at: https://www.bats.org.uk/about-bats/threats-to-bats/roads (accessed 06.11.2023).
[63] J.Collins (Ed) 2023
[64] Acoustic activity of bats at power lines correlates with relative humidity: a potential role for corona discharges
Jérémy S. P. Froidevaux, Gareth Jones, Christian Kerbiriou and Kirsty J. Park
Published:15 March 2023https://doi.org/10.1098/rspb.2022.2510

it also found that high-flying and open-space foragers like noctule and Leisler's bats may avoid power lines owing to the physical structure (pylons and cables) of the power lines. These are two open-space forager species that forage at height and OHL may potentially represent obstacles for foraging/commuting.

8.30 An Irish study[65] 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'.

8.31 There is a low likelihood of encountering rare bat species along the route in terms of roosting bats in trees/woodland. In relation to the impact of the OHL to bats roosting in trees and woodland, it is considered unlikely that any of the four rarer Habitats Directive Annex II bat species (greater horseshoe; lesser horseshoe, barbastelle; and Bechstein's) would be roosting in trees impacted by the scheme. Whilst the two species of horseshoe bat are likely present in this part of the England-Wales border, they do not roost in trees. Bechstein's bat has a very restricted distribution[66] and neither this species of barbastelle bat[67] are usually found in this part of the English/Welsh border based on existing distribution maps. Any impact on small numbers of other tree roosting bats are unlikely to meet the significance test of the EIA regulations, although legal compliance will be followed.

8.32 The approach to bats, reflecting the stages of the Project are summarised as:

- Routeing stage: Data search for bat SACs; bat landscape features e.g. woodlands. Avoided where possible direct and indirect impact to both;
- Preferred route selection: Minimise tree loss (and loss of other bat foraging habitats). Minimise loss or disruption of potential roosting and commuting features. Data search, plus Extended Phase 1 habitat survey identifies bat roost and resource potential, as set out in 2023 Bat Guidelines;
- Detailed design, EcIA and ES preparation: continue to minimise tree loss through detailed design/tower siting and static bat recorders will be deployed to classify bat activity levels of each woodland block directly impacted, spring, summer, autumn, apply methods established in 2023 Bat Guidelines. From this, likely roost activity can be inferred. This is considered sufficient to assess risk to bats for ES submission. The EcIA will recognise that tree condition is dynamic and that the roost potential of trees will change between assessment and construction. Data presented in the ES, therefore, will not represent baseline at construction, thus pragmatism must be applied. The precautionary principle will be applied. Where data suggests maternity roost activity, roosts will be assumed and assessed as such. Similarly, this risk will be recognised in ES mitigation commitments. On-going liaison with NE and NRW will be undertaken as bat data is analysed.
- Planning/ Licensing/ Delivery: Pre-commencement bat surveys can be conditioned. Detailed emergence/ activity surveys of any trees to be removed as part of mitigation package. Licensing if required.

Great crested newt

8.33 Towers and associated works will be positioned to avoid waterbodies (ponds, ditches etc) and terrestrial habitat that would require great crested newt (GCN) survey. Presence/absence surveys for GCN may be triggered based on pond Habitat Suitability Index (HSI data), data search results and presence of suitable (connected) terrestrial habitat. In line with established practice, ponds with a poor HSI score will not be subject to survey (assumed GCN absence). In most cases, micro-siting of towers will avoid any impact. 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).

Arboricultural Survey

8.34 An arboricultural survey will be undertaken on targeted areas of the scheme design as informed by the baseline assessment. Trees with the potential to be directly affected by the proposals will be surveyed. Surveys will centre around high

[65] EirGrid Evidence Based Environmental Studies Study 3: Bats
Literature review and evidence based field study on the effects of high voltage transmission lines on bats in Ireland December 2015
[66] Bechstein's Bat. Available at: https://cdn.bats.org.uk/uploads/pdf/Bechsteins-bat-species-account.pdf?v=1642079639 (accessed 06.11.2023).
[67] Barbastelle Bat. Available at: https://cdn.bats.org.uk/uploads/pdf/About%20Bats/barbastelle_11.02.13.pdf?v=1541085170 (accessed 06.11.2023).

retention value trees and woodland and especially any areas of ancient woodland with influencing distance of proposed works. It is proposed that the following features will be captured during the surveys:

- BS5837 category A trees;
- Ancient trees;
- Veteran trees;
- Ancient woodland (all categories); and
- Woodland (all categories).

8.35 Tree surveys will be carried out from ground level with reference to BS 5837. Arboricultural features will be recorded as trees or wooded areas where this is appropriate. The trees will be inspected using the Visual Tree Assessment methodology as developed by Mattheck and Breoler. Root Protection Areas (RPAs) will be calculated as an area equivalent to a circle with a radius 12 times the stem diameter and are capped at a distance of 15 metres.

Surveys scoped out

8.36 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):

- **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 thus remain unaffected by the construction and operation of the Project. Should this assumption change, the need for water vole surveys will be revisited.
- **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/roughland habitat impacted by the Project (e.g. for tower bases, access, compounds, undergrounding etc), followed by a cutting of the vegetation down to 10cm, leaving for 24 hours during suitable weather conditions (for reptiles to move into contiguous adjacent suitable habitat), then vegetation clearance/top soil removal. Should this technique not be appropriate, the need for reptile surveys will be revisited.
- **Invertebrate surveys.** Invertebrate populations are unlikely to be impacted by cabling, towers, or associated works.
- **Fish and aquatic surveys**. Watercourses will be spanned and remain unaffected. Standard good practice measures will be in place for construction, to include pollution prevention.
- **Other mammals** (brown hare, hedgehog, harvest mouse). Impact not considered significant in EIA terms.

Assessment Method

8.37 Impact assessments presented within the ES will be undertaken in accordance with CIEEM guidance (2018, updated 2022).

8.38 The approach to assessment will take account of existing guidance and published scientific literature, together with professional judgement and experience of undertaking EIA on similar developments.

8.39 The ES will provide a detailed description of the existing baseline for terrestrial ecology within the Study Area, along with the assessment of the potential effects of the Project on the identified important ecological features, taking account of embedded and standard good practice measures to avoid and minimise significant impacts where possible.

8.40 Relevant international, national and local legislation policy and guidance will be referenced to determine the importance (or 'sensitivity') of terrestrial ecological features. In addition, importance will also be determined using professional judgement, specialist consultation advice as appropriate and the results of baseline surveys and the importance of features within the context of the geographical area.

8.41 Importance will not necessarily relate solely to the level of legal protection that a feature receives, and ecological features may be important for a variety of reasons, such as their connectivity to a designated site and the rarity of species or the geographical location of species relative to their known range.

8.42 The importance of ecological features will be defined in a geographical context from 'Local' to 'International' in line with CIEEM guidelines.

8.43 The identification and characterisation of effects on ecological receptors will be undertaken in accordance with the CIEEM guidelines with reference to effect magnitude (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.

8.44 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.

8.45 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).

8.46 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. **Table 8.2** below sets out features proposed to be scoped in and out of the assessment.

8.47 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.

Arboricultural Impact Assessment

8.48 A formal AIA Report and associated set of Tree Impacts plans will be produced and appended to the ES. The report and associated drawings will assess the impacts of required tree removal, as well as any construction impacts on trees to be retained, and will provide details on appropriate mitigation measures for re-provisioning and initial recommendations on protection measures required during construction. The results and recommendations arising from the AIA will be summarised within this section of the ES.

Consultation

8.49 The Proposed consultees and bodies to be consulted with for the provision of information are detailed in **Appendix C.**

Likely Significant Effects

Embedded and Standard mitigation measures

8.50 The adoption of embedded mitigation measures to avoid or minimise adverse impacts upon ecological features resulting from the Project will continue to form part of the iterative design process.

8.51 Ecological baseline data will be used to inform the iterative design process. Full details of the scheme's design evolution and embedded mitigation measures in relation to ecology will be detailed within the ES. This will include the specification of any species-specific buffers as necessary.

8.52 There will be a particular focus on avoiding direct impacts on the sites designated for nature conservation purposes (i.e. described above) and significant impacts on protected species and habitats of conservation concern.

8.53 Further consideration of micro-siting of towers and the location of other infrastructure may be required in the design and construction process to avoid or minimise disturbance effects on protected and notable species.

8.54 To comply with relevant nature conservation legislation, suitable buffers will be included around breeding or resting/ roosting locations for protected or notable species, as defined by best practice. Where appropriate, protected species licences will be sought to enable works that would otherwise be unlawful, in line with licence conditions and supporting Species Protection Plans (SPPs).

8.55 The following standard good practice mitigation measures are assumed to be in place for the purposes of the assessment:

- Reinstatement of habitats to pre-construction conditions where possible;
- Careful timing of activities and other construction measures such as ramping of trenches to avoid effects on protected species;
- The production of Species Protection Plans (SPPs) where appropriate, which may include the rigors of the species licencing process. The species licensing process requires detailed and targeted mitigation, and if necessary, biodiversity compensation;
- The development and application of a Construction Environment Managemental Plan (CEMP), which will set out guidance on compliance with nature conservation legislation and policy;
- Production of a Pollution Prevention Plan (PPP) as part of the CEMP and adherence to Guidelines on Pollution Prevention (GPPs), which will significantly reduce the likelihood and severity of pollution events and associated impact to water ecology;
- Update pre-construction protected species surveys to be completed to confirm the status of protected species prior to works commencing; and
- The appointment of an Ecological Clerk of Works (ECoW) to advise, monitor and report on compliance with relevant legislation, policy and project specific mitigation during construction.

Potential Effects Scoped into the Assessment

8.56 The assessment will consider the following potential effects:

- Direct and indirect effects on statutory designated areas for nature conservation purposes as a result of the construction phase of the Project (i.e. SACs and SSSIs);
- Direct and indirect effects arising from permanent loss and/or fragmentation during the construction phase of the Project on habitats of conservation concern; and
- Direct and indirect effects during construction of the Project on sheltering or foraging of non-avian protected and notable species.

8.57 A separate HRA Screening and Appropriate Assessment Report (if required) will be produced in parallel with the ES to assess Likely Significant Impacts on European Wildlife Sites (SACs, SPAs and Ramsar sites) and potential sites.

Potential Effects Scoped Out of the Assessment

8.58 The following effects are proposed to be scoped out of assessment:

- Direct and indirect effects on statutory designated areas for nature conservation purposes as a result of the operation of the Project on the basis that there will be limited land take and minimal ongoing disturbance following construction. Undergrounding, if proposed, would have a larger land take but would not impact statutory nature conservation sites.
- Direct and indirect effects arising from permanent loss and/or fragmentation during operation of the Project on habitats of conservation concern on the basis that there will be no additional (to construction effects) habitat loss or fragmentation as a result of operation. Potential impacts will be managed through implementation of a Habitat Protection Plan, which will include pre-works checks and, if necessary, timing restrictions and buffer distances around habitats of conservation concern.
- Direct and indirect effects arising from temporary habitat loss and/or fragmentation (i.e. habitats that are not of conservation concern) as a result of construction and operation of the Project, on the basis that the scale of temporary habitat loss will be insubstantial relative to the surrounding landscape and micro-siting of tower locations will be employed prior to construction if required.
- Direct and indirect effects as a result of the operation of the Project on non-avian protected and notable species on the basis that potential impacts will be managed through implementation of a SPP, which will include pre-works checks and, if necessary, timing restrictions and buffer distances and protected species licencing to ensure legal compliance.

8.59 While the effects above are scoped out because they are not likely to be significant in EIA terms, the need to ensure compliance with international and national nature conservation legislation still applies. The presence and potential presence of protected species along the route will require to be established and appropriate avoidance, mitigation and enhancement measures implemented accordingly.

Approach to Additional Mitigation

8.60 Where effects are assessed as being significant, within the context of the EIA Regulations, mitigation measures will be identified and agreed in consultation with relevant stakeholders. All mitigation measures will be developed on the basis of robust science, drawing on current and emerging good practice, and its likely efficacy and success will be considered.

Benefit for Biodiversity

8.61 Field data will be collected in a way that enables a biodiversity net gain assessment to be made utilising UK habitat classification and condition assessment and mapping. Biodiversity Net Gain would be calculated using the latest Defra Metric 4.0.

8.62 The Project will also aim to deliver on the Welsh Net Benefits for Biodiversity (NBB) and DECCA framework approach, which sets out five attributes of ecosystem resilience:

- Diversity: maintaining and enhancing diversity at every scale, including genetic, structural, habitat and between-habitat levels. This supports the complexity of ecosystem functions and interactions that deliver services and benefits.
- Extent: incorporating measures which maintain and increase the area of semi-natural habitat/features and linkages between habitats. In general, smaller ecosystems have reduced capacity to adapt, recover or resist disturbance.
- Condition: The condition of an ecosystem is affected by multiple and complex pressures acting both as short term and longer term types of disturbance. Both direct and wider impacts should be considered, for example avoiding or mitigating pressures such as climate change, pollution, invasive species, land management neglect etc.
- Connectivity: This refers to the links between and within habitats, which may take the form of physical corridors, stepping stones in the landscape, or patches of the same or related vegetation types that together create a network that enables the flow or movement of genes, species and natural resources. Developments should take opportunities to develop functional habitat and ecological networks within and between ecosystems, building on existing connectivity.
- Aspects of ecosystem resilience (adaptability, recovery and resistance): ecosystem resilience is a product of the above four attributes. Adaptability, recovery and resistance to/from a disturbance are defining features of ecosystem resilience.

8.63 Biodiversity enhancements that achieve net biodiversity gain will be considered following (i.e. additionally to) implementation of the approach of firstly avoiding, then minimising, mitigating and as a last resort compensating for, adverse impacts on the environment in a development.

8.64 Habitat creation and/or long-term management arrangements to enhance existing habitats, to improve biodiversity and the resilience of ecosystems will also be an important potential tool for securing a new benefit to biodiversity.

Proposed Scope of the EIA

8.65 **Table 8.2** provides summary of ecology surveys proposed to be scoped in/out of the EIA.

Table 8.2: Proposed EIA Scope

Matter	Scoped in/out	Justification
International and national sites designated for biodiversity.	Construction – in. Operation – out.	Direct and indirect effects on statutory designated areas for nature conservation purposes as a result of construction phase of the Project (i.e. SACs and SSSIs) where the design is unable to avoid potential impact to these sites.

Matter	Scoped in/out	Justification
		A HRA will be undertaken to determine any significant effects, including an assessment of any 'functionally linked land'.
Local (statutory) sites designated for biodiversity and ancient woodlands.	Construction – in. Operation – out.	Direct and indirect effects on local statutory designated areas for nature conservation purposes as a result of construction phase of the Project, where the design is unable to avoid potential connectivity with these sites.
Priority habitats, GWDTEs	Construction – in. Operation – out.	Direct and indirect effects arising from permanent loss and/or fragmentation during the construction phase of the Project on habitats of conservation concern.
Bat activity, hazel dormouse, otter, great crested newt (GCN), vascular and non-vascular plants, and invasive non-native species.	Construction – in. Operation – out.	Direct and indirect effects during construction of the Project on sheltering or foraging of non-avian protected and notable species. Bat activity transect surveys required where there is a high impact on bat feeding habitat e.g. where route crosses through woodland and wooded river banks. For GCN, towers and associated works will be positioned/micro-sited to avoid waterbodies (ponds, ditches etc) and habitat that would require GCN survey. Small amounts of terrestrial habitats impacted can be subject to habitat manipulation under ecological supervision (see reptiles).
Invertebrates, fish, brown hare, harvest mouse, hedgehog, fungi	Construction – out Operation – out	Impacts not expected to be significant in ES terms.
Bats - roosting	Construction – out Operation – out	Detailed surveys of trees to be felled is seen as mitigation, as bat roost suitability of trees is likely to change between planning and construction. No bat roost surveys are proposed to inform the ES for individual trees to be removed during the construction phase, as this would be an unreasonably high level of survey work to carry out given the amount of forestry to be affected. There is an expectation of a minimum three years between the completion of the ecology field surveys and the commencement of the construction phase. However, static bat detectors will be deployed in suitable habitat within the Study Area and these will be

Matter	Scoped in/out	Justification
		supplemented by data search information and habitat assessment for bats. See above. Therefore, an understanding of the bat species and activity levels will be gained for the Project. This is considered sufficient baseline data to inform the ES and as stated above, appropriate surveys would be undertaken prior to construction.
Badger	Construction – out Operation – out	Impact not considered to be significant in ES terms. Where badger setts occur in vicinity of proposed tower base or associated works/compound/switching station, modification to works will be proposed to retain badger setts – these cases may require walkover badger survey.
Water vole	Construction – out Operation – out	Impact not considered to be significant in ES terms. Water vole activity mostly restricted to areas close to river, canal and stream banks – these should remain unaffected. A walkover for water vole signs will be included as part of the otter surveys above if required.
Reptiles	Construction – out Operation – out	Impact not considered to be significant in ES terms. Impact can be avoided by use of 'habitat manipulation under ecological supervision'. This technique includes hand searching for reptiles in areas of suitable grassland/roughland habitat impacted by the scheme (e.g. for tower bases, access, compounds etc), followed by a cutting of the vegetation down to 10cm, leaving for 24 hours during suitable weather conditions (for reptiles to move into contiguous adjacent suitable habitat), then vegetation clearance/top soil removal.

Questions for Consultees

Q8.1: Do consultees agree that the scope of desk studies and ecological baseline surveys proposed are sufficient and proportionate to inform the design and assessment of the Project?

Q8.2: Do consultees agree with the assessment method (including scoped in/scoped out effects)?

Q8.3: Do consultees hold any data sets that could be made available to inform the assessment?

Q8.4: Do consultees agree with the proposed bat surveys and the approach to the assessment?

Chapter 9
Ornithology

Introduction

9.1 This chapter sets out the proposed approach to the assessment of likely significant effects on ornithology arising from the construction and operation of the Project.

9.2 The assessment of effects on ornithology will be undertaken by competent experts at LUC.

Study Area

9.3 The Scoping Study Area includes the following buffer zones (calculated from the Scoping Corridor, with buffers being updated as the design progresses), in line with species specific best practice guidelines. Distances reflect approaches accepted in Habitat Regulation Assessment (HRA) terms as well as the circumstances of the Project.

Desk study

- Internationally designated areas: 10km for Special Protection Areas (SPAs) and Ramsar Sites, to capture connectivity between the Project and these sites where qualifying bird species may range beyond the Scoping Corridor;
- Nationally designated areas where birds are a qualifying feature and non-statutory designated sites: 1km; and
- Records of extant Schedule 1 species (from 2012 onwards): 1km.

Field studies

- Bird flight activity from vantage points (VPs): within 500m;
- Breeding Schedule 1 raptors: within 2km; and
- Breeding birds: 250m for lowland enclosed agricultural land; up to 500m for upland and unenclosed land.

9.4 For the purposes of this Scoping Report the Scoping Study Area for ornithology is presented on **Figure 9.1**.

Existing Conditions

Information Sources

9.5 The baseline has been informed by the following information sources:

- Aerial Photography (Google Earth 2023) - Review of freely available aerial photography has allowed habitats within the Scoping 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.
- Multi-agency Geographic Information for the Countryside (MAGIC) (2023) – The location of statutory designated sites for nature conservation,
- Relevant OS mapping has been studied to identify ponds, and other wetland features that may be of importance for bird populations.

- Published information on bird species distribution in the breeding and non-breeding seasons[68].

Baseline Conditions

9.6 A comprehensive ornithological baseline to inform the design and assessment of the Project will be established through desk study and field surveys. Full details will be presented within the ES.

9.7 There are no sites designated for ornithology within the Scoping Corridor. There is one internationally designated site citing ornithological features within the Scoping Study Area for ornithology, as shown in **Table 9.1**.

Table 9.1: Internationally Designated Sites Potentially Impacted

Name of Internationally Designated Site	Notes
Ramsar Site within 10km	
Midland Meres and Mosses Ramsar	A series of 18 areas made up of nutrient-rich open water bodies (meres) with fringing aquatic, emergent and damp habitats. In winter, the site supports nationally important populations of gadwall, pochard, shoveler and cormorant.

9.8 Initial desk studies suggest that several breeding bird species of nature conservation importance may occur within and adjacent to the Scoping Corridor, including birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 and birds from the UK and Welsh Red-lists of Birds of Conservation Concern.

9.9 Habitats within the Scoping Corridor are dominated by enclosed agricultural land, intensively managed as pasture and arable. There are hedgerows and small pockets of woodland scattered throughout and some limited areas of unenclosed land in the south and west. Some sections of the Scoping Corridor are adjacent to riparian or wetland areas that may be used by wintering birds, including migratory wildfowl such as swans and ducks, waders and gulls.

Future Baseline

9.10 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. Large parts of land within the Scoping Corridor are located on agricultural land. The conditions are unlikely to change materially in the short term as current agricultural practices are likely to be maintained, therefore the future ornithological baseline is likely to be the similar to the current baseline. Where changes arise from other future developments these would be considered in the cumulative assessment of the ES, as appropriate.

Data Collation and Assessment Methodology

Legislation and Guidance

9.11 The ornithological assessment will be carried out in cognisance of the following relevant legislation and standards:

- The Wildlife and Countryside Act 1981;
- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a);
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2024b);
- National Planning Policy Framework[69];
- Environment Act 2021 (including Biodiversity Net Gain);
- The Environment (Wales) Act 2016;

[68] Balmer D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. & Fuller, R.J. (2013) Bird Atlas 2007-11; the breeding and wintering birds of Britain and Ireland. BTO Books, Thetford.
[69] Department for Levelling Up, Housing and Communities, Dec 2023

- The Conservation of Habitats and Species Regulations 2017 (as amended) (i.e. the "Habitats Regulations");
- The Nature Recovery Plan 2020[70];
- Planning Policy Wales: Technical Advice Note 5: Nature Conservation and Planning[71];
- The Powys County Council Local Biodiversity Action Plan (LBA)[72]; and Powys Nature Recovery Plan[73]; and
- Shropshire Biodiversity Action Plan[74].

9.12 The assessment will also have regard to the following guidance:

- Chartered Institute of Ecology and Environmental Management (CIEEM), Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Marine[75];
- Guidance on bird survey methods to inform impact assessment[76]; and
- Guidance on assessment and mitigation of impacts of overhead lines on birds[77].

Ornithological Receptors

9.13 The ornithological receptors that will be considered as part of the assessment are:

- Statutory designated sites where ornithology forms part of the qualifying interest;
- Bird species whose populations are likely to form part of the qualifying interest of statutory designated sites;
- Birds listed on Annex 1 of the EC Birds Directive and on Schedule 1 of the Wildlife and Countryside Act 1981; and
- Birds listed on the Red list of Birds of Conservation Concern (BoCC)[78] or the Red list Birds of Conservation Concern in Wales (BoCCW)[79].

Data Collection - Desk Based

9.14 Desk studies will continue to inform the collation of baseline information. 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.

9.15 The following key information sources have been consulted to inform Scoping:

- Multi-agency Geographic Information for the Countryside (MAGIC) (2023) [80] online application and NRW webpages[81] for information on designated sites; and
- Additional data requests will be made from relevant organisations to inform the EIA.

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[70] Welsh Government (2020) The Nature Recovery Action Plan for Wales. Available at: https://gov.wales/sites/default/files/publications/2020-10/nature-recovery-action-plan-wales-2020-2021.pdf (accessed 15.09.2023).
[71] Welsh Government (2002) Planning Policy Wales Technical Advice Note 5: Nature Conservation and Planning. Available at: https://gov.wales/sites/default/files/publications/2018-09/tan5-nature-conservation.pdf (accessed 15/08/2023).
[72] Powys Biodiversity Partnership (2002). Our Partnership with Nature: A Local Biodiversity Action Plan for Powys. Available at: https://en.powys.gov.uk/article/2553/Local-Biodiversity-Action-Plan
[73] https://en.powys.gov.uk/article/2573/Powys-Nature-Recovery-Action-Plan
[74] https://www.shropshire.gov.uk/environment/ecology-and-biodiversity/biodiversity-action-plan/ (accessed 15.09.2023).
[75] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal and Marine. Winchester: Version 1.2 - Updated April 2022. Chartered Institute for Ecology and Environmental Management, Romsey.
[76] SNH. (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. SNH, Battleby.
[77] SNH. (2016). Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. SNH, Battleby.
[78] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.
[79] Johnstone, I.G., Hughes, J., Balmer, D.E., Brenchley, A., Facey, R.J. Lindley, P.J., Noble, D.G. & Taylor, R.C. (2022). Birds of Conservation Concern Wales 4: the population status of birds in Wales. Milvus, 2: 1-34.
[80] Defra. Magic Map. Available at: https://magic.defra.gov.uk/MagicMap.aspx (accessed 15.09.2023)
[81] NRW. Protected areas of land and seas. Available at: https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/?lang=en (accessed 15.09.2023)

Data Collection - Field Surveys

9.16 In accordance with NatureScot guidance adopted by NRW and EN (SNH, 2017), one full year of ornithological surveys will be completed. The following field surveys will be undertaken:

- Flight Activity Surveys (a minimum of 12 vantage point locations will be used);
- Breeding Bird Survey (BBS) comprising up to four visits to key open ground habitats that are likely to support populations of nature conservation importance; and
- Breeding raptor and owl surveys.

9.17 Field surveys will use standard survey methodologies where required, including raptor survey methods specified in Hardey et al. (2013)[82]. Flight activity surveys will comprise timed watches from VPs, based on the methods described by Band et al. (2007)[83].

9.18 Ornithology field surveys to inform the baseline for assessment will run from April 2024 to March 2025.

Assessment Method

9.19 The ES will provide a detailed description of the existing baseline ornithological features, along with an assessment of the potential effects of the Project on the important ornithological features present, taking account of mitigating measures to avoid and reduce significant effects where appropriate.

9.20 Impact assessments presented within the ES will be undertaken in accordance with CIEEM guidance (2019)[84]. 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.

9.21 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 section below). Effects on birds could arise because of habitat loss, disturbance, displacement, collision mortality and electrocution.

Determining Importance

9.22 Relevant international and national legislation, policy and guidance will be referenced to determine the Nature Conservation Importance (NCI) of ornithological features. In addition, species' sensitivity to potential effects from OHL developments and development of other Project elements will be taken into account by considering aspects like their behaviour and capacity for habituating to the presence of infrastructure.

Identification and Characterisation of Effects

9.23 The identification and characterisation of effects on important ornithological features will be undertaken in accordance with the CIEEM guidelines (2018, amended 2022) with reference to effect magnitude (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. 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.

9.24 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.

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[82] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013) Raptors: a field guide to survey and monitoring. Third Edition. The Stationary Office, Edinburgh.
[83] Band, W., Madders, M. & Whitfield, D.P. (2007) Developing field and analytical methods to assess avian collision risk at wind farms. In de Lucas, M, Janss, G.F.E. and Ferrer, M. (Eds.) Birds and Wind Farms: Risk assessment and Mitigation, pp. 259 - 275. Quercus, Madrid.
[84] CIEEM. Guidelines for ecological impact assessment in the UK and Ireland. Available at: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1.pdf. (accessed 15.09.2023)

Significant Effects

9.25 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.

Presentation of Sensitive Information

9.26 Sensitive information as it relates to ornithology will be presented within a confidential appendix to the ES.

Consultation

9.27 The proposed consultees and bodies to be consulted with for the provision of information are detailed in **Appendix C**.

Likely Significant Effects

Embedded and Standard mitigation measures

9.28 The adoption of embedded mitigation measures to avoid or minimise adverse effects upon ornithological features resulting from the Project will continue to form part of the iterative design process.

9.29 Where required, suitable species-specific buffers around sensitive ornithological sites may be incorporated in the design process. Full details of scheme design and embedded mitigation measures in relation to ornithology will be detailed within the ES.

9.30 A Bird Protection Plan (BPP) will be prepared to ensure legislative compliance and accordance with current good practice guidance. This will be incorporated into any Construction Environmental Management Plan (CEMP) and overseen by an Ecological Clerk of Works (ECoW).

9.31 The assumption is that the clearance of vegetation likely to support breeding birds will aim to be avoided during the bird breeding season (March to August inclusive). Where this would be required, an ECoW will undertake a disturbance risk-assessment as part of the BPP and will supervise the work to ensure that disturbance is avoided or minimised. Where active nests are discovered, suitable no disturbance buffers will be maintained until chicks have fledged. Where possible, scheduling construction and maintenance activities outside certain periods will be proposed for seasonally sensitive species.

Potential Effects Scoped into Assessment

9.32 The construction and operation of the Project has the potential to cause significant effects on birds. These may arise due to:

- 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 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.

9.33 The potential for each effect varies between species and species-groups and, therefore, a species-specific assessment will take place using information from baseline studies and knowledge of how different species may be affected. For example, the risk of collision varies for different species due to their biometrics and flight behaviour and is further modified by habitat and topography.

9.34 The assessment will only assess in detail effects upon important ornithological features, where these features, principally species, are known to be susceptible to the effects likely to arise from the construction and operation of the Project. This will include species defined as having high or moderate nature conservation interest, where individuals of these species make substantial use of airspace and habitats surrounding the Project for breeding, roosting, or foraging.

Potential Effects Scoped Out of Assessment

9.35 The following potential effects on ornithology are proposed to be scoped out of full assessment:

- Electrocution - electrocution on OHLs is possible either where a bird can touch a conductor while it is perched on an earthed tower, touch a conductor and the earth wire simultaneously or touch two conductor wires simultaneously. The design and configuration of the wires and towers of modern OHLs means that none of these scenarios are possible as the gaps between the conductors and the perch points would be greater than the wingspan of perching bird species likely to be encountered in this area.
- Operational disturbance - the Collector Substation, CSEC, OHL (and UGC where proposed) would require only occasional site visits either on foot or in vehicles for maintenance activities. While the Project may also result in disturbance arising from low-level noise and visual effects associated with the Collector Substation, wires and towers, the magnitude of these potential impacts is considered too low to cause significant effects on bird populations.
- Effects on non-sensitive populations - a detailed assessment of bird populations that are present but sufficiently widespread, unthreatened and resilient to the potential effects arising from the Project will not be undertaken. Full justification for Scoping out certain populations will be provided in the ES, where relevant.

Approach to Additional Mitigation

9.36 Mitigation measures will be considered to off-set any predicted significant effects.

9.37 Mitigation measures may include further location- or species-specific buffers or timing restrictions to avoid disturbance to sensitive bird species; and installing line markers or 'bird diverters' as appropriate to reduce collision risk.

Benefit for Ornithology

9.38 Field data will be collected in a way that enables the bird community to be considered within a biodiversity net gain assessment. The policy and processes underpinning the approach to delivering biodiversity benefits, including benefits for bird populations, are detailed in **Chapter 8: Ecology**.

Proposed Scope of the EIA

9.39 **Table 9.2** provides summary of ornithology surveys proposed to be scoped in/out of the EIA.

Table 9.2: Proposed EIA Scope

Matter	Scoped in/out	Justification
International and national sites designated for birds.	Construction – out. Operation – in.	The only relevant site is the Midland Meres and Mosser Ramsar Site, where designated ornithological features will not be disturbed by construction, but could suffer mortality arising from collision with overhead lines while commuting to and from the site.
Breeding, wintering/passage birds	Construction – in. Operation – in.	Effects on breeding and wintering/passage bird populations could occur because of disturbance and/or displacement during construction and as a result of collision mortality during the operational phase of the Project.

Questions for Consultees

Q9.1:Do consultees agree that the scope of desk studies and ornithological baseline surveys proposed are sufficient and proportionate to inform the design and assessment of the Project?

Q9.2: Do consultees agree with the assessment method (including scoped in/scoped out effects)?

Q9.3: Do consultees hold any data sets that could be made available to inform the assessment?

Chapter 10
Historic Environment

Introduction

10.1 This chapter sets out the proposed approach to the assessment of likely significant effects on the historic environment during construction and operation of the Project.

10.2 For the purposes of this chapter, the Overarching National Policy Statement (NPS) for Energy (EN-1) definition of historic environment is followed. Accordingly, it is taken to include: "*All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora*."[85] As such, this chapter will focus on archaeology, built heritage and historic landscapes.

10.3 The historic environment is composed of heritage assets[86]: buildings, monuments, sites, places, areas or landscapes, or any combination of these, that as are identified as having heritage interest, or significance.[87] Heritage significance derives not only from a heritage asset's physical presence, but also from its setting. NPS EN-1 does not offer a definition of setting, relying instead on those provided by Welsh Government Technical Advice Note 24 (TAN24), which describes setting as: *"the surroundings in which* [an asset] *is understood, experienced, and appreciated embracing present and past relationships to the surrounding landscape.*[88] Importantly, its extent is not fixed and may change. Moreover, elements of an asset's setting may make a positive or negative contribution to the significance of an asset, or the ability to understand or appreciate that significance; or may not contribute at all.[89]

Study Area

10.4 The Study Area for the historic environment topic at Scoping comprises the area that may be directly physically affected by the Project (represented by the Scoping Corridor) plus a 3 kilometre (km) area extending from it. This Study Area provides context to understand the historic environment baseline at Scoping and allow identification of heritage assets with potential to experience direct physical effects and effects related to setting change.In parallel, ZTVs of the emerging Project will be used to identify assets at greater distances that may be sensitive to setting change and in receipt of significant effects. Similarly, this process will enable careful screening of assets across the study area to exclude those with no theoretical intervisibility / in-combination visiblity, and/or low/no susceptibility to setting change. The Scoping Corridor and Study Area are shown on **Figure 10.1**.

Existing Conditions

Information Sources

10.5 The following sources of information have been reviewed during desk-based research to inform this Scoping Report:

- Data on designated heritage assets in the Study Area[90] comprising:

[85] Section 5.9.2 Historic Environment, Overarching National Policy Statement for Energy (EN-1), Department for Energy and Climate Change, 2024 p. 136
[86] Heritage assets are synonymous with 'historic assets' the term applied in Planning Policy Wales and associated guidance.
[87] Paragraph 5.9.3 Historic Environment, Overarching National Policy Statement for Energy (EN-1), Department for Energy and Climate Change, 2024 p. 136
[88] Paragraph 1.25, Planning Policy Wales Technical Advice Note 24: The historic Environment, Welsh Government, 2017, p.10
[89] Paragraph 1.26, *ibid*; Setting of Heritage Assets in Wales, Welsh Government / Cadw, 2017
[90] Spatial data for designated heritage assets in Wales has been sourced from MapDataWales, Available at: https://datamap.gov.wales/search/?limit=20&offset=0 (accessed 06.11.2023). With the exception of Conservation Areas, which are maintained by the LPA, all designated asset data originates from Cadw. For designated heritage assets in England The National Heritage List for England was used. Available at: https://historicengland.org.uk/listing/the-list/data-downloads/ (accessed 06.11.2023).

  - World Heritage Sites;
  - Scheduled monuments;
  - Listed buildings;
  - Conservation areas;
  - Registered Historic Parks and Gardens (RHPG; Wales) and Registered Parks and Gardens (RPG; England);
  - Registered battlefields; and
  - Registered Historic Landscapes (RHL – Wales only)[91].
- Clwyd Powys Archaeological Trust (CPAT) Historic Environment Record (HER) and Shropshire Council HER data for the Study Area;
- Historic and current Ordnance Survey mapping;
- Recent digital aerial photography from online sources; and
- Initial findings of other topics (e.g. Landscape and Visual Amenity, Hydrology, Hydrogeology and Geology).

Baseline Conditions

Archaeological and Historical Context

10.6 The following designated heritage assets are wholly or partly within the Scoping Study Area:

- 51 scheduled monuments;
- 632 listed buildings:
  - Five Grade I
  - 36 Grade II*
  - 591 Grade II
- 22 conservation areas;
- Two HPG and one RPG; and
- 6,616 HER core data entries (4,692 from the CPAT HER; 1,924 from the SC HER).[92]

10.7 The Scoping Corridor commences on the south-eastern edge of the Esgair Cwmowen upland plateau to the north-west of Cefn Coch in mid-Wales, from where it runs approximately north-east before crossing River Banwy to the north-west of Llanfair Caereinion. After crossing the Banwy valley, the Scoping Corridor turns east before entering the south-western end of the Meifod valley. The Scoping Corridor again turns north-east and travels up the Meifod valley following the alignment of the River Vyrnwy towards Llansantffraid-ym-Mechain and the confluence of the Vyrnwy and River Cairn. At this point the Scoping Corridor turns east and continues to follow the alignment of the River Vyrnwy before crossing the Montgomery Canal and the A483 between Four Crosses and Llandysilio to the south and Llanymynech to the north. On entering Shropshire, the Scoping Corridor travels north-east up the floodplain of the River Morda, passing West Felton to the east along roughly the same alignment as the Montgomery Canal. The Scoping Corridor terminates to the south-west of Lower Frankton where the corridor meets the National Grid substation search area.

10.8 As the Scoping Corridor traverses a wide range of rural landscapes, although primarily valley bottoms whose primary land use is mixed agriculture, there are a broad range of heritage assets of all periods within the Scoping Study Area. Specific

[91] Registered Historic Landscape designations are specific to Wales and there are no equivalent designations within England.
[92] As indicated above, ZTV(s) and analysis of assets' likely susceptibility to setting change will substantially reduce the numbers of assets taken forward for assessment.

heritage assets are referred to using their designation or HER reference, where relevant, in the following contextual overview of the Scoping Study Area and Scoping Corridor.

10.9 The locations of heritage assets within the Study Area are shown on **Figure 10.1**.

Contextual Overview

10.10 The landscapes within the Study Area appear to have been exploited since prehistory. Neolithic and Bronze Age (4,000 BC – 1,500 BC) funerary and ritual activity is relatively well-documented in the form of extant burial mounds (upstanding remains of round barrows and cairns), as well as ring ditches[93], cremation cemeteries, pit circles, standing stones and stone circles. Those burial mounds that survive as above ground heritage assets are typically located on ridges of high ground, particularly in the upland area at the south-western end of the Scoping Study Area. There are four extant funerary monuments within the Study Area, of which Mynydd y Gribin kerb cairn (Cadw Scheduled Monument (SM) Ref. MG327) and Gelli Gethin round cairn (Cadw SM Ref. MG727) are located within the Scoping Corridor.

10.11 Other heritage assets from this period within the Study Area have been recorded as crop marks from aerial photographs or identified through archaeological investigations, including geophysical survey, within river valleys. There is a particular concentration of prehistoric activity along the Severn valley, including within the Study Area to the north of Four Crosses, including a possible Bronze Age field system (CPAT HER Ref: PRN130601) within the Scoping Corridor.

10.12 Evidence for late Bronze Age and Iron Age (500 BC – AD 70) activity mainly comes from defensive enclosures located on the higher ridges and hilltops overlooking the valleys through which the Project will pass. They include the hillforts at Ffridd Mathrafal (Cadw SM Ref. MG232), Bryn y Saethau (Cadw SM Ref. MG231) and Pentre (Cadw SM Ref. MG124) at the south-western end of the Meiford valley, and the hillfort at Llanymynech (Cadw SM Ref. MG030). Occupying the whole of the 70 hectares (ha) limestone plateau this hillfort is the largest in Wales. Other smaller defended enclosures some with associated field systems, such as the examples at Collfryn (Cadw SM Ref. MG200), have provided evidence of continued occupation from the Iron Age through to the end of the Roman administrative control over Wales. While their functions are likely to have changed over time, particularly in the case of those that evidence lengthy occupation, the large hillforts would have been used to assist in the exploitation and control of local resources, trade and movement throughout the surrounding landscape, while offering protection to their inhabitants. This function is reflected in their choice of location and setting, characterised by easily defendable hilltop locations and taking advantage of the natural topography to enable views down and along natural routeways, such as the River Vyrnwy.

10.13 The Roman occupation of Wales (AD 70 – 410) is characterised by a series of military campaigns and 'Romanisation' of native populations (adopting the lifestyles, material culture and values of the Roman colonists) which establish a long Roman presence and influence well beyond the network of military installations and associated settlement. Communication links through central Wales were extensive linking both military establishments as well as civilian settlements. The Roman road between the major Roman military complex at Caersws and the Banwy Valley (CPAT HER Ref. PRN14347) crosses the Scoping Corridor approximately north to south to the south-west of Llanfair Caereinion. Where the alignment of the Roman road has not been superseded by later roadways, some sections of the Caersws to Banwy Valley Roman road survive as earthworks. This includes the short section of scheduled Roman road at Mynydd Waun (Cadw SM Ref. MG320) which is within the Scoping Study Area. The projected alignment of the Long Mountain to Mallwyd Roman Road (CPAT HER Ref. PRN47121) largely follows the route of the A458, is also crossed by the Scoping Corridor. As well as the many Iron Age enclosures which have produce evidence of later Roman influence, other evidence for Romano-British activity in the Study Area includes material culture including Roman coin hoards (CPAT HER Ref. PRN26), Roman period cremation burials at Four Crosses (CPAT HER Ref. PRN50560) and a possible Roman villa site at Hendre Farm (CPAT HER Ref. PRN5255) near Llandrinio south of the Scoping Corridor at Four Crosses.

10.14 The reorganisation of society and transfer of political and military control following the collapse of the Roman administration resulted in the establishment of a number of competing independent kingdoms. While there is little physical evidence for this period within the Study Area , evidence for early medieval (AD 410 – 1100) activity is suggested by placenames.

[93] The buried archaeological remains of circular ditches often identified as crop marks on aerial photographs characteristically associated with ploughed out barrows or hut circles.

10.15 The Scoping Study Area contains numerous names with the prefix "Llan" which indicates the presence of a post-Roman/ early Medieval Christian church site and associated settlement, that have continued as the focus of settlement including, Llanfair Caereinion, Llansantffraid-ym-Mechain and Llanymynech.

10.16 Several scheduled monuments within the Scoping Study Area relate to the early medieval boundary earthworks of Offa's Dyke and Wat's Dyke. Long sections of Offa's Dyke survive as earthworks or known buried archaeological remains north of the River Severn and through the centre of Four Crosses (Cadw SM Ref. MG033) and north of Llanymynech (Historic England (HE) List Entry Nos. 1003014; 1020948). There is no evidence for Offa's Dyke between Llandysilio and Llanymynech where the likely alignment of the dyke is crossed by the Scoping Corridor. It is possible that a permanent boundary was not constructed at this point in the landscape. While there are designated sections of Wat's Dyke (HE List Entry Nos. 1020564, 1020619, 1020618, 1020562, 1020616) within the Scoping Study Area, these lie to the north of the Scoping Corridor within the settlements of Oswesty and Mile Oak.

10.17 The charged political environment resulting from the wrestling for control of the Welsh Marches following the Norman conquest is evidenced in the number of earthwork and timber castles recorded in the Study Area. Many of the surviving earthwork mottes are scheduled monuments which evidence this time of military control over the contested marches. They are strategically located to enable the occupants to exert a level of control over the local environs as well as the movement of people through the landscape. Good examples of this in the Scoping Study Area are those at Hen Domen (Cadw SM Ref. MG103) and Rysnant Hall (SM Ref. MG142) which overlooks the Severn valley. Probably built by Owain Cyfeiliog in around 1170, Mathrafal Castle (MG044) was the original capital of the Prince of Powys. Mathrafal Castle, which comprises the remains of a motte and an outer bailey, is located with the Scoping Corridor at the south-western end of the Meifod Valley.

10.18 As the political situation in the Welsh Marches solidified some of the many earth and timber castles were replaced with more permanent structures. Located at the northern end of the Scoping Study Area within the settlement of Whittington, Whittington Castle (HE List Entry No. 1019450) includes the remains of the earlier motte and bailey castle superseded by a stone-built fortified keep surrounded by a moat. The continued stability following the Welsh Wars of Independence, enabled landed gentry to invest in their homes. A fashion for moated houses, high status houses surrounded by a water-filled moat, designed for display rather than defence was established. These moated sites were often associated with gardens and deer parks, such as the example at Bromwich Park moated site and formal garden remains (HE List Entry No. 1017006) to the east of Maesbury within the Scoping Corridor. A smaller moated homestead is the Cwrt y Person moated site (Cadw SM Ref. MG166), just to the north of the village of Meifod, represents a good example of this type of asset.

10.19 Many of the early medieval settlements suggested by the 'Llan' placename, developed into villages in the medieval period, some, such as Llanfair Caereinion, grew to become towns and market centres. Several of the settlements in the Scoping Study Area retain churches which are largely or substantially medieval in date. Most of these churches are listed at high grades (Grade I or II*) to reflect the survival of extensive medieval fabric, including the Parish Church of St Tysillo and St Mary at Meifod (CPAT HER Ref. PRN7646) and the Church of St Michael at Llanyblodwel (HE List Entry No. 1307719). Other evidence for medieval activity recorded on the CPAT and SC HERs comes from the remains of ridge and furrow earthworks and field systems, demonstrating the use of these areas for farming.

10.20 The majority of the 6,616 HER entries are of post-medieval date. They largely reflect the dominance of farming and agricultural land use of the lowlands and lower levels of activity in the upland areas to the south-west of the Scoping Study Area. Evidence for farming within the Study Area includes numerous farmsteads and farmhouses, earthwork and structural remains of farming activities, such as ridge and furrow cultivation, land divisions, sheepfolds, and of changing agricultural practices, such as marl pits and water management features (such as ponds and weirs). There are also many quarries of post-medieval date reflecting the importance of, and ready access to, building stone during this period.

10.21 The limestone at Llanymynech was exploited through the post-medieval period and into the later 19th and 20th centuries. Much of the evidence for this industrial activity at Llanymynech is designated (HE List Entry No. 1021412), including the lime kilns, associated tramways, structures and other buildings. Together they form a particularly well-preserved and complete group of structures, of particular interest being the Hoffmann kiln which represents the best-preserved example of its type.

10.22 Listed buildings are present throughout the Study Area with clusters in historic settlements (villages and hamlets). Of these, twenty-two are also conservation areas, including Meifod and Llanymynech which are within the Scoping Corridor. Most of the listed buildings are of post-medieval date and relate to domestic buildings, those associated with an agricultural function or ecclesiastical buildings. As such these buildings represent relatively discrete assets for which direct physical effects can be

avoided through design. The majority of the settings of these buildings are related to their surrounding urban or village settlements, or their rural / agricultural landscape setting.

10.23 Few designated heritage assets and HER entries relate to modern (20th century and later) activity. Those that are present include war memorials (all Grade II listed buildings), military installations and modern infrastructure such as railway and road construction.

Future Baseline

10.24 Future baseline relates to likely changes to the baseline between now and construction of the Project which will be considered in the assessment for this topic.

10.25 Whilst no significant changes to the historic environment baseline are anticipated, the following may occur:

- Further heritage assets may be identified;
- The status of some heritage assets changes, i.e. assets currently non-designated may become designated and vice versa;
- Heritage assets may become better understood due to advances in knowledge and/or technology;
- The condition of heritage assets may change due to climate change and/or changes in rural land management regimes in the post-Brexit subsidy environment; and
- Some heritage assets may be damaged or destroyed by forces related to climate change (e.g. peatland wildfires, erosion associated with increased frequency and severity of cloudburst events).

10.26 The Environmental Statement (ES) will address this uncertainty over baseline with appropriate post-scoping consultation with relevant consultees (see 'Consultation with stakeholders' below) to establish cut-off dates for baseline data gathering and realistic future baseline scenarios to be assessed.

Data Collation and Assessment Methodology

Legislation, Policy and Guidance

10.27 The assessment of effects of the Project on the historic environment will be carried out in accordance with the principles contained within the following[94]:

- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a)
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2024b);
- National Planning Policy Framework (NPPF);
- Ministry of Housing, Communities & Local Government (2019) Planning Practice Guidance: Historic Environment;
- Institute of Environmental Management and Assessment, Chartered Institute for Archaeologists (CIfA) and Institute of Historic Building Conservation (IHBC) (2021) Principles of Cultural Heritage Impact Assessment in the UK (hereafter PCHIA);
- Historic England (2015) Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning Note 2;
- English Heritage (2008) Conservation Principles, Policies and Guidance For the Sustainable Management of the Historic Environment (hereafter ‘Conservation Principles’);

[94] Given that the Project will be taken forward as a DCO, the guidance identified is that which underpins NPS EN-1 and EN-5. Planning Policy Wales and Welsh guidance is fundamentally similar to the English equivalent and uses the same conservation principles which underpin the proposed approach.

- Historic England (2017) The Setting of Heritage assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) (hereafter 'Setting Guidance')[95]; and
- CIfA (2020) Standard and guidance for historic environment desk-based assessment.

Proposed Study Area

10.28 The proposed extent of the Study Area will allow the historic environment specialist assessors to identify assets and develop an appropriate understanding of their context and significance. It covers the extent over which the LVIA assessors, at the time of preparation of the Scoping Report (i.e. 3 km from the Project), consider significant visual effects likely so is adequate for assessing effects arising from changes in the setting of heritage assets.

10.29 As the iterative design process continues, the Scoping Corridor will be refined to comprise the siting of all infrastructure required for the operation of the Project as well as the temporary infrastructure required for construction of the Project. Whilst the Scoping Study Area used for the EIA will be realigned to match any refinements in the Project extent, it is proposed that they remain as the area that may be directly physically affected by the Project and an appropriate buffer[96] which provides suitable context for understanding the baseline and with which to identify assets susceptible to effects related to setting change. The Zone of Theoretical Visibility (ZTV/s) for the Project will also be used to identify any designated heritage assets which may be susceptible to effects related to setting change beyond 3km.

Data Collection - Desk Based

10.30 The sources listed under the Information Sources section above will also be used for baseline information to inform the historic environment assessment for the EIA. It will also use the Project ZTV/s to assist in identification of assets which may be susceptible to effects related to setting change. Additional information will be collated via desk-based assessment including use of readily accessible documentary evidence[97] with primary archival research where necessary. The assessment will be informed by targeted walkover survey, including infrastructure locations, and site visits to heritage assets likely to experience effects related to setting change. Should any previously unknown heritage assets be identified during the walkover survey an appropriate record (i.e. location, extent, apparent form of and significance of asset) will be made. A photographic record will be made of the walkover survey and site visits and a selection of images utilised in the baseline reporting.

10.31 The results of the assessment process will be reported as a Historic Environment Desk-based Assessment (HEDBA). This will cover:

- Baseline context for heritage assets, including an appropriate archaeological and historical background;
- Identification of assets susceptible to effects – commentary on their heritage significance, including contribution of setting and importance (level of significance);
- Likely effects to assets as a result of:
  - Direct physical effects; and
  - Direct effects resulting from setting change.

10.32 The HEDBA will include information derived from asset specific surveys/studies as necessary, such as geophysical survey.

10.33 The ES chapter will include an appropriate summary of the conclusions of the HEDBA, plus any other supporting surveys/studies, and detail the likely significant effects of the Project.

[95] While there are slight difference in the definition of setting between the Historic England setting guidance and Setting of Historic Assets in Wales (Cadw, 2017), the same assessment process is adopted by both documents.
[96] Initial baseline analysis may indicate that effects will be confined closer to the Project. Any associated refinement to the Study Area will be subject to post-scoping consultation with relevant consultees (i.e. Cadw, Historic England, local planning authority archaeological and conservation advisors).
[97] Sources available online or through subscriptions such as historic mapping and Tithe Award information.

Data Collection - Field Surveys

10.34 It is anticipated that some form of targeted geophysical survey will be required to inform the EIA, both to aid design evolution and to provide appropriate baseline information for assessment. It is not possible at this stage to identify survey areas as this will be informed by the results of further baseline research. It is likely that geophysical survey will be undertaken in areas where permanent infrastructure is proposed and there is either a heightened level of potential for previously unknown buried archaeological remains or where there are known archaeological remains whose extent is unclear. Should the Project design include areas of undergrounding, this is predicted to result in larger areas needing to be surveyed.

10.35 Further consultation will be undertaken with Cadw, Historic England, CPAT and Shropshire Council historic environment team, as appropriate, post-scoping to establish the scope of field survey that would be required.

Assessment Method

Assessing Heritage Significance

10.36 In historic environment policy and guidance, the significance, hereafter referred to as 'heritage significance' to disambiguate from the EIA concept of 'significance [of effect]', of a heritage asset comprises a series of qualities, known as 'heritage values'. The heritage significance of assets will be articulated using the heritage values in Conservation Principles (English Heritage, 2008).[98] The description of an asset's heritage significance will include assessment and discussion of whether and how an asset's setting contributes to its heritage significance.

Importance

10.37 Whilst heritage values help describe the heritage significance of assets, they do not articulate the relative importance or level of significance of assets. The importance of a heritage asset is a measure of the degree to which the heritage significance of that asset is sought to be protected through, for example, legislation and planning policy. Determining the importance of a cultural heritage asset is a key component in the process as it will influence the way in which decisions are made during the development of a proposal as well as the weight to be given it by the decision-maker.[99] For the purposes of the ES, the 'importance' of assets will be ascribed informed by the following criteria, designation criteria and, where relevant, regional archaeological research frameworks:

- **High** - assets of national importance,[100] comprising designated heritage assets and non-designated heritage assets of demonstrably equivalent level of heritage significance.
- **Medium** - assets of regional importance, for example those identified by regional research priorities, via engagement with relevant consultees or through the assessment of their heritage significance.
- **Low** - assets of local importance.
- **Uncertain** - assets of uncertain importance.

Effect levels

10.38 Effects to assets will be expressed with reference to the degree of harm that will be created. The NPPF outlines three levels of harm; total loss, substantial harm and less than substantial harm. This may be understood as the overall effect to an asset and equates most closely to an extent to the concept of 'significance of effect' commonly used in EIA.

10.39 The following levels of effect, drawing on Section 5.9 of NPS EN-1, will be used to convey the Project's predicted effects to heritage assets:

- Total loss – removal of the entire heritage asset.

[98] Conservation Principles for the sustainable management of the historic environment in Wales (Cadw, 2011) is an adaption of the conservation principles developed by English Heritage (2008) and the approach to assessment is therefore comparable.
[99] PCHIA, p. 9
[100] Initial review of the Study Area indicates that no assets of greater than national importance are present, should analyses during the EIA stage indicate that these are present then post-scoping consultation will be undertaken with relevant consultees to agree an appropriate level of value and criteria for use in the ES (e.g. 'Very High' – assets of international importance).

- Substantial harm – change or changes which either remove altogether or very much reduce a heritage asset's significance.
- Less than substantial harm – change or changes which do not remove altogether or very much reduce a heritage asset's significance.
- None – the proposed Project will leave the asset's heritage significance unaffected.
- Beneficial – the proposed Project will enhance the heritage significance of the asset.

10.40 The level of effect ascribed will be supported by a description of how the Project will affect the asset's heritage significance and whether or not this effect will be temporary or permanent. A clear statement will be made as to whether or not an effect is considered to be a significant effect in terms of the EIA regulations. Without prejudice to the findings of the assessment, **total loss** or **substantial harm** to a **high** value heritage asset, i.e. a designated heritage asset or non-designated asset of demonstrably equivalent value, will be considered to be a significant effect in the context of the EIA Regulations.

Consultation

10.41 The Proposed consultees and bodies to be consulted with for the provision of information are detailed in **Appendix C.**

Likely Significant Effects

Embedded and Standard Mitigation Measures

10.42 In the first instance the Project will seek to avoid and minimise effects by design. This will primarily be achieved by close involvement of topic specialists in the design process so issues are highlighted at an early stage and design interventions can be made to avoid or minimise harm to assets as far as reasonably practicable. Topic specialists will also input to the Construction Environmental Management Plan (CEMP) to design realistic control measures to avoid accidental damage to heritage assets during the construction.

10.43 Where interaction of the Project and heritage assets cannot be avoided, good practice and additional mitigation measures to prevent, reduce, and/or where possible enhance these effects will be proposed.

Potential Effects Scoped into the Assessment

10.44 At this stage, the following potential effects, including cumulative effects, appear to have potential to arise as a result of the Project so are scoped in:

- Direct physical effects to heritage assets arising during the construction; and
- Direct effects resulting from setting change for assets during operation.

Potential Effects Scoped Out of the Assessment

10.45 On the basis of the work undertaken to date, the professional judgement of the assessment team and experience from other similar projects and consultation responses, it is proposed that the following effects can be scoped out due to the design evolution process and implementation of standard good practice construction measures:

- Direct physical effects to heritage assets during operation and maintenance (since direct physical effects will only occur during construction);
- Direct physical effects to assets beyond the land required for construction;
- Direct effects resulting from setting change during construction due to the temporary nature of construction activities;
- Indirect physical effects resulting from construction[101]; and

[101] Indirect physical effects can also occur at any stage of a development to heritage assets which lie outside the construction footprint. For instance, adverse impacts due to changes in groundwater levels which can affect the preservation of waterlogged archaeological remains, or damage to buildings and structures from vibration arising from construction plant and machinery.

- Effects during decommissioning.

Approach to Additional Mitigation

10.46 Owing to the nature of the Project, it is envisaged that mitigation after design freeze is likely to focus on addressing direct physical effects to heritage assets, particularly those to below-ground heritage assets (buried archaeological remains). The approach to mitigation will be guided by industry common practice and appropriate procedures as laid out in the relevant CIfA standards and guidance documents and consultation with the relevant historic environment advisory body (e.g. CPAT, Shropshire Council).

Proposed Scope of the EIA

10.47 **Table 10.1** provides a summary of the proposed scope of the EIA.

Table 10.1: Proposed EIA Scope

Matter	Scoped in/out	Justification
Direct physical effects to heritage assets within the Project arising during the construction	Scoped In	Potential for Likely Significant Effects
Direct effects resulting from setting change during the operation	Scoped In	Potential for Likely Significant Effects
Cumulative effects	Scoped In	Potential for Likely Significant Effects
Direct physical effects during operation	Scoped Out	Direct physical effects will only occur during construction
Direct physical effects to assets beyond the Proposed Development footprint	Scoped Out	There will be no direct physical effects to heritage assets beyond the Project footprint as direct physical effects can only occur within the areas where construction will take place.
Direct effects resulting from setting change during construction	Scoped Out	Direct effects resulting from setting change during construction due to the temporary nature of construction activities.
Indirect physical effects resulting from construction.	Scoped Out	Given the nature of the receiving environment and the Project indirect physical effects are not predicted to occur to heritage assets beyond the Project footprint.
Effects during decommissioning	Scoped Out	Decommissioning of the Project will be carried out in line with the legislation and guidance current at the time of decommissioning.

Questions for Consultees

Q10.1: Do consultees consider the Study Area appropriate?

Q10.2: Are there any other relevant consultees who should be consulted about this topic?

Q10.3: Are consultees aware of any other supplementary guidance of relevance to assessment of effects to heritage assets?

Q10.4: Is the approach to the assessment of effects, including those effects scoped in and out and the cumulative assessment, appropriate?

Q10.5: Is the approach to surveys, including geophysical survey, considered appropriate?

Chapter 11
Traffic and Transport

Introduction

11.1 This chapter sets out the proposed approach to the assessment of likely significant effects of the construction and operation of the Project on Traffic and Transport.

Study Area

11.2 The Study Area for Traffic and Transport comprises the area directly affected by the Project and will be finalised and presented in the ES once the proposals have been progressed and tower locations have been identified. The Study Area will include those transport links which provide access between the Scoping Corridor and the Strategic Road Network where the Project is predicted to generate a significant increase in traffic flows. For the purpose of this chapter, the Study Area is assumed to be the Scoping Corridor, plus those transport links that provide access to the Strategic Road Network.

11.3 As the iterative design process continues, the Study Area will be refined to comprise the proposed alignment and siting of all infrastructure required for the operation of the Project as well as the temporary use of infrastructure required for construction of the Project.

Existing Conditions

Information Sources

11.4 The following sources of information have been reviewed during desk-based research to inform this Scoping Report:

- OS Mapping including OS Open Roads to inform the type of roads within the Study Area;
- Railway line information;
- Shropshire Adopted Highways data; and
- Powys Adopted Highways data.

Baseline Conditions

11.5 Across the Scoping Corridor there are a number of A Roads which interact with it, 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
- 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.

11.6 There are numerous B and unclassified roads within the Scoping Corridor, and a railway which the Project interacts with in one location.

11.7 The key Traffic and Transport sensitive receptors are likely to be:

- Residents;

- Workplaces;
- Vulnerable groups of people such as elderly, children, or disabled;
- Sensitive locations such as churches, hospitals, schools and historical buildings;
- Pedestrians;
- Cyclists;
- Rail Network and Users;
- Open spaces and recreational sites; and
- Tourist and visitor attractions.

Future Baseline

11.8 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.

11.9 Future baseline traffic flows will be derived using TEMPro software to extract National Trip End Model [102] traffic growth factors.

Data Collation and Assessment Methodology

Legislation and Guidance

11.10 Relevant guidance specific to the assessment of Traffic and Transport that will inform the assessment comprises of:

- General approaches and guidance outlined in **Chapter 5: Planning Policy Context**;
- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a)
- Environmental Assessment of Traffic and Movement[103] guidance document;
- WelTAG[104];
- Mid Wales Joint Local Transport Plan 2015[105];
- TAG[106]; and
- Shropshire Local Transport Plan 2011-2026[107].

Data Collection- Desk Based

11.11 The baseline assessment will be informed by a desk study which will utilise the following data sources.

- Identification of existing traffic monitoring locations and data sources to determine existing and future baseline traffic flows. The Department for Transport has a network of annual Count Points that provide baseline traffic data, with several in place along the A458, A483, A490 and A495. Local authorities may also hold traffic data for local roads.
- Accident data for up to five years will be reviewed where necessary at locations to be determined through consultation with the local highways authority.
- The existing road network, where access is required for the construction of the Project will be examined and described, including the existing access arrangements.

[102] Department for Transport (2023) National Trip End Model (NTEM).
[103] Davis, S., Hoare, D., Howard, R. (2023) Institute of Environmental Management and Assessment (IEMA): Environmental Assessment of
[104] Welsh Government (2017) Welsh Transport Appraisal Guidance.
[105] TraCC (2015) Mid Wales Joint Local Transport Plan
[106] Department for Transport (2022) Traffic Appraisal Guidance.
[107] Shropshire Council (2011) Shropshire Local Transport Plan 2011-2026.

- Any sensitive receptors at and along the access to all locations affected by the development traffic will be identified, described and mapped with particular reference to those impacted by an increase in vehicle movements on pedestrian amenity such as access to schools, nursing homes, healthcare and residential areas.

Data Collection- Field Surveys

11.12 It is not anticipated that any field surveys will be needed due to making use of the publicly available data. The major roads in the vicinity of the Project benefit from a high level of existing Department of Transport data.

11.13 However if particularly sensitive locations are identified as the Project progresses, which could require more detail assessment, location-specific Automatic Traffic Counts (ATC) can be commissioned. These record vehicle flows, classifications and speeds over a period of seven days. The surveys must be undertaken during 'neutral' operation periods (March through November, excluding August, and avoiding holidays/local half-terms/abnormal conditions).

Assessment Method

11.14 A staged approach will be followed for the assessment as follows:

- Identify up to date guidance, standards and methodologies for traffic flow prediction and embedded mitgation measures as appropriate;
- Assess the impact of the Project on the existing road and junction network at or immediately surrounding the proposed construction access arrangements;
- Assess the effect of the Project on the local public transport network;
- Consider and advise on the potential traffic implications arising from temporary access locations;
- Assess the impacts of the proposals on sensitive receptors;
- Identification of additional mitigation measures as appropriate; and
- Identification of any effects remaining after additional mitigation measures have been applied. The magnitude and significance of any of these 'residual effects' will be clearly presented.

11.15 The potential impacts will be assessed against the following categories defined in the IEMA guidance:

- Severance of communities
- Road vehicle driver and passenger delay
- Non-motorised user delay
- Non-motorised amenity
- Fear and intimidation on and by road users
- Road user and pedestrian safety
- Hazardous/large loads

Consultation

11.16 The Proposed consultees and bodies to be consulted with for the provision of information are detailed in **Appendix C.**

Likely Significant Effects

11.17 This section sets out the likely significant effects of the Project on Traffic and Transport. This assumes that relevant embedded mitigation measures are in place before assessing the impacts.

Embedded and Standard Mitigation Measures

11.18 Reflecting IEMA guidance on delivering proportionate EIA (IEMA 2017), the scope and assessment assumes that relevant embedded and standard good practice applied measures are in place. These would include:

- A Construction Environmental Management Plan (CEMP) will be developed and included alongside the ES. This will support the application for a DCO and will be implemented so that likely significant effects on the environment during the construction phase of the Project are avoided, minimised or mitigated; and
- An Outline Construction Traffic Management Plan (OCTMP) which will also form part of the mitigation for the Project. This will outline construction vehicle routeing 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; and
- The provision of updates relating to traffic movements associated with vehicles accessing the site on the Project website/Twitter feed and or a newsletter.

Potential Effects Scoped into the Assessment

Construction

11.19 The primary Traffic and Transport likely significant impacts associated with the Project would be as a direct result of increased traffic flows on the surrounding roads, being used by HGVs and construction workers. The likely significant effects on the sensitive receptors would be included in the assessment of construction traffic. This is where the flows generated by the Project have increased the baseline traffic and HGV flows by 30% or 10% in sensitive areas, such as SSSIs or AONBs (as determined by the IEMA 2023 Guidance Document).

11.20 As construction traffic will be temporary and may route via the strategic road network, it could cause severance in places on the network through increased difficulty for pedestrians crossing, giving rise to likely adverse significant effects.

11.21 Construction traffic has the potential to increase driver and bus delays due to increased road usage from the construction vehicles, as well as increasing journey times for pedestrians and cyclists due to the closure of routes to facilitate the construction of the Project. These can result in potential adverse significant effects.

11.22 Additionally, construction traffic is made up of a quantity of HGVs which could have an adverse impact on other highway users in the area, increasing fear and intimidation as defined in the IEMA guidance.

Potential Effects Scoped Out of the Assessment

Operation and Decommissioning

11.23 It is proposed that all effects of the operational and decommissioning phase of the Project are scoped out. This is because these phases are unlikely to cause significant effects. Any operational traffic would be limited to routine maintenance and inspection activities, which would be less than the 30% (or 10% in sensitive areas) baseline criteria.

Approach to Additional Mitigation

11.24 Throughout the EIA process any additional mitigation measures will be developed depending on the level of likely significant effects of the Project on the sensitive receptors.

11.25 There is no mitigation proposed for the operational or decommissioning phases of the Project as there are unlikely to be any significant effects.

Proposed Scope of the EIA

11.26 **Table 11.1** provides a summary of the proposed scope of the EIA.

Table 11.1: Proposed EIA Scope

Matter	Scoped in/out	Justification
Construction effects on severance	Scoped In	Any construction traffic will be temporary and will be expected to route via the strategic road network for the majority of the journeys. Therefore this could cause severance in places on the network.
Construction effects on driver and bus delay	Scoped In	Due to increased construction traffic, this has the potential to increase congestion and delays on the local road networks.
Construction effects on pedestrian and cyclist delay	Scoped In	There could be the closure and/or diversion of pedestrian and cycling routes to facilitate construction. This would lead to increased journey times and delays for any users.
Construction effects on amenity, fear and intimidation	Scoped In	A proportion of HGV's would be used during construction which could have an adverse impact on the experience of the other highway users in the area.
Construction effects on accidents and safety	Scoped In	The construction traffic will have a proportion of HGVs, with frequent and temporary changes to the road network to facilitate the construction. This could lead to an increase in the number of road traffic accidents in the area.
Operational effects on traffic and transport	Scoped Out	Any traffic and transport impacts associated with the operational phase of the Project will be limited to routine maintenance and repair. Therefore it is proposed that all likely significant effects during the operational phase are scoped out.

Questions for Consultees

Q11.1 Is the proposed field survey methodology acceptable, in the event they are necessary?

Q11.2: Are the proposed matters to be scoped out acceptable?

Chapter 12
Noise and Vibration

Introduction

12.1 This chapter sets out the proposed approach to the assessment of likely significant effects of noise and vibration associated with the construction and operation of the Project.

Study Area

12.2 For the purposes of Scoping, the Scoping Corridor shown on **Figure 1.2** has been used as the basis for the Study Area for identifying baseline receptors.

12.3 The Study Area for potential construction noise effects will be 500 metres (m) from the proposed works (at this stage, this is based on the Scoping Corridor): beyond this distance, no significant effects are expected (based on guidance of BS 5228-1, referenced below) the type of activities potentially involved and the experience of the design team of similar projects).

12.4 Construction vibration effects would be more localised, and the Study Area would be restricted to receptors within 100m of relevant activities, as levels would reduce to imperceptible levels beyond this distance based on the guidance of BS 5228-2 and LA111.

12.5 Operational noise from the proposed collector substation will be considered within a distance of approximately 1 kilometre (km) from the substationbased on guidance of BS 4142, reference below , the type of equipment potentially involved and the experience of the design and assessment team of similar projects.

Existing Conditions

Information Sources

12.6 The baseline assessment has been informed by a desk-based study using the following information sources:

- OS mapping;
- OS residential data to inform the location of sensitive receptors including residential dwellings, schools, and healthcare facilities;
- Noise and soundscape action plan 2018 to 2023 (2018)[108]; and
- Strategic noise maps of England (2017)[109].

Baseline Conditions

12.7 The existing baseline noise environment within and around the Scoping Corridor is mostly characterised by ‘natural’ sources such as wind disturbed vegetation or animals, with some varying contribution from anthropogenic sound sources such as road traffic, trains in some cases, and agricultural activity. In particular, the Scoping Corridor includes A-roads, such as the A495, A483, A5 or A458, which will generate relatively high levels of road traffic noise in their vicinity. There were no Noise Action Planning “priority areas” (Wales) or “Important Areas” (England) identified in strategic noise mapping exercises as those where dwellings are exposed to particularly high noise levels.

[108] Welsh Government, Noise and soundscape action plan 2018 to 2023, December 2018.
[109] England Noise and Air Quality Viewer. Available at: http://www.extrium.co.uk/noiseviewer.html (accessed 06.11.2023).

12.8 No significant baseline sources of vibration are generally likely to be present within and around the Scoping Corridor and baseline vibration levels are therefore considered to be negligible in most cases[110]. This is in any case not relevant to the assessment of the Project based on the methodology described below based on assessment against fixed thresholds.

Future Baseline

12.9 Environmental noise and vibration levels in the area are likely to remain largely similar to those currently experienced in the short term, with the exception of any other major developments which would affect these levels.

Data Collation and Assessment Methodology

Legislation and Guidance

12.10 In addition to the general approach and guidance outlined in **Chapter 4** , the assessment of noise and vibration effects will have regard to the following guidance documents:

- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a)[111];
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2024b)[112];
- Planning Policy Wales (PPW, 2021)[113];
- Technical Advice Note (Wales) 11: Noise (TAN 11, 1997)[114];
- Noise and soundscape action plan 2018 to 2023 (2018)[108];
- Revised planning guidance in relation to air quality, noise and soundscape, draft for consultation (2022)[115];
- Draft Noise and Soundscape Plan for Wales 2023-2028 (2023)[116];
- National Planning Policy Framework (NPPF, 2023)[117];
- Noise Policy Statement for England (NPSE, 2010)[118];
- Planning Practice Guidance (PPG) – Noise (2019) and Minerals (2014)[119];
- British Standard 5228:2009 (Amendment, 2014) Code of practice for noise and vibration control on construction and open sites. Noise. Part 1: Noise (BS 5228-1) and Part 2: Vibration (BS 5228-2)[120];
- British Standard 4142 2014-A1 2019: Methods for rating and assessing industrial and commercial sound (2019)[121];
- Design Manual for Roads and Bridges, LA 111 Noise and vibration'[122]; and
- Minerals Technical Advice Note (Wales) 1 (2004)[123].

[110] Some vibration may be perceptible within 50 m from some train lines for example or other localised sources.
[111] Department of Energy Security and Net Zero (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 (accessed 18/01/2024)
[112] Department for Energy Security and Net Zero (2024), 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 18/01/2024).
[113] Welsh Government, Planning Policy Wales, Edition 11, February 2021.
[114] Welsh Government, Planning Guidance (Wales), Technical Advice Note (Wales) 11, Noise, 1997.
[115] Welsh Government, Revised planning guidance in relation to air quality, noise and soundscape, "Technical Advice Note 11: Air Quality, Noise and Soundscape", draft for consultation (2022).
[116] Welsh Government, Draft Noise and Soundscape Plan for Wales 2023-2028, draft for consultation, June 2023.
[117] Department for Levelling Up, Housing and Communities (2023), National Planning Policy Framework.
[118] Department for Environment, Food and Rural Affairs (2010). Noise Policy Statement for England (NPSE).
[119] Department for Levelling Up, Housing and Communities, Planning Practice Guidance (PPG), Noise (2019) and Minerals (2014).
[120] British Standards Institute, BS 5228:2009-A:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise' and Part 2: Vibration'.
[121] British Standard Institute (2019). BS 4142 2014-A1 2019: Methods for rating and assessing industrial and commercial sound.
[122] Highways England, Transport Wales. 'Design Manual for Roads and Bridges, LA 111 Noise and vibration', revision 2 (2020).
[123] Welsh Government, Minerals Planning Policy (Wales), Minerals Technical Advice Note (Wales) 1: Aggregates, National Assembly for Wales, 2004.

12.11 In England and Wales, there are two legislative instruments which address the effects of environmental noise with regard to construction noise, vibration and nuisance; the Environmental Protection Act 1990 (EPA) and the Control of Pollution Act 1974 (CoPA). The EPA defines the powers for local authorities to investigate and control statutory nuisance from noise. The CoPA provides two means of controlling construction noise and vibration. Section 60 provides a Local Authority with the power to impose at any time operating conditions on a development site. Section 61 allows a developer to negotiate a set of operating procedures with a Local Authority prior to commencement of site works. Notwithstanding these powers, the aim of the planning system is to minimise and control construction and operational noise levels where it is appropriate and necessary to do so.

12.12 For detailed guidance on construction noise and its control, both NPS EN-1 and Annex B of TAN 11 refer to British Standard BS 5228. BS 5228-1 provides guidance on a range of considerations relating to construction noise including the legislative framework, general control measures, example methods for estimating construction noise levels and example criteria which may be considered when assessing effect significance. Similarly, BS 5228-2 provides general guidance on legislation, prediction, control and assessment criteria for construction vibration.

12.13 Annex B of TAN 11 also makes reference to the BS 4142 standard for assessing noise from industrial and commercial developments, including fixed plant such as that at the proposed collector substation.

12.14 Welsh and English planning guidance on surface mineral extraction is relevant to the types of mineral extraction activity associated with site construction works and borrow pit excavation. Reference should be made to Minerals Technical Advice Note (Wales) 1: Aggregates (MTAN1) and Planning Practice Guidance - minerals. BS 5228-1 and BS 5228-2 also provide guidance relating to surface mineral extraction including the assessment of noise and vibration impacts associated with quarry blasting.

Data Collection- Desk Based

12.15 A desk study will be undertaken to identify any sensitive noise receptors in the Study Area. The sensitive receptors will comprise residential dwellings, as well as schools and healthcare facilities (if relevant), as referenced in NPS EN-1 and TAN 11. Commercial and industrial receptors are not referenced as noise-sensitive in NPS EN-1 or TAN 11as they are of lower sensitivity to noise and vibration; therefore, they are unlikely to experience significant adverse effects from the Project and are not proposed to be considered in the ES.

Data Collection- Field Surveys

12.16 The assessment of construction noise will mainly be based on fixed thresholds, derived from the guidance referenced in the guidance section above, on the basis of the largely rural nature of the Scoping Corridor. It is nevertheless proposed to undertake some sample baseline noise monitoring at a sample of specific representative locations along the proposed route.

12.17 As the potential for significant operational noise effects from the Project components is also considered unlikely and is proposed to be scoped out (as detailed below), it is generally not proposed to undertake baseline background noise monitoring to inform a detailed operational noise assessment.

12.18 The only exception would be regarding the potential for operational noise from the proposed collector substation. It is likely that background noise levels representative of the nearest noise-sensitive receptors will have recently been collected as part of the assessment for the Llyn Lort Energy Park. The suitability of this existing baseline data for the assessment of potential noise from the collector substation will be considered in consultation with Powys County Council and referenced if applicable. In addition, new background noise monitoring would also be undertaken to supplement this existing data at the nearest affected residential property(ies) or at a representative location.

12.19 No noise or vibration baseline surveys are proposed for any ecological sites and as such this element is Scoped Out.

Assessment Method

12.20 The assessment of the magnitude of change for construction noise and vibration will compare predicted levels with standard guideline levels, as well taking into account the potential duration and nature of the different activities. For noise, these guidelines thresholds will be determined from guidance in Annex E of BS 5228-1, taking into account the generally rural character of the area. For vibration, reference will be made to guidance in Annex B of BS 5228-2. Predictions will follow the methodology of BS 5228 based on reference emission data for different activities (for noise and vibration). If the potential for significant effects is identified, suitable mitigation measures will be determined.

12.21 The analysis of the potential impacts of rock extraction from borrow pits (should this be required) by means of blasting operations will be made in accordance with MTAN1, PPG and BS 5228.

12.22 BS 4142 provides an objective method for rating the potential impacts from industrial and commercial operations, including fixed plant installations such as that which could be installed at the collector substation. The standard describes the means of determining noise levels from these sources, including corrections for the character of the noise. The standard also provides guidance on undertaking baseline noise surveys including consideration of suitable equipment, weather condition and other factors such that this survey can be representative of the noise climate generally experienced by the residential receptors considered.

12.23 The potential operational noise generated by the proposed collector substation will be predicted based on typical noise emission levels using indicative manufacturer selections and experience of similar developments. Predicted noise levels at the nearest receptors will be assessed against relevant baseline noise levels in accordance with the methodology of BS 4142. Account would be taken of the potential character in the noise in accordance with the standard and considering relevant contextual factors.

Consultation

12.24 The Proposed consultees and bodies to be consulted with for the provision of information are detailed in **Appendix C.**

Likely Significant Effects

Embedded and Standard Mitigation Measures

12.25 The design of the Project will seek to avoid proximity to settlements where possible as these are sensitive to noise and vibration. Further embedded measures would be incorporated in the final design of the Project to maximise distance to dwellings where it is possible and appropriate to do so.

Construction

12.26 The management of noise and vibration from construction activities would be included in the Construction Environmental Management Plan (CEMP), described in **Chapter 3**, which could include measures such as:

- Applications for prior consent under section 61 of the Control of Pollution Act 1974;
- Restrictions on core working hours; and
- Standard good practice measures such as use of Best Practical Means to reduce disturbance associated with noise and vibration during construction as far as reasonably practicable, with reference to relevant guidance in BS 5228 (parts 1 and 2).

12.27 In addition, construction traffic (including heavy vehicle movements in particular) would be managed and restricted to certain hours as part of the measures implemented through the Construction Traffic Management Plan (CTMP).

12.28 The application for a DCO will be accompanied with outline versions of the CEMP and CTMP with the final versions of both management plans secured through Requirements included in the DCO.

Operation

12.29 The design and selection of components for the overhead lines, collector substation and Cable Sealing End Compound (CSEC) would conform with standard industry best practice to minimise the potential from any noise generation. Noise generated by any faulty components would be identified and cleaned or replaced as required as part of maintenance activities.

12.30 The design of the collector substation will also take into account proximity to noise-sensitive receptors.

Potential Effects Scoped into the Assessment

Noise from Construction Activities

12.31 In assessing the effects of construction noise and vibration, it is accepted that the works are of a temporary nature. **Chapter 3** identifies the expected construction periods associated with overhead line (OHL) and underground cabling (UGC) infrastructure. The activities associated with the construction of the overhead line (including CSEC) or underground cabling and associated ancillary works, are linear in their geographical extent. The noise generated by these construction activities will therefore quickly diminish as construction progresses, moving the activity further away from noise-sensitive locations within a relatively short period of time. These activities are therefore unlikely to be associated with significant effects due to their limited extent in terms of duration.

12.32 However, other activities such as construction of the collector substation or quarrying of borrow pits (if required) may need to be undertaken for a more sustained period in a particular location, which could be associated with potential significant noise effects.

12.33 Working hours may also include some weekend periods (Saturday afternoons and Sundays) to minimise the overall duration of the construction programme. Furthermore, if required trenchless techniques (for example, Horizontal Directional Drilling) may be used for the underground cabling to cross obstacles like roads, railways, service connections or watercourses: this may require drilling to continue for at least 24 hours once started, for safety or operational reasons, and therefore outside of standard working hours.

12.34 Construction work locations associated with the Project will be accessed by different access points which will be spread along the Project area and will be geographically separate. As a result, the construction traffic movements will be distributed over the existing road network and proposed access tracks throughout the construction programme. As such, any increase in traffic associated with these works is generally unlikely to be sustained in such a way that it would represent a significant noise effect[124]. However, there may be localised noise impacts associated with the construction traffic in some areas, particularly if associated with weekend works, leading to potential significant noise effects. This will therefore be considered in the assessment, using the guidance set out in the DMRB and BS 5228-1.

12.35 Some of the construction works and traffic could therefore lead to significant adverse noise effects and this will be scoped in, with the assessment focusing on potentially significant activities. The need for any specific additional mitigation and management measures which may be required will be identified.

Vibration from Construction

12.36 The nature and duration of most of the works likely to be required for the Project are such that the risk of significant effects relating to ground borne vibration are generally very low. However, blasting may be required as part of quarrying at borrow pits as part of the Project, which can be associated with air overpressure and vibration generation. This will therefore be scoped in. The potential associated vibration effects would be assessed in line with MTAN1/PPG as well as BS 5228-2.

Operational Noise (Collector Substation)

12.37 Operational noise from electrical equipment associated with the collector substation could also potentially affect neighbouring sensitive receptors. The potential operational noise effects will be assessed in line with BS 4142.

Potential Effects Scoped Out of the Assessment

Noise and Vibration from Construction Traffic

12.38 Occasional momentary noise and vibration can arise when heavy vehicles pass dwellings at very short separation distances. It is therefore proposed to scope in this aspect of the assessment.

[124] Guidance in DMRB suggests that significant effects would arise for a short-term increase in traffic noise of more than 3 dB, which would generally require a doubling in traffic levels (on roads that already carry substantial traffic) which is unlikely to occur for any sustained period.

Operational Noise (Overhead Lines and Underground Cables) and Maintenance Noise

12.39 Under dry weather conditions, 132kV OHLs generally do not produce any audible noise. But in wet weather, the presence of protrusions on the conductor surface (such as water droplets) can cause electric fields to propagate in the air (so-called 'corona discharge') which can be a source of noise, albeit at relatively low level. The generation of this noise is minimised as part of modern overhead transmission line design. However, during wet weather conditions, increased baseline noise levels are generally experienced.

12.40 Based on experience from the EIA team of 132kV OHLs, levels of noise from this type of overhead line, even during worst-case conditions (wet weather), are very low (less than 20 dB(A)) and not significant. If required and included within the Project, underground cables would not produce any noise during operation. On this basis, it is proposed to scope out the assessment of operational noise from the overhead lines and potential underground cables. Some maintenance activities may produce noise, but this would be for very limited periods and unlikely to be associated with any significant effects.

12.41 It is therefore proposed to scope out operational and maintenance noise. Specific measurements of baseline background noise levels will therefore not be required (as set out above).

Noise and Vibration from Operational and Maintenance Traffic

12.42 Levels of traffic during the operational phase, associated with maintenance activities, would be sporadic and likely to be associated with negligible noise or vibration effects. It is therefore proposed to scope this out.

Operational Vibration

12.43 None of the infrastructure which forms part of the Project during operation is likely to generate anything other than negligible levels of vibration during operation. Some maintenance activities, such as drilling and vehicle movements may produce vibration, but this would be localised, very low level and for very limited periods and unlikely to be associated with any significant effects. It is therefore proposed to scope this aspect out.

Approach to Additional Mitigation

12.44 Where potentially significant noise effects are identified, measures to prevent, reduce and where possible offset these adverse effects will be proposed. The mitigation measures proposed will draw on guidance and best practice and will be appropriate to the nature and significance of the effect identified.

12.45 Possible additional mitigation measures may include:

- Additional localised restrictions on working hours in certain cases; and
- Localised screening or management.

12.46 For operational noise from the collector substation, standard engineering measures such as selection of suitably quiet plant, use of enclosures and silencers, and solid screening, may be considered if required to reduce operational noise levels at neighbouring receptors.

Proposed Scope of the EIA

12.47 **Table 12.1** provides a summary of the proposed scope of the EIA.

Table 12.1: Proposed EIA Scope

Matter	Scoped in/out	Justification
Noise and vibration from construction activities.	Scoped in	Some activities may be associated with significant effects if not suitably managed.

Matter	Scoped in/out	Justification
Noise from construction traffic.	Scoped in	Potential for significant increases in traffic noise associated with construction will be considered.
Vibration from construction traffic	Scoped out	Occasional momentary vibrations from construction traffic unlikely to lead to significant effects.
Operational Noise (overhead lines and underground cables)	Scoped out	Noise from overhead lines and underground cabling (if required) likely to be negligible.
Operational Noise (collector substation)	Scoped in	Plant noise from the proposed substation could potentially affect neighbouring sensitive receptors.
Maintenance Noise	Scoped out	Maintenance activities likely to be sporadic and limited in time.
Operational and maintenance vibration	Scoped out	No sources of vibration are proposed.
Operational and maintenance traffic noise and vibration	Scoped out	Sporadic maintenance traffic only.

Questions for Consultees

Q12.1: Are you satisfied with the proposed scope of the assessment in terms of noise and vibration?

Q12.2: Do you agree with the proposed approach regarding baseline noise or vibration monitoring?

Chapter 13
Water Resources

Introduction

13.1 This chapter sets out the proposed approach to the assessment of likely significant effects of the construction and operation of the Project on Water Resources.

13.2 The chapter will consider the likely effects on:

- Hydrology including Main Rivers and Ordinary Watercourses;
- Flood risk from all sources including the Project;
- Drainage with due regard to the Sustainable Drainage System (SuDS) hierarchy and water quality;

13.3 Hydrogeology including Private Water Supplies and Groundwater Dependant Terrestrial Ecosystems are covered in Chapter 14.

Study Area

13.4 The Study Area comprises the area that could be directly affected by the Project (assumed for the purpose of this chapter, as the Scoping Corridor) with a 250 metre (m) buffer within which potential effects may occur. Specific features of interest that lie outside of the buffer zone may be included where required for example, if there is a particular hydraulic catchment of interest. The Scoping Study Area is presented on **Figure 13.1**.

13.5 As the iterative design process continues, the Scoping Corridor will be refined to comprise the proposed alignment and siting of infrastructure required for the operation of the Project as well as the temporary infrastructure required for construction of the Project. The Study Area for the EIA will therefore comprise a 250m buffer around the final infrastructure layout.

Existing Conditions

Information Sources

13.6 The work to date has been based on desk based information including:

- Ordnance Survey mapping (contemporary[125] and historical[126]);
- Natural Resources Wales (NRW) mapping and Water Watch Wales data[127];
- Department for Environment, Food and Rural Affairs (DEFRA) mapping[128]
- Environment Agency (EA) mapping datasets[129]
- British Geological Survey (BGS) mapping[130];

[125] Ordnance Survey, 2023.
[126] Landmark Information Group data, 2023.
[127]Natural Resource Wales, 2023. Available at: https://maps.cyfoethnaturiolcymru.gov.uk/Html5Viewer/Index.html?configBase=https://maps.cyfoethnaturiolcymru.gov.uk/Geocortex/Essentials/REST/sites/Flood_Risk/viewers/Flood_Risk/virtualdirectory/Resources/Config/Default&layerTheme=0 (accessed 04.10.2023).
[128] Department for Environment, Food & Rural Affairs, 2023. Magic Maps. Available at: https://magic.defra.gov.uk/MagicMap.aspx (accessed 04/10/2023).
[129] Environment Agency, 2023. GOV.UK. Available at: https://www.data.gov.uk (accessed 04.10.2023).).
[130] VGS. GeoIndex Onshore. Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.183061094.1727182461.1607682458-1383460590.1607682458 (accessed 04.10.2023).).

- Aerial imagery[131]; and,
- County Authority Data requested under Freedom of Information Requests.

Baseline Conditions

13.7 The Study Area crosses a varied landscape including upland plateau areas and lower lying valley systems.

13.8 The Scoping Corridor interacts with several NRW and EA modelled flood zones associated with a number of Main Rivers and smaller/ ordinary watercourses, namely the:

- Afon Einion;
- Afon Banwy;
- Yr Hafesb;
- River Vyrnwy;
- Afon Cain;
- River Tanat;
- Wern Ddu Brook;
- River Morda;
- Oswestry Brook;
- River Perry;and
- Smaller tributaries associated with these watercourses.

13.9 These watercourses fall within the Banwy, Vrynwy, Cain, Tanat, Morda and Severn North Shropshire, and Perry Roden and Tern North Shropshire Catchments as defined by NRW and the EA. Each river is also classified by NRW and the EA in accordance with the Water Framework Directive (River Basin Management Plan) for their chemical and ecological status. Key drivers across all watercourses include nutrients (phosphate), morphology and ecological species presence. The majority of the watercourses are deemed to have a 'high' chemical status, and a 'good' ecological status, but with opportunities needing to be taken to improve the ecological status from 'moderate' to 'good' in some catchments.

13.10 A large proportion of the Scoping Corridor lies along the River Vyrnwy floodplain, or tributaries thereof. The floodplain between Llangyniew and Trefnanney is broad and extends almost across the full width of the Scoping Corridor and is at high risk of flooding, predominantly lying within Flood Zone 3, the highest flood risk zone. There are however within this reach, small pockets of land at higher elevation that are not at high risk of flooding. To the south-west and north-east of this stretch, the flood risk zones are less extensive, however there are still numerous small watercourse crossings with associated medium and high risk of flooding. These areas of medium and high risk are typically more localised around the watercourse and have the potential to be spanned by overhead lines. The flood zones are shown on **Figure 13.1**.

13.11 Based on the setting and existing conditions, there are no formal drainage arrangements which will interact with the Project and surface water runoff will be via greenfield mechanisms.

Future Baseline

13.12 The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed in the EIA.

13.13 With regard to flood risk and drainage, future baseline conditions would be forecast by NRW and the EA, drawing on current best practice guidelines taking into account the likely impacts of climate change on rainfall intensities and where applicable peak river flows.

[131] Google Earth, 2023

13.14 The assessment will consider the future scenario with respect to climate change resilience in regards to flood risk and managing surface water runoff.

13.15 The implementation of future cycles of WFD management plans driving future improvements in the ecological and chemical quality of water bodies would also be considered. However, under the 'do nothing scenario' based on current and future predicted agricultural practices together with future development, there is a likelihood that water quality in the identified watercourses will deteriorate due to the influx of nutrients (phosphate) from farming activities.

13.16 There are no further foreseeable notable changes in future baseline anticipated in relation to Water Resources, either prior to, or during, the construction and operational phases.

13.17 It is assumed that other subsequent proposed developments would be appropriately permitted and operated to prevent the creation of potentially adverse effects.

Data Collation and Assessment Methodology

Legislation and Guidance

13.18 The assessment will be carried out according to the principals contained within the following legislation:

- The EU Water Framework Directive (2007/60/EC);
- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a);
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2024b);
- Groundwater Directive (2006/118/EC);
- Land Drainage Act 1991;
- Water Resources Act 1991;
- Water Environment Regulations 2017;
- Flood Risk Regulations 2009 and,
- Groundwater (England and Wales) Regulations 2009.

13.19 The assessment will be carried out in accordance with the principles contained within the following guidance documents:

- Planning Policy Wales Technical Advice Note 15: Development and Flood Risk. 2004;
- National Planning Policy Framework: Meeting the challenge of climate change, flooding and coastal change. 2023;
- NRW Flood estimation: technical guidance Reference number: GN008. 2017;
- EA Flood estimation technical guidance: Reference number LIT 11832. 2021;
- Welsh Government Statutory standards for sustainable drainage systems – designing, construction, operation and maintaining surface water drainage systems. 2018;
- UK Water Supply (Water Quality) Regulations 2000;
- Environment Agency. 2018 – The Environment Agency's approach to groundwater protection;
- Design Manual for Roads and Bridges: LA 113 Roads drainage and the water environment, March 2020;
- CIRIA Report C532 – Control of Water from Construction Sites;
- CIRIA Report C692 – Environmental Good Practice Onsite. 3rd Ed. 2010; and
- CIRIA Report C753F – The SuDS Manual. 2015.

Additional Data Collection- Desk Based

13.20 In addition to the desk based data collated to date and noted above, the baseline conditions will be identified using a review of available desk based information including;

- Flood model data from NRW and the EA;
- Drainage and flood data from Local Authority Surface Water Management Plans and Strategic Flood Risk Assessments;
- Data defining surface water catchment areas and hydrological properties (e.g. rainfall, slopes, and soil permeability) from the Flood Estimation Handbook webservice[132]
- NRW flood risk data[133] and DEFRA flood risk data[134];
- WFD Cycle 3 data[135].

Assessment Method

13.21 The assessment will be undertaken in accordance with the overarching methodology set out in **Chapter 4** and the assessment will be based on experience and professional judgement with reference to the Design Manual for Roads and Bridges (DMRB) LA113, guided by criteria which will be set out in the ES. Likely significant effects, in the context of the EIA Regulations 2017 would be effects of moderate or major significance.

Consultation

13.22 The Proposed consultees and bodies to be consulted with for the provision of information are detailed in **Appendix C.**

Likely Significant Effects

Embedded and Standard Mitigation Measures

13.23 Reflecting IEMA guidance on delivering proportionate EIA (IEMA 2017), the scope and assessment assumes that relevant embedded and standard good practice measures will be in place. The overriding design principle for the Project will be to seek to avoid or minimise impacts on sensitive water resources receptors.

13.24 Where possible, towers, collector substation and cable sealing end compound will be positioned to avoid impacts on watercourses, PWSs, GWDTEs and other water resources. They will also be positioned to be outside of Flood Zone 2 or 3 where possible.

13.25 For areas/components of the Project within Flood Zones 2 and 3 a Flood Risk Assessment will be carried out to assess risks to the Project from flooding sources and will contain appropriate mitigation measures. Where required, this will include a surface water drainage strategy to meet the requirements of Statutory Standards for sustainable drainage systems.

13.26 A WFD Screening Assessment will be undertaken for each hydraulic catchment through which the Scoping Corridor passes.

13.27 The construction of the Project will be managed by use of the Construction Environmental Management Plan (CEMP). This document will set out the requirements of all contractors working on the Project in adhering to environmental statutory requirements, guidance and best practice. The requirements of the CEMP have been assumed as applied mitigation within the assessment of effects during site construction. The CEMP will include the following measures to manage potential effects on Water Resources:

[132] Flood Estimation Handbook and Flood Studies Report. Available at: https://www.ceh.ac.uk/services/flood-estimation-handbook (accessed 04.10.2023).
[133] NRW. Flood Map for Planning/ Development Advice Map. Available at: https://naturalresources.wales/flooding/flood-map-for-planning-development-advice-map/?lang=en (accessed 04.10.2023).
[134] DEFRA, Flood Map for Planning. Available at: https://environment.data.gov.uk/dataset/86ec354f-d465-11e4-b09e-f0def148f590. (accessed 04.10.2023)
[135] NRW. Water Watch Wales Map Gallery. Available at: https://waterwatchwales.naturalresourceswales.gov.uk/en/ (accessed 04.10.2023).

- Management of surface water during the construction phase, including attenuation and settlement of surface water to reduce silt loads entering waterbodies;
- Proper storage and use of oils, fuels and construction chemicals;
- Provision of Site-worker accommodation and sanitation facilities;
- A construction phase surface water management plan; and,
- Management and removal of waste materials.

13.28 Works within or in close proximity to watercourses will be undertaken in accordance with relevant consents/ permits including Ordinary Watercourse Consent/ Flood Risk Activity Permit.

Potential Effects Scoped into the Assessment

13.29 This section sets out the likely significant effects of the Project on Water Resources. It assumes that the relevant embedded (design measures), standard measures and the expected mitigation for any other consents or permits are in place before assessing the effects.

13.30 This is in accordance with guidance from IEMA as part of preparing a proportional assessment (IEMA, 2022) as set out above.

Drainage with Due Regard to the SuDS Hierarchy and Water Quality

Construction

13.31 Good practice standard mitigation measures within the outline CEMP will minimise the risk of pollution to hydrology, and land drainage receptors during construction by removing the pathway between the source and the receptors for most of the working environment. This will include a construction phase Surface Water Management Plan (SWMP).

13.32 The most sensitive sites regarding pollution risk are where works involve watercourse crossings by underground cable and/or where ground based infrastructure (e.g. towers, substation etc) are located in close proximity to watercourses. The potential risk may be reduced for crossings where trenchless techniques are used and eliminated where the cable is overhead. In addition, works within watercourses and the construction of access tracks across watercourses, will be undertaken with the conditions set out within the consents and permits from the relevant authorities (e.g. Flood Risk Activity Permit or Ordinary Watercourse Consent). With the implementation of standard mitigation measures, no likely significant effects are anticipated and therefore it is proposed to scope drainage and water quality out of the ES during the construction phase.

Operation

13.33 The collector substation and cable sealing end compound design shall include a formal drainage strategy in accordance with the latest climate change predictions, the SuDS hierarchy and will be subject to the SuDS Approving Body (SAB) agreement. This will ensure that there is no increase in flood risk to off-Site receptors.

13.34 During operation of the Project, pollution impact pathways to surface watercourses are not considered to be present as land will be reinstated following completion of the construction phase and there will be no operational discharges. Physico-chemical elements supporting WFD water body status will therefore be safeguarded.

13.35 All maintenance activities will be undertaken in accordance with best practice and manufacturers requirements. Therefore, no likely significant effects on water quality or from increased flood risk and it is proposed that this aspect is scoped out of the ES.

Hydrology including Main Rivers and Ordinary Watercourses

Construction

13.36 Based on the nature of the Project, during its construction there would be no large scale consumptive water uses and no effects on the downstream continuity of flow in watercourses. The potential for likely significant effects on existing water

interests including PWSs is therefore considered to be negligible and no significant effects on hydrology are anticipated. Therefore, it is proposed to scope this aspect out of the ES.

13.37 During construction of the Project, there would be potential for temporary physical disturbance to watercourses. Where possible, such potential impacts will be designed out and where unavoidable, impacts would be short-term in duration. In addition, works within watercourses and the construction of access tracks across watercourses, will be undertaken in accordance with the DCO and / or the conditions set out within the consents and permits from the relevant authorities (e.g. Flood Risk Activity Permit or Ordinary Watercourse Consent). With the implementation of standard mitigation measures, no likely significant effects are anticipated and therefore it is proposed to scope this out of the ES.

Operation

13.38 Due to the nature of the Project, there will be no significant effects on existing water interests including PWSs when the Project is operational. Therefore, it is proposed to scope out this aspect from the ES.

Flood Risk from all Sources

Construction

13.39 As described in the Existing Conditions section above, parts of the Scoping Corridor include watercourses with relatively extensive floodplains primarily the River Banwy and River Vrynwy. During the temporary construction phase there is the potential for the Project to increase flood risk through the formation of compounds, storage of materials and other temporary works e.g. construction of access tracks and temporary watercourse crossings.

13.40 The Project will be accompanied by a Flood Risk Assessment (FRA) which is considered to be standard mitigation and best practice on a project of this scale. The FRA will assess potential flood risk from all sources and provide suitable mitigation where required. In addition, the Project shall consider the presence of flood zones in relation to the siting of towers, compounds, collector substation and cable sealing end compound and will be undertaken in accordance with the DCO and / or the conditions set out within consents and permits from the relevant authorities (e.g. Flood Risk Activity Permit or Ordinary Watercourse Consent), where required. Notwithstanding the above, at present, with the potential for a temporary loss of floodplain storage and/or impediment to flood flows, flood risk from rivers and the sea during construction is proposed to be scoped into the assessment.

13.41 Potential flood risks from other sources (including groundwater, sewers and artificial sources e.g. reservoirs) will be assessed within the FRA. However, based on the Project, it is considered unlikely that these will pose a potential risk and therefore are proposed to be scoped out of the ES.

Operation

13.42 During operation the majority of land required for construction phase will be restored and therefore, potential impacts on rivers and their floodplains across the Project are likely to be limited. Permanent infrastructure along the route will include towers, the collector substation and cable sealing end compound. The towers are considered to be water compatible (subject to mitigation as identified in the FRA) and the collector substation and cable sealing end compound will be, sited such that they are outside of Flood Zones 2 and 3. Based on the limited presence of ground based infrastructure (i.e. towers, collector substation and cable sealing end compound), it is proposed to scope this out of the ES.

Approach to Additional Mitigation

13.43 No additional mitigation beyond the embedded and good practice mitigation measures identified above is considered likely to be required.

Proposed Scope of the EIA

13.44 **Table 13.1** provides a summary of the proposed scope of the EIA.

Table 13.1: Proposed EIA Scope

Matter	Scoped in/out	Justification
Flood Risk (fluvial and pluvial)	Construction – In Operation – Out	Significant effects covered by embedded mitigation in the form of appropriate Flood Risk Assessments for infrastructure. However potential significant effects may remain with the temporary loss of floodplain during construction.
Flood Risk (groundwater, sewers and artificial sources)	Construction – Out Operation - Out	Based on the Project and location of the Scoping Corridor, it is considered unlikely that these sources of flood risk will generate significant effects requiring mitigation. If required, the embedded mitigation and design will identify measures to prevent significant effects to sensitive receptors.
Hydrology	Construction – Out Operation – Out	If works are required within or in close proximity to watercourses additional consent/ permits will be required.
Water quality including drainage	Construction – Out Operation – Out	Embedded mitigation and design will prevent significant effects to sensitive receptors.
Hydrogeology, GWDTEs, PWS and groundwater abstractions	Construction – In Operation – In	Potential temporary and permanent significant effects to sensitive receptors including important water resources, including part of the corridor falling within a Source Protection Zone, and GWDTEs.

Questions for Consultees

Q13.1: It has been assumed that infrastructure to support the transmission (towers etc) will be deemed as water compatible or if not, as essential infrastructure. Please could you confirm that this approach is acceptable?

Q13.2: Given the very localised nature of proposed permanent ground based infrastructure i.e. towers, it has been assumed that formal drainage arrangements will not be required with incidental water returned to ground adjacent to the structure. Please could you confirm that this approach is acceptable?

Q13.3 Are you in agreement that the proposed desk and field surveys are sufficient for the purposes of the EIA?

Chapter 14
Ground Conditions, Geology and Hydrogeology

Introduction

14.1 This chapter sets out the proposed approach to the assessment of likely significant effects of the construction and operation of the Project on Ground Conditions.

14.2 The chapter will consider the potential effects on:

- Geology including Regionally Important Geo-conservation Sites (RIGS);
- Mineral reserves;
- Land instability and mining;
- Contaminated land including landfills;
- Hydrogeology including groundwater abstractions;
- Public and private water supplies; and
- Groundwater Dependant Terrestrial Ecosystems (GWDTEs)

14.3 The potential effects on Peat are covered in **Chapter 15**.

Study Area

14.4 The Study Area comprises the area directly affected by the Project (assumed for the purpose of this chapter, as the Scoping Corridor) with a 250 metre (m) buffer within which effects may occur. The Scoping Study Area is presented on **Figure 14.1**

14.5 As the iterative design process continues during the EIA, the Scoping Corridor will be refined to comprise the proposed alignment and siting of infrastructure required for the operation of the Project as well as the temporary infrastructure required for construction of the Project. The Study Area for the EIA will therefore comprise a 250m buffer around the final infrastructure layout included within the application.

Existing Conditions

Information Sources

14.6 The work to date has been based on desk based information including:

- Ordnance Survey mapping (contemporary[136] and historical[137]);
- Natural Resources Wales (NRW) Data on active[138] and historic[139] landfills;

[136] Ordnance Survey, 2023
[137] Landmark Information Group data, 2023
[138] NRW. Find details of permitted waste sites. Available at: https://naturalresources.wales/evidence-and-data/maps/find-details-of-permitted-waste-sites/?lang=en (accessed 28.08.2023).
[139] Data Map Wales. Historic Landfill Sites. Available at: https://datamap.gov.wales/layers/inspire-nrw:NRW_Historic_Landfill_Sites (accessed 28.08.2023).

- Environment Agency (EA) Data on active[140] and historic landfills[141];
- Natural Resources Wales (NRW) mapping and Water Watch Wales data[142];
- Department for Environment, Food and Rural Affairs (DEFRA) mapping[143];
- BGS Mineral Map of Wales[144];
- Minerals Safeguarding Areas for Shropshire including Telford and Wrekin[145],
- British Geological Survey (BGS) including Coal Authority mapping[146];
- Aerial imagery[147];
- Data on local RIGS, where available;
- County Authority Data requested under Freedom of Information Requests; and
- Planning data.

Baseline Conditions

14.7 The Scoping Study Area covers a wide range of geological environments, typified by superficial deposits of alluvium, glaciofluvial deposits and glacial till especially within valley lows and a variety of bedrock conditions typically found in raised areas of the Scoping Corridor.

14.8 The Scoping Corridor does not fall within a Coal Authority designated Development High Risk Area.

14.9 The Scoping Corridor is largely located within rural areas where properties will include Private Water Supplies (PWS) from both surface and groundwater resources. In urban and semi-rural settings, it is likely that potable water from public water supplies is the primary source. A stretch of up to 7km of the Scoping Corridor, from the National Grid substation search area in the north-east to the A5 is within Zone 3 (total catchment) of a source protection zone for three Groundwater abstractions.

14.10 Based on the variable topography and hydrogeological conditions it is likely that groundwater dependent terrestrial ecosystems (GWDTEs) may be present within the Scoping Corridor. Within the Scoping Corridor, numerous features are present which may interact with the Project leading to a potentially significant effect on sensitive receptors. This includes:

- Graig-wen Quarry and Tan-y-ffridd Quarry RIGS along the A495, north of Glascoed;
- Sand and gravel mineral deposits particularly within river valleys;
- Potential sandstone resource north of Llanfair Caerenion;
- Geological Conservation Review (GCR) sites at Upper Hall and along the Afon Vyrnwy;
- Geological SSSI at Afon Banwy Mathrafal;
- Landfills noted near Llanerfyl, Llansantffraid Sewage treatment works and adjacent to the Afon Vyrnwy;
- Mass movement deposits (landslides) near Llanerfyl.

[140] Environment Agency. Permitted Waste Sites – Authorised Landfill Site boundaries. Permitted Waste Sites - Authorised Landfill Site Boundaries - data.gov.uk (accessed 29.09.23)
[141] Environment Agency. Historic Landfill Sites. Available at: Historic Landfill Sites - data.gov.uk (accessed 29.09.23)
[142]Natural Resource Wales, 2023. Available at: https://maps.cyfoethnaturiolcymru.gov.uk/Html5Viewer/Index.html?configBase=https://maps.cyfoethnaturiolcymru.gov.uk/Geocortex/Essentials/REST/sites/Flood_Risk/viewers/Flood_Risk/virtualdirectory/Resources/Config/Default&layerTheme=0 (accessed 04.10.2023).
[143] Department for Environment, Food & Rural Affairs, 2023. Magic Maps. Available at: https://magic.defra.gov.uk/MagicMap.aspx (accessed 04/10/2023).
[144] BGS. The Mineral Resources Map of Wales. Available at: https://www2.bgs.ac.uk/mineralsuk/download/wales/TheMineralResourceMapsofWales.pdf (accessed 28.08.2023).
[145] BGS. Minerals Safeguarding Areas for Shropshire including Telford and Wrekin
[146] BGS. GeoIndex Onshore. Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.183061094.1727182461.1607682458-1383460590.1607682458 (accessed 28.08.2023).
[147] Google Earth, 2023

Future Baseline

14.11 The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed in the EIA.

14.12 Current projections for the impacts of climate change suggest that the Site will experience drier summers and wetter winters, with increased prevalence of high-intensity rainfall evens. The increased seasonality of rainfall and intensity of rainfall events may affect the integrity of soil and peat deposits, through increased drying or erosion, for example. This potential change to the future baseline shall be considered in the proposed assessment of ground conditions during the EIA process. It may also lead to an increased risk of land instability and soil erosion. This shall be considered and appropriately mitigated within the design process, which itself comprises embedded mitigation.

Data Collation and Assessment Methodology

Legislation and Guidance

14.13 The assessment will be carried out according to the principals contained within the following legislation:

- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a);
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2024b)
- The EU Water Framework Directive (2007/60/EC);
- Groundwater Directive (2006/118/EC);
- Groundwater (England and Wales) Regulations 2009.
- Environmental Protection Act 1990;
- Environment Act 1995;
- Control of Pollution Act 1974; and
- Environmental Permitting Regulations (2016).

14.14 The assessment will be carried out in accordance with the principles contained within the following documents:

- Planning Policy Wales Minerals Technical Advice Notes 1&2: Aggregates and Coal 2004 &2009;
- National Planning Policy Framework (NPPF), 2023;
- Environment Agency. 2018 – The Environment Agency's approach to groundwater protection;
- Institute of Environmental Management & Assessment (IEMA): A New Perspective on Land and Soil in Environmental Impact Assessment, February 2022;
- CIRIA Report C532 – Control of Water from Construction Sites; and
- CIRIA Report C692 – Environmental Good Practice Onsite. 3rd Ed. 2010.

Data Collection- Desk Based

14.15 The baseline conditions will be identified using a review of available desk based information including;

- Commercial Envirocheck report for the Scoping Study Area;
- BGS 1:50,000 and, where available, 1:10,000 scale geological mapping together with published boreholes, mineral sites, mass movement data and sheet memoirs[148] ;

[148] BGS. GeoIndex Onshore. Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.183061094.1727182461.1607682458-1383460590.1607682458 (accessed 28.08.2023).

- BGS mining data including data from the Coal Authority[149]; and
- Soilscapes data set[150].

Data Collection- Field Surveys

14.16 Field surveys will be guided by initial desk-based research and will include:

- Field surveys will be guided by initial desk-based research and will include a targeted walkover survey of water resource/ hydrological features in the proposed location of ground based infrastructure to identify potential impacts to sensitive water resources such as private water supplies and GWDTEs.
- Visual walkover survey of the Scoping Study Area to confirm the presence of key features including mineral sites, landfills, RIGS/ exposures and other potential elements of note; and
- Geomorphological walkover to consider potential slope stability risks.

Assessment Method

14.17 The assessment will be undertaken in accordance with the overarching methodology set out in **Chapter 4** and the assessment will be based on Institute of Environmental Management & Assessment guidance, guided by criteria which will be set out in the ES. Likely significant effects, in the context of the EIA Regulations would be effects of moderate or major significance.

14.18 The baseline information will be assessed in accordance with the methodology within the Land Contamination Risk Management Guidance[151] to identify potential source-pathway-receptor linkages and inform a risk-based assessment of the effects of the Project in relation to Ground Conditions. This risk based assessment will be based on the matrix outlined in CIRIA C552 (CIRIA, 2001) and assume a reasonable worst case regarding the likely ground conditions determined from the desk study information.

14.19 Where this risk based approach identifies a very low or low risk rating, these areas will not be taken forward for further assessment on the basis that significant effects are unlikely to occur.

Consultation

14.20 The Proposed consultees and bodies to be consulted with for the provision of information are detailed in **Appendix C.**

Likely Significant Effects

Embedded and Standard Mitigation Measures

14.21 Reflecting IEMA guidance on delivering proportionate EIA (IEMA 2017), the scope and assessment assumes 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 Construction Environmental Management Plan (CEMP).

14.22 Where possible, towers, collector substation and cable sealing end compound will be positioned to avoid impacts on PWSs & GWDTEs.

14.23 A Foundation Works Risk Assessment will be secured via a suitable condition of planning for permanent ground based infrastructure to understand potential impacts on hydrogeology including GWDTEs and PWSs (where it has not been possible to avoid through design). Where required, this will include suitable mitigation measures to minimise potential effects.

14.24 The construction of the Project will be managed by use of the CEMP. This document sets out the requirements of all contractors working on the Project in adhering to environmental statutory requirements, guidance and best practice. The

[149]BGS. Coal Authority, Available at: https://mapapps2.bgs.ac.uk/coalauthority/home.html (accessed 28/08.2023).
[150] Soilscapes. Available at: https://www.landis.org.uk/soilscapes/ (accessed 28.08.2023).
[151] Gov.UK. Land contamination risk management. Available at: https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm (accessed 29.08.2023).

requirements of the CEMP have been assumed as standard good practice mitigation within the assessment of effects during construction. The CEMP will include the following measures relevant to Ground Conditions:

- Management of soils including, if required, a materials management plan;
- Proper storage and use of oils, fuels and construction chemicals;
- Provision of Site-worker accommodation and sanitation facilities; and
- Management and removal of waste materials.

14.25 A Preliminary Risk Assessment (Desk Study) will be undertaken for the Study Area including consideration of all topics covered in this chapter including:

- Geology (including RIGS/GCR sites);
- Peat;
- Mineral reserves, mining and landfills;
- Contaminated land; and
- Land instability.

14.26 The Desk Study will utilise all existing and proposed available data and consider potential risks to sensitive receptors in accordance with the methodology outline in CIRIA C552.

14.27 As part of the detailed pre-construction design, a suitable environmental and geotechnical site investigation will be undertaken in accordance with current best practice including BS5930[152], BS10175[153] and Eurocode 7[154] which will inform, if required, a site remediation strategy, slope stability assessments and piling risk assessments where appropriate.

14.28 Where required, 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.

14.29 Where potential contaminated land (including landfills) is recorded which may interact with the Project, a remediation/ risk management strategy will be produced and implemented detailing the proposed measures required to ensure the Project does not impact sensitive receptors including human health and the wider environment.

Construction Effects

14.30 The following sections identify the potential significant effects of the Project on ground conditions to be considered within the ES. It assumes that the relevant embedded (design measures) and standard mitigation measures outlined above have been implemented. This is in accordance with guidance from IEMA as part of preparing a proportional assessment (IEMA, 2022).

PWS and GWDTEs

14.31 Good practice standard mitigation measures within the outline CEMP will minimise the risk of pollution to hydrogeological receptors including PWS and GWDTE receptors during construction by removing the pathway between the source and the receptors for most of the working environment.

Land Instability and Mining

14.32 Ground stability in relation to site specific ground conditions and geohazards including mining will be considered within the engineering design of the Project. The Project, and design of structures, will include (in accordance with best practice and industry guidance) suitable consideration of site-specific ground conditions, potential ground instability and geohazard risks such that new infrastructure would not be adversely affected and would not generate any significant effects. In addition, the Coal

[152] BS 5930:2015+A1:2020
[153] BS 10175:2011+A2:2017
[154] Eurocodes: Building the future. Available at: https://eurocodes.jrc.ec.europa.eu/EN-Eurocodes/eurocode-7-geotechnical-design (accessed 28.08.2023).

Authority have confirmed that none of the Scoping Corridor falls within their Development High Risk Area. Therefore, Land Instability and Mining is proposed to be scoped out of the ES.

Geology Including RIGS / GCR Sites

14.33 There are five sites of geological importance within or in close proximity to the Scoping Corridor. The Afon Vyrnwy GCR is listed for its important fluvial geomorphology and particularly its well preserved palaeochannels (historic river channels), it will therefore be sensitive to any infrastructure that alters the landscape surface. Therefore, sites of geological importance are proposed to be scoped into the EIA during the construction phase.

Mineral Reserves

14.34 The Scoping Corridor crosses a number of existing mineral extraction sites (mainly for sand and gravel) and potential mineral sites/ mineral safeguarding areas. At present, the available data for mineral safeguarding areas is limited and as a result the potential for significant effects cannot be ruled out. Therefore, it is proposed to scope mineral reserves (active and proposed) into the EIA during the construction phase.

Contaminated Land Including Landfills

14.35 Whilst there is the potential for existing contamination/ landfills to be encountered within the Scoping Corridor, the standard mitigation identified above will identify, investigate and assess potential sources of contamination, and potential source-pathway-receptor linkages. If identified contaminated land sites will be referenced within the ES with a twelve figure grid reference. This process is considered standard practice and subject to appropriate designing out of the risk or, if required, remediation, the potential for existing contamination/ landfills to give rise to significant effects is considered unlikely. Therefore, it is proposed to scope this out of the EIA during construction.

Operational effects

Mineral reserves

14.36 The Study Area crosses a number of existing mineral extraction sites (mainly for sand and gravel) and potential mineral sites/ mineral safeguarding areas. At present, the available data for mineral safeguarding areas is limited and as a result the potential for significant effects cannot be ruled out. Therefore, it is proposed to scope mineral reserves (active and proposed) into the ES during the operational phase[155].

PWS and GWDTEs

14.37 Based on the nature of the Project, permanent infrastructure will be relatively limited e.g. towers, collector substation and cable sealing end compound. However, the placement of foundations and other below ground requirements may have a permanent effect on groundwater flows and/or levels. Therefore, in the absence of further data and assessment, the potential effects on hydrogeology and water abstractions including associated sensitive receptors as identified above is proposed to be scoped in during operation.

14.38 Based on the standard/ embedded mitigation measures outlined and the Project (narrow transmission corridor) there are no other potential operational effects proposed to be scoped into the ES.

Approach to Additional Mitigation

14.39 No additional mitigation beyond the embedded and standard good practice mitigation measures identified above is proposed at this stage. Where significant effects on ground conditions have not been avoided during design and the implementation of standard good practice measures, additional geographic/receptor specific measure will be identified to avoid/reduce likely significant effects.

[155] A further review will be undertaken once the design (tower locations and associated temporary infrastructure) is known as it may be possible to scope out operational effects pending the outcome of the construction effects on mineral reserves (to avoid double counting).

Proposed Scope of the EIA

14.40 Table 14.1 provides a summary of the proposed scope of the EIA.

Table 14.1: Proposed EIA Scope

Matter	Scoped in/out	Justification
Land instability and mining	Construction – Out Operation – Out	Covered by standard / embedded mitigation including desk based surveys and Scoping Corridor walkover. Project is outside of Coal Mining Development High Risk Areas.
RIGS/GCR sites	Construction – In Operation – Out	Afon Vyrnwy GCR has the potential to be impacted by any infrastructure that alters the landscape surface and careful design will be required.
Mineral reserves	Construction – In Operation – In	Existing mineral sites and significant potential reserves exist within the Scoping Corridor. Whilst further assessment will be undertaken as identified in the standard/ embedded mitigation, the potential for significant effects (sterilisation) cannot be ruled out at this stage.
Contaminated land including landfills	Construction – Out Operation – Out	Potential contaminated land and existing (active and former) landfills are present within the Scoping Corridor. Further assessment will be undertaken as identified in the standard/ embedded mitigation. However, based on the proposed scheme, the potential for significant effects are considered unlikely.
Hydrogeology, GWDTEs, PWS and groundwater abstractions	Construction – In Operation – In	Potential temporary and permanent significant effects to sensitive receptors including important water resources, including part of the corridor falling within a Source Protection Zone, and GWDTEs.

Questions for Consultees

Q14.1: Please confirm what dataset(s)/ policy document(s) are available to ensure that our assessments are as robust as possible (including any site identified, prioritised or proposed to be investigated under Part IIa of the Environmental Protection Act.?

Q14.2: Confirmation that the desk and field surveys are sufficient for the purposes of the EIA?

Q14.3: Do you consider the potential effects to be scoped in and out to be appropriate to inform a proportional assessment?

Chapter 15
Soils and Agriculture

Introduction

15.1 This chapter sets out the proposed approach to the assessment of likely significant effects of the construction and operation of the Green Gen Vyrnwy Frankton Project on soils and agriculture. The assessment of soils in this Chapter also includes peat as peat is a soil type.

Study Area

15.2 The Study Area for Soils and Agriculture comprises the area which could be directly affected by the Project. This is assumed for the purpose of this chapter to be the Scoping Corridor.

15.3 As the iterative design process continues, the Scoping Corridor will be refined to comprise the proposed alignment and siting of all infrastructure required for the operation of the Project as well as the temporary infrastructure required for construction of the Project.

15.4 The Scoping Corridor presented in **Figure 15.1** is sufficient and appropriate for the purposes of identifying the approach to be taken to the assessment of likely significant effects of the Project on soils and agriculture.

15.5 The identified receptors in relation to Soils and Agriculture are:

- Agricultural land (including best and most versatile (BMV[156]) land); and
- Soils (including peat).

Existing Conditions

Information Sources

15.6 The following sources of information have been reviewed during desk-based research to inform this Scoping Report:

- British Geological Survey (BGS) Geology Viewer[157];
- Soils and their use in Wales (Rudeforth *et al*., 1984)[158];
- Peatlands of Wales Maps (Welsh Government, 2022)[159];
- Soils and their use in Midlands and Western England (Ragg *et al*., 1984)[160];
- OS mapping and aerial photography with respect to current land use[161];

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[156] The Best and Most Versatile (BMV) agricultural land is defined as land which falls in ALC grades 1 to 3a.

[157] BGS (British Geological Survey) Geology Viewer. Available at: https://geologyviewer.bgs.ac.uk/?_ga=2.90005406.463851537.1688742231-705807284.1688742231 (accessed 09.10.2023).

[158] 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.

[159] Welsh Government (2022). Peatlands of Wales Maps. Available at Peatlands of Wales Maps | DataMapWales (gov.wales) (accessed 30.11.2023)

[160] Ragg, J. M.; Beard, G. R.; George, H.; Heaven, F. W.; Hollis, J. M.; Jones, R. J. A.; Palmer, R. C.; Reeve, M. J.; Robson, J. D. & Whitfield, W. A. D. (1984) Soils and their use in Midland and Western England, Soil Survey of England & Wales, Bulletin no 12.

[161] OS MasterMap Imagery Layer (Ordnance Survey). Available at: https://www.ordnancesurvey.co.uk/products/os-mastermap-imagery-layer (accessed 09.10.2023).

- The Predictive Agricultural Land Classification Map 2 ('ALC2') with respect to the potential location of Best and Most Versatile (BMV) Agricultural Land[162]; and
- Department for Environment, Food and Rural Affairs (Defra), Magic Map Application[163].
- Climatological Data for Agricultural Land Classification (Meteorological Office, 1989)[164].

Baseline Conditions

Soils

15.7 There are a range of soil types within the Scoping Corridor according to Soils and their use in Wales (Clwyd *et al.*, 1984) and Soils and their use in Midlands and Western England (Ragg *et al.*, 1984). The associated soil maps indicate that there are the following soil associations within the Scoping Corridor:

- Adventurers' 1- Deep peat soils;
- Newport 1 - Deep well drained sandy and coarse loamy 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;
- Bridgnorth - Well drained sandy and coarse loamy soils over soft sandstone;
- Wick 1 - Deep well drained coarse loamy and sandy soils locally over gravel;
- East Keswick 1 - Deep well drained fine loamy soils and similar soils with slowly permeable subsoils and slight seasonal waterlogging;
- Teme - Deep stoneless permeable silty soils;
- Denbigh 1 - Well drained fine loamy and fine silty soils over rock;
- Cegin - Slowly permeable seasonally waterlogged fine silty and clayey soils;
- Wilcocks 2 - Slowly permeable seasonally waterlogged loamy upland soils with a peaty surface horizon; and
- Manod - Palaeozoic slate, mudstone and siltstone.

Agricultural Land Classification

15.8 ALC Map 2 from Welsh Government predicts the majority of land within the Scoping Corridor in Wales to be Grade 2. Grade 3a and Grade 3b with small areas of Grade 4 and 5. Magic Map indicates that that the predicative ALC grades within the Scoping Corridor in England are predominantly ALC Grade 3 with small areas of Grade 2 and Grade 4. The ALC grades within the Scoping Corridor (including BMV land) are shown on **Figure 15.1**.

Land Use

15.9 Aerial photography, OS mapping and preliminary field surveys of accessible areas indicate the agricultural land use within the Scoping Corridor to be predominantly grassland with arable land in places.

[162] Predictive Agricultural Land Classification (ALC) Map 2, Welsh Government. Available at: https://datamap.gov.wales/layers/inspire-wg:wg_predictive_alc2 (accessed 09.10.2023).
[163] Department for Environment, Food and Rural Affairs (Defra), Magic Map Application. Available at: https://magic.defra.gov.uk/MagicMap.aspx (accessed 09.10.2023).
[164] Meteorological Office (1989). Climatological Data for Agricultural Land Classification. London: The Meteorological Office.

Future Baseline

15.10 Climate change is considered unlikely to result in substantive changes to soils and ALC grades within the Study Area within the timeframe for the construction of the Project[165] based upon the criteria set out in the ALC Guidelines (MAFF, 1988)[166]. It is considered that the baseline with respect to ALC grades will remain the same within this timeframe.

15.11 Over the longer term, climate change is acknowledged to be one of the key pressures that soils and agricultural land in the UK are facing (IEMA, 2022), with changes in temperature and rainfall and increased frequency of extreme weather events over the operational lifetime of the Project being likely to affect soil hydrology, carbon sequestration and emissions, nutrient cycling and biodiversity. Farming practices and agricultural systems may change in response to such effects.

15.12 Adaptations within farming practices and agricultural systems are likely to overcome some of these changes in conditions.

15.13 There is potential for land use within individual landholdings to change within the future baseline.

Data Collation and Assessment Methodology

Legislation, policy and Guidance

15.14 Relevant legislation, policy and guidance specific to the assessment of Soils and Agriculture that will inform the assessment comprises:

- Agricultural Land (Removal of Surface Soil) Act 1953[167];
- Welsh Government (2017), Natural Resources Policy[168];
- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a);
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2024b);
- The National Planning Policy Framework (2023)[169];
- The Second State of Natural Resources Report (SoNaRR) Assessment of the achievement of sustainable management of natural resources: Land use and soils Natural Resources Wales (2020)[170];
- Welsh Government (2022). Agricultural Land Classification Guidance and Services[171];
- Powys Local Development Plan 2011-2026[172]
- Shropshire Local Development Framework: Adopted Core Strategy[173];
- A New Perspective on Land and Soil in Environmental Impact Assessment (IEMA, 2022);
- England Peat Action Plan (UK Government, 2021)[174];

[165] Construction is anticipated to commence late 2026/early 2027.
[166] 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.
[167] Agricultural Land (Removal of Surface soil) Act (1953). Available at: https://www.legislation.gov.uk/ukpga/Eliz2/1-2/10/contents (accessed 09.10.2023).
[168] Welsh Government (2017), Natural Resources Policy. Available at: https://www.gov.wales/sites/default/files/publications/2019-06/natural-resources-policy.pdf (accessed 09.10.2023).
[169] The National Planning Policy Framework (2023). Available at: www.gov.uk (accessed 20.10.2023).
[170] State of Natural Resources Report (SoNaRR) for Wales 2020. Available at: https://naturalresources.wales/evidence-and-data/research-and-reports/state-of-natural-resources-report-sonarr-for-wales-2020/?lang=en (accessed 09.10.2023).
[171]Welsh Government (2022). Agricultural Land Classification Guidance and Services. Available at: https://www.gov.wales/agricultural-land-classification (accessed 09.10.2023).
[172] Powys Local Development Plan 2011 – 2026. Available at: https://en.powys.gov.uk/article/4898/Adopted-LDP-2011---2026 (accessed 09.10.2023).
[173] Shropshire Local Development Framework: Adopted Core Strategy. Available at: https://www.shropshire.gov.uk/planning-policy/local-planning/core-strategy-2006-2026/ (accessed 09.10.2023).
[174] UK Government (2021). England Peat Action Plan. Available at England Peat Action Plan (publishing.service.gov.uk) (Accessed 30.11.2023)

- The National Peatland Action Programme (Natural Resources Wales, 2020)[175];
- 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[8];
- Construction Code of Practice for the Sustainable Use of Soils on Construction Sites Defra (2009)[176]; and
- National Highways (2020). Design Manual for Roads and Bridges (DMRB) LA112: Population and human health.

Data Collection- Desk Based

15.15 The sources listed under the Information Sources Section above along with field survey data will be used collect baseline information to inform the Soils and Agriculture assessment within the EIA.

Data Collection- Field Surveys

15.16 A detailed review of predictive ALC maps from the Welsh Government and Natural England will be undertaken to inform the scope of soil and ALC surveys required to inform the design and assessment of the Project as part of the EIA. Soil and ALC surveys will be undertaken where the soils and agricultural land will be disturbed by the Project.

15.17 Where peat is known or likely to be present, 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).

15.18 The Welsh Government's Land Quality and Advice Service (LQAS) and Natural England will be consulted prior to surveys commencing with respect to the proposed survey. A factual ALC survey report will be produced which will form an Appendix to the ES chapter.

Assessment Method

15.19 The assessment of the impacts on the receptors of soil and agricultural land (BMV) will be undertaken in accordance with IEMA Guidance, "A New Perspective on Land and Soil in Environmental Impact Assessment" published in 2022.

15.20 The baseline information collected will be used to assess the sensitivity of soils and agricultural land (BMV) in relation to their potential and there will be engagement with relevant disciplines to ensure the reported assessment of impacts aligns across all relevant ES chapters.

15.21 Judging the significance of the effects on soils and agricultural land (BMV) 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 relative to the soil resource and its functions and agricultural land (BMV). The magnitude of potential effects will then take into consideration the size and scale of effects; geographical extent; duration and reversibility.

15.22 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 would be described as positive (beneficial), neutral or negative (adverse).

15.23 The rationale for corridor, route alignment and tower position selection and the interaction with agricultural land (BMV) will be presented within the Design Evolution and Alternatives chapter of the ES and used to inform the assessment of effects on Soils and Agriculture.

Consultation

15.24 The Proposed consultees and bodies to be consulted with for the provision of information are detailed in **Appendix C.**

[175] Natural Resources Wales (2020). The National Peatland Action Programme. Available at Natural Resources Wales / The National Peatland Action Programme (Accessed 30.11.2023)
[176] Department for Environment, Food and Rural Affairs (Defra) (2009). Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

Likely Significant Effects

Embedded and Standard mitigation measures

15.25 Reflecting IEMA guidance on delivering proportionate EIA (IEMA 2017), the scope and assessment assumes that relevant embedded, standard and additional measures are in place. These will be set out in detail within an Appendix to the ES and will include:

- An iterative design process that will continue to seek to avoid/minimise effects on sensitive soils, BMV agricultural land and disruptions to farm activities of agricultural land holding.
- A range of standard mitigation measures adopted for the duration of the construction phase of the Project. This would include for example a CEMP which would be produced prior to any construction works being carried out. There would be soil handling measures in place to manage disruption to soil with the main works contractor undertaking site inspections to check these standards are being conformed to.

15.26 Soil management measures will be detailed in a Soil Resources Management Plan, which would include the following:

- Details on the type of soil resource present;
- Details on how the topsoil and subsoil would be stripped and stockpiled, including calculations on the volume and type of soils effected;
- Details of the suitable conditions and techniques for soils handling e.g. avoiding handling of waterlogged soil;
- Indicative soil storage locations with details on size, location, construction and management of the stockpiles;
- Details on how the soil stockpiles would be designed, this would include consideration of the site conditions and the nature/ composition of the soil;
- Specific management plans relating to sensitive soils affected;
- Protective surfacing where soil stripping can be avoided, this would be based on the sensitivity of the environment and the proposed works;
- The approach to the reinstating and restoration of the soil that has been compacted and removed including the techniques to use and aftercare programme; and
- Any details for measures needed for soil restoration if required.

15.27 This plan would provide clear principles by which it will be ensured that land required temporarily for construction would be returned to its original state and condition.

15.28 A Peat Management Plan will also be developed if it is confirmed that peat (including shallow organic soils) will be affected.

Potential Effects Scoped into the Assessment

Construction

15.29 During the construction phase there would be the potential temporary and permanent (see operational phase below) loss of agricultural land from agricultural productivity. There would also be temporary disturbance to the soils from construction of the accesses to the tower locations for installation and, if undergrounding is required, due to the excavation and soil stripping for underground cable trenches, substation, circuit cable sealing end compound (CSEC), and construction compounds. As the iterative design of the Project is evolving such that the final location of permanent and associated temporary infrastructure is not known, whilst the design will seek to avoid/minimise effects on soils and agricultural land, significant effects cannot be ruled out, so agricultural land is proposed to be scoped into the ES.

15.30 Impacts on soil function and quality will occur once construction activities commence. It is considered likely that these impacts will be temporary. Although soil handling measures would be implemented via a Soil Resources Management Plan during construction, the range of functions and quality will however be compromised to some extent compared to those present prior to construction, and as such, impacts on soils are scoped into the ES.

Potential Effects Scoped Out of the Assessment

Operation

15.31 During the operation of the Project, land used temporarily by the Project will have been reinstated and returned to agricultural use, whilst land taken permanently by the Project will remain out of agricultural use. As the construction phase will calculate both the temporary and permanent loss, there would be no significant effect expected during operation phase and therefore soils and agricultural land are scoped out of ES for the operation phase.

15.32 Maintenance and repair works that may result in the disturbance to soils during operation would be undertaken in accordance with standard good practice soil handling methods (see above). Therefore, no likely significant effects are expected, and it is proposed to scope this matter out of the ES.

Proposed Scope of the EIA

15.33 **Table 15.1** provides a summary of the proposed scope of the EIA.

Table 15.1: Proposed EIA Scope

Matter	Scoped in/out	Justification
Temporary loss of agricultural land, (including BMV land during construction)	Scoped in	There will be soils and ALC surveys carried out in areas where permeant infrastructure and sections of haul route and stripping for cable installation are proposed. The temporary land use will be reinstated after the construction phase is completed.
Permanent loss of agricultural land (including BMV land)	Scoped in	The permanent loss of BMV land would be fully assessed during the construction stage assessment as permanent land take will be out of agricultural use once the construction commences.
Effects upon soils (including peat) during construction	Scoped in	An Outline Soil Management Plan will be developed and submitted with the planning application to guide the detailed design and to reduce impact on soil function and quality. Impacts on soil function will occur once construction activities commence. A detailed Soil Management Plan will be developed prior to construction and following the evolution of the design. An outline Peat Management Plan will also be developed if it is confirmed there will be impacts to peat resources.
Effects upon soils (including peat) during operation	Scoped out	Operational effects in this respect are predicted to be limited and not significant, subject to re-instatement of land requirement for temporary works according to the Soil Resources Plan.

Questions for Consultees

Q15.1: Are the proposed matters to be scoped out acceptable?

Chapter 16
Air Quality

Introduction

16.1 This chapter sets out the proposed approach to the assessment of likely significant effects upon air quality arising from the construction and operation of the Project.

16.2 There is the potential for adverse air quality impacts associated with the construction and operation/maintenance phases of the Project. As such, an assessment to consider the air quality impacts of the Project is proposed. This chapter of the Scoping Report describes the methodology to be used within the air quality assessment, the datasets to be used to inform the assessment, the baseline conditions, the likely significant effects to be considered within the assessment, and how those effects will be assessed through the Environmental Impact Assessment (EIA).

Study Area

16.3 In accordance with the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction[177] (hereafter referred to as the 'IAQM construction dust guidance'), the study area for construction phase dust (as shown in Figure 16.1) would be:

- 350m from the locations of demolition, construction and earthworks activities for human receptors and up to 50m for ecological receptors[178]; and
- 50m from the route(s) used by construction vehicles on the public highway, up to 500m from the Project entrance(s) [178].

16.4 The number of vehicles associated with the construction and operation/maintenance phases of the Project is not yet known. Should traffic flows exceed the screening criteria set out in Environmental Protection UK (EPUK) and IAQM Guidance on land-use planning and development control: Planning for air quality[179] (hereafter referred to as the 'EPUK & IAQM development control guidance'), the study area would comprise an area within 200m of the roads which exceed the criteria in accordance with the Design Manual for Roads and Bridges (DMRB) LA105[180]. This will be confirmed upon receipt and screening of the traffic data.

16.5 Sensitive receptors to be considered in the air quality assessment include human health receptors such as residential properties, hospitals, schools and residential care homes, and ecological habitats. In addition to these receptors, the construction dust assessment will also consider locations where amenity, aesthetics or values could be affected by dust soiling.

16.6 Operational impacts are proposed to be scoped out as it is anticipated that there will be no significant impacts on air quality during the operation phase due to the Project being a static structure which does not have any associated emissions during operation and operational vehicle movements will be limited and expected to be well below the EPUK & IAQM development and control guidance screening criteria.

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[177] Institute of Air Quality Management (2023),Guidance on the Assessment of Dust from Demolition and Construction v2.1. Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-dust-2023-BG-v6-amendments.pdf (accessed 10.10.2023).
[178] A revised version of the IAQM construction dust guidance is currently being prepared in light of a number of identified errors in v2.1. This may result in changes to the Study Area criteria set out in the IAQM construction dust guidance.
[179] Environmental Protection UK and Institute of Air Quality Management (2017), Land-Use Planning & Development Control: Planning for Air Quality. Available at: https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf (accessed 10.10.2023).
[180] Highways England (now National Highways) (2019), LA 105 Air Quality. Available at: https://www.standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d90 (accessed 10.10.2023).

Existing Conditions

Information Sources

16.7 The following sources of information have been reviewed during desk-based research to inform this Scoping Report:

- Department for Environment, Food and Rural Affairs (Defra) UK Air website[181] – to establish predicted background concentrations for nitrogen dioxide (NO_2), particulate matter less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$);
- Powys County Council, Air Quality Progress Report 2022[182]; and
- Shropshire Council, Air Quality Annual Status Report 2022[183].

Baseline Conditions

16.8 As a requirement of the Environment Act 1995, local authorities are required to report to Defra on local air quality and local air quality management schemes. If the Air Quality Strategy (AQS) objectives[184, 185] are predicted to be exceeded, the local authorities are required to declare the area as an Air Quality Management Area (AQMA). There are two Air Quality Management Areas within Shropshire. Powys have not declared any AQMAs.

16.9 The closest AQMA to the Scoping Corridor is Shrewsbury No 3 AQMA, located approximately 18.5km east of the Scoping Corridor. This has been declared for exceeding the annual mean NO_2 AQS objective[183]. The AQMA encompasses most of the Town Centre of Shrewsbury.

16.10 Local authority monitoring data for the most recently reported year of 2021 did not show any exceedances of the AQS objectives in Powys. However, monitored exceedances of the annual mean NO_2 AQS objective in the Shropshire Area were reported at the Shrewsbury No 3 AQMA, the Bridgnorth AQMA (declared by Shropshire Council), and at Tern Hill. All exceedance locations are over 19km from the Scoping Corridor.

Future Baseline

16.11 Background air pollutant concentrations are currently available using 2018 base year for projections[186]. These are predicted to improve over time due to reductions in emissions resulting from:

- Reductions in transport emissions resulting from improvements in fuel efficiency and uptake in low emission vehicles;
- General reduction in the use of fossil fuels;
- Reductions in pollutant emissions from agricultural sources due to improvements in management envisaged in the 2019 Clean Air Strategy[187]; and
- Improved emission standards for Non-Road Mobile Machinery and static generators.

16.12 Consented developments in the surrounding area may increase traffic flows in the vicinity of the Project. This may therefore result in an increase in local air quality concentrations.

16.13 In addition, construction of any consented developments may result in a temporary increase in particulate concentrations as a result of fugitive dust emissions during construction works.

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[181] Department for Environment, Food and Rural Affairs (2022). UK AIR, Air Information Resource. Available at: https://uk-air.defra.gov.uk/ (accessed 10.10.2023).
[182] Powys County Council (2022), Powys Air Quality Progress Report 2022. Available at: https://en.powys.gov.uk/article/7201/Air-Quality (accessed 10.10.2023).
[183] Shropshire Council (2022), Shropshire Air Quality Annual Status Report 2022. Available at: https://www.shropshire.gov.uk/environmental-health/environmental-protection-and-prevention/air-quality/shropshire-council-air-quality-reports/ (accessed 10.10.2023).
[184] HMSO (2002), The Air Quality (England) (Amendment) Regulations 2002 (SI 2002/3043)
[185] Welsh Government (2000), The Air Quality (Wales) Regulations 2000
[186] Department for Environment, Food and Rural Affairs (2020), Background Mapping Data for Local Authorities – 2018. Available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018 (accessed 10.10.2023).
[187] Department for Environment, Food and Rural Affairs (2019), Clean Air Strategy 2019. Available at: https://www.gov.uk/government/publications/clean-air-strategy-2019 (accessed 20.10.2023).

Data Collation and Assessment Methodology

Legislation and Guidance

16.14 In addition to the general approach and guidance outlined in **Chapter 4 (EIA Approach and Method)**, the assessment of effects upon Air Quality will have regard to the following guidance documents:

- Overarching NPS for Energy (EN-1) Department for Energy Security & Net Zero (DESNZ), 2024a);
- IAQM Guidance on the Assessment on Dust from Demolition and Construction V2.1[177];
- Defra Guidance on air quality management: Local Air Quality Management Technical Guidance (TG22)[188];
- EPUK and IAQM Land-Use Planning and Development Control: Planning for Air Quality[179]; and
- National Highways DMRB LA 105[180].

Data Collection- Desk Based

16.15 The baseline assessment will be informed by a desk based study using the following information sources:

- The Defra UK Air website[181];
- Local Authority records[182, 183];
- MAGIC website[189]; and
- Air Pollution Information System[190].

Data Collection - Field Surveys

16.16 It is not envisioned that any site-based surveys will be needed due to the freely available air quality monitoring data obtained by the Local Authorities.

Assessment Method

16.17 Construction dust impacts would be assessed qualitatively in accordance with the methodology contained within the IAQM Guidance on the Assessment of Dust from Demolition and Construction[177]. The IAQM construction dust guidance[177] categorises the unmitigated risk of dust impacts on human health and amenity (rather than ascribe a significance of effect) as a means of identifying the level of dust emissions mitigation required to ensure that residual effects are 'not significant'. Following assessment of construction dust impacts, appropriate dust mitigation measures would be proposed to manage adverse air quality impacts and reduce potential impacts to an acceptable level.

16.18 At this stage it is not anticipated that construction vehicle numbers would exceed the criteria outlined in the EPUK & IAQM development control guidancei[179], therefore quantitative assessment of construction vehicle exhaust emissions are expected to be scoped out. If the criteria are exceeded, then further assessment of vehicle emissions will be undertaken and potential impacts at sensitive receptors[191] within 200m of the affected road network would be considered. Beyond this distance emissions are expected to have dispersed to concentrations equivalent to background levels and would not be assessed[192].

16.19 The screening criteria are as follows:

- A change in Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA or more than 500 AADT elsewhere;

[188] Department for Environment, Food and Rural Affairs (2022), Local Air Quality Management Technical Guidance (TG22). Available at: https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/ (accessed 10.10.2023).
[189] Department for Environment Food and Rural Affairs and Natural England (2023), MAGIC. Available at: https://magic.defra.gov.uk/ (accessed 10.10.2023).
[190] UK Centre for Ecology and Hydrology (2023), Air Pollution Information System. Available at: https://www.apis.ac.uk/ (accessed 11.10.2023).
[191] LAQM.TG(22) 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.
[192] As is consistent with guidance within LA105 published by National Highways

- A change in Heavy Duty Vehicle (HDV) (>3.5 tonnes) flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- 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.

16.20 Potential impacts at sensitive receptor locations would be assessed by undertaking detailed dispersion modelling using the Atmospheric Dispersion Modelling System (ADMS) model to predict pollutant concentrations at worst case receptor locations. The magnitude of change in NO_2 and particulate matter concentrations as a result of the Project would be calculated, and total concentrations compared against relevant AQS objectives.

Consultation

16.21 The proposed consultees and bodies to be consulted with for the provision of information are detailed in **Appendix C.**

Likely Significant Effects

Embedded and Standard Mitigation Measures

16.22 A range of standard measures relevant to the control and management of impacts that could affect air quality would be adopted throughout the construction phase, including those secured through the adoption of a Construction Environmental Management Plan (CEMP). These measures could include:

- 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;
- 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)
- 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;
- 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;
- 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;
- Earthworks and stockpiled soil will be protected (to avoid dust generation) by covering, seeing or using water suppression where appropriate;
- Bonfires and the burning of waste material will be prohibited; and
- The contractor(s) shall undertake daily site inspections to check conformance to the Management Plans.

Potential Effects Scoped into the Assessment

16.23 Construction vehicles have the potential to increase local air pollutant concentrations and nitrogen deposition rates from their emissions of NOx and particulate matter. The exact number of towers supporting the overhead electricity transmission line and their location is yet to be determined, however the length of construction duration is unlikely to be longer than one month at each tower construction area. It is therefore unlikely that the delivery of materials will lead to significant effects upon air quality in rural locations, however construction vehicles could generate emissions from delivering materials along key access roads which could adversely affect air quality at sensitive receptors. It is therefore proposed to scope in construction traffic if the screening criteria are met as set out in the EPUK & IAQM development control guidance[179].

16.24 If the screening criteria set out in the EPUK and IAQM planning guidance[179] are not met, it is proposed to scope construction traffic out of the EIA.

16.25 Fugitive dust emissions from construction activities have the potential to cause adverse air quality impacts including dust deposition and health impacts from PM_{10} concentrations. Good practice measures stipulated in the IAQM construction dust guidance[177] will seek to ensure that no significant dust effects will occur. Until the construction areas are finalised, however, and the impacts considered, the effects of construction dust are proposed to be scoped into the assessment.

Potential Effects Scoped Out of the Assessment

Construction

16.26 Assessment of Non-Road Mobile Machinery (NRMM) emissions is proposed to be scoped out of the air quality assessment due to the temporary and transient nature of their use and the low background concentrations. Significant effects of NRMM emissions are considered unlikely with incorporation of best practice measures through the CEMP and compliance with NRMM standards. However, this will be confirmed following review of updated information in the air quality assessment.

Operation

16.27 It is anticipated that there will be no significant impacts on air quality during operation due to the Project being a static structure which does not have any associated emissions during operation. There will be travel to the site for maintenance purposes, but these will be very limited in nature and vehicle trips are anticipated to be below the EPUK and IAQM screening criteria[179]. Maintenance works are not anticipated to require heavy equipment (NRMM) or generate significant dust emissions, and will therefore have insignificant effects upon air quality. Therefore, operational air quality effects are proposed to be scoped out of the EIA.

Approach to Additional Mitigation

16.28 Drawing upon measures detailed in the IAQM construction dust guidance[177], additional mitigation will be proposed and secured through a Dust Management Plan, forming part of the CEMP, that will be prepared and consulted upon with the Local Authorities, as appropriate following the outcome of the assessment.

Proposed Scope of the EIA

16.29 **Table 16.1** provides a summary of the proposed scope of the EIA.

Table 16.1: Proposed EIA Scope

Matter	Scoped in/out	Justification
Construction dust emissions	Scoped In	The construction areas are not yet confirmed or their proximity to sensitive receptors. There is the potential for significant effects in the absence of site-specific mitigation measures.
Construction plant and equipment emissions	Scoped out	Emissions from plant are unlikely to be concentrated in an area for a significant period of time or be emitted in an area with existing poor air quality. Best practice measures will be incorporated through a CEMP and compliance with NRMM standards. This is therefore proposed to be scoped out and this will be confirmed following review of updated information in the air quality assessment.
Construction vehicle emissions	Scoped In (if the EPUK and IAQM screening criteria are exceeded)	There is the potential for deterioration in the local air quality for human and ecological receptors due to construction traffic emissions. If the EPUK & IAQM development control guidance criteria are not met, this is proposed to be scoped out.
Operational vehicle emissions	Scoped out	No likely significant effects are expected as vehicle trips associated with the operation and maintenance phase are anticipated to be well below the EPUK & IAQM development control guidance screening criteria.

Questions for Consultees

Q16.1: Do consultees have any comments on the proposed scope of the Air Quality Assessment?

Chapter 17
Cumulative Effects

Introduction

17.1 This chapter sets out the proposed approach to the assessment of likely significant cumulative effects of the Project.

17.2 Cumulative effects occur when impacts caused by present and reasonably foreseeable activities combine to create an increased level of effect. There are two types of cumulative effects; intra-project and inter-project effects defined as follows:

- 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 wind farms in the Study Area may lead to a temporary increase in traffic on the local road network.

Study Area

17.3 The Study Area for the assessment of both intra and inter-project effects is defined by the Study Areas of each of the individual environmental topics covered in **Chapters 7-16.** For inter project effects a long list of cumulative projects within the Study Area will be identified however not all of these projects would be assessed.

Legislation and Guidance

17.4 The EIA Regulations[193] 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).*

17.5 *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."*

17.6 The EIA Regulations (Schedule 4, Paragraph 5) requires that the ES should consider 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."*

17.7 Advice Note Seventeen (Planning Inspectorate 2019)[194] provides some guidance on how to structure the assessment of inter-project effects for a DCO application.

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[193] The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/572/made (accessed 05.10.2023).
[194] National Infrastructure Planning. Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects, published August 2019 (Version2). Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/ (accessed 05.10.2023).

17.8 The following guidance has also informed the methodology for the assessment:

- European Commission DG XI Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (May 1999)[195];
- LA 104, Environmental assessment and monitoring, National Highways, August 2020;
- International Association for Impact Assessment (IAIA) Cumulative Effects Assessment Fast Tips (October 2017)[196]; and
- Impact Assessment Outlook Journal, Demystifying Cumulative Effects (2020)[197].

17.9 There is currently no standard approach on the assessment of intra-project effects which is attributed to the complex nature and difficulty of undertaking such an assessment. An appropriate approach is therefore proposed in Paragraphs 17.14 to 17.23.

Data Collection- Desk Based

Intra-Project Effects

17.10 The desk-based data collection to assess intra-project effects will be completed by the environmental topic specialists as outlined in their individual chapters.

Inter-Project Effects

17.11 To identify cumulative developments within the Study Area the following data sources will be used:

- Large development projects; i.e. those that are listed on the Welsh Government Planning Casework portal[198], and the Development of National Significant Applications[199] website ;
- Nationally Significant Infrastructure Projects (NSIPs) listed on the Planning Inspectorate's Programme of Projects;
- Committed development data will be obtained from Powys County Council and Shropshire Council;
- Local Development Plan data will be obtained from Powys County Council and Shropshire Council; and
- OS mapping will be used to inform the baseline and confirm the status of consented developments.

17.12 The final list of developments for inclusion within the inter-project cumulative assessment will be agreed with Powys County Council, Shropshire Council and the Planning Inspectorate.

Assessment Method

Intra-Project Effects

17.13 Each topic within the EIA will identify the likely inter-actions between the topic and other topics on a receptor and identify the potential for cumulative impacts from intra-project effects.

17.14 A checklist matrix will be used to scope-in receptors that are expected to experience multiple effects, the matrix will visually identify relationships between project impacts and environmental components.

17.15 An individual receptor, e.g. protected species or people, will be identified for each topic to represent areas that are the most sensitive to impact interactions.

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[195] Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions. Available at: https://ec.europa.eu/environment/archives/eia/eia-studies-and-reports/pdf/guidel.pdf (accessed 05.10.2023).
[196] Cumulative Effects Assessment. Available at: https://www.iaia.org/uploads/pdf/Fastips_16%20Cumulative%20Effects%20Assessment_1.pdf (accessed 05.10.2023).
[197] IEMA Impact Assessment Outlook Journal, Volume 7: July 2020. Demystifying Cumulative Effects. Thought pieces from UK practice.
[198] Welsh Government Planning casework. Available at: https://planningcasework.service.gov.wales/ (accessed 05.10.2023).
[199] Welsh Government Developments of national significance (DNS): applications. Available at: https://www.gov.wales/developments-national-significance-dns-applications (accessed 05.10.2023).

17.16 The predicted significance of intra-project effects upon the receptors identified will be determined based on professional judgement considering the extent to which a single receptor may be affected as a result of a combination of different effects due to the construction and operation of the Project. Where the same receptor is identified in two or more ES chapters it will be assessed for intra-project cumulative effects.

17.17 Where significant cumulative effects are identified upon a single receptor, additional mitigation measures and monitoring requirements will be outlined as required.

Inter-Project Effects

17.18 The assessment will consider the cumulative effects arising from the construction and operation of the Project in combination with other developments within the Study Area.

17.19 To ensure a robust assessment, a 'cut-off' date will be agreed with the Planning Inspectorate at which time only those developments will fall within the following list will be included in the cumulative assessment[200]:

- Existing projects, will be included as part of the baseline (and already assessed through each topics primary assessment);
- Projects that are under construction;
- Consented projects that have not yet been built but that have been granted consent within the last 5 years (or shorter should their planning permission expire before 5 years);
- Projects submitted to planning within the 12 months prior to the ES being written that have not yet been determined;
- Other projects that have been submitted for scoping to the Planning Inspectorate where the design is sufficiently progressed to inform a robust assessment (to be agreed with the LPAs and the Planning Inspectorate); and
- Sites allocated within the relevant local authorities development plan;
- Projects listed on the Planning Inspectorates programme of projects where a scoping report has not been submitted; and
- Sites identified within future development consents or frameworks.

17.20 Following the collation of a list of cumulative projects in the Study Area the projects would be assessed relative to a threshold criteria to determine if the development has the potential to give rise to significant effects in combination with the Project.

17.21 Professional judgement will be used to apply the threshold criteria to determine if the development should be scoped in or scoped out of the assessment. The criteria for including development projects will review temporal scope, the scale and nature of the development and the sensitivity of the receiving environment.

17.22 The developments that are considered to potentially give rise to significant effects when in combination with the Project will then be assessed. The assessment will evaluate and outline the likely significant inter-project effects that may arise from the Project. The results of the assessment will be presented in a table format. The significance and magnitude of impact will be determined according to the criteria set out within the environmental topic chapters.

Potential Effects Scoped Out

Transboundary Effects

17.23 Transboundary effects are those that could affect receptors in other countries. No transboundary effects are expected in relation to the Project as there is no pathway for effects to occur outside of the UK. Therefore, this is proposed to be Scoped Out.

Proposed Scope of the EIA

17.24 **Table 17.1** provides a summary of the proposed scope of the EIA in relation to cumulative effects.

[200] It is recognised that should new projects become public during examination the cumulative assessment is likely to be required to be updated.

Table 17.1: Proposed EIA Scope

Matter	Scoped in/out	Justification
Intra-project effects during construction and operation	Scoped in	There is the potential for significant effects arising between environmental topics on the same receptors.
Inter-project effects during construction and operation	Scoped in	There is the potential for significant effects to arise due to the development of multiple projects within the Study Area.
Transboundary Effects	Scoped out	There is no potential for significant effects to arise outside of the UK due to the development of the Project.

Questions for Consultees

Q17.1: Do you agree with the proposed approach to the cumulative assessment of both inter-project and intra-project effects?

Appendix A

Competent Expert Details

Appendix A- Competent Expert Details

Table 1.1: Competent Expert Details

Chapter	Qualification / Expertise of Person Responsible
Chapters 1-6: Introductory Chapters (prepared by LUC)	The Scoping Report was overseen by **Kate Wigley BSc (Hons) MA MIEMA CEnv** Kate is a Director of Environmental Planning and has over 20 years of professional EIA experience, specialising in integrated environmental design and EIA of major infrastructure projects, including overhead transmission lines. Kate has extensive experience of the routeing, scoping and EIA stages of grid connection projects as well as being able to deliver high quality Environmental Statements. Her recent grid experience involves over 12 OHL transmission projects for SP Energy Networks, the SP Manweb Mid Wales Connections project in Powys and is currently involved in the Towy Usk Project in Wales for GGC. Kate has been involved in the Vyrnwy Frankton Project since its inception, overseeing the routeing stage. Kate has also recently provided expert EIA witness services at an inquiry for an overhead line transmission project. **Jessica Pearce BSc** is a Senior Environmental Planner in LUC. Jess has over 6 years of experience in environmental consultancy. Jess has experience of managing and preparing the routeing and scoping inputs to the Vyrnwy Frankton Project, the Towy Usk overhead line Project in Wales and EIA's for numerous Wind Farms across Wales, notably working on Nant Mithil, Garn Fach, Lluest y Gwent and Brechfa Forest wind farms. Jess is skilled at coordinating project teams, communicating with clients and stakeholders and managing inputs to meet planning expectations.
Chapter 7: Landscape and Visual Amenity (prepared by LUC)	**Karen Lees BLand Arch, BEng, PGCE** is an Associate Landscape Planner with over 16 years experience in professional practice, and a background in civil engineering and teaching. Karen is a skilled landscape planner with a responsible, motivated and thoughtful approach, strongly rooted in an enthusiasm for landscape and environmental studies. Karen has a proven ability to engage and build excellent relationships with colleagues, multidisciplinary teams and clients. Karen's expertise includes the preparation and peer review of landscape and visual impact assessments (LVIAs), landscape character, capacity and sensitivity studies, preparation and co-ordination of Environmental Impact Assessments (EIAs) and Appraisal Reports (EARs), Nationally Significant Infrastructure Projects (NSIPs), the Development Consent Order (DCO) process, stakeholder and community engagement and consultation. Karen was also one of three environmental overseeing consultants responsible for peer reviews of the collaborative LVIA for HS2 Phase 2B and has acted as landscape witness at hearings for NSIPs.
Chapter 8: Ecology (prepared by LUC)	**Niall Machin** is Director of Ecology at LUC with over 30 years experience in ecology, ornithology and sustainability. He had worked on large scale infrastructure projects including energy, rail and port developments, including Welsh wind farm schemes and grid projects for LUC. He has particular expertise in ecological assessment, ornithology and Habitat Regulations Assessment. He has appeared as expert ecology witness at a number of public inquiries, most recently for the Transpennine Route Upgrade for Network Rail. Niall sits on the CIEEM England Policy Board.
Chapter 9: Ornithology (prepared by LUC)	**Iain MacKenzie BSc MSc MCIEEM** is an Associate Director of Ecology. Iain has over 20 years of professional ecological experience and has managed the ornithological components of more than 25 wind farm developments and eight OHL projects. A recognised ornithological expert, Iain is regularly called upon on to design and oversee complex ornithological surveys and undertake Ornithology Impact Assessments for large-scale projects. He is particularly adept in identifying key issues and managing consultation with stakeholders.

Chapter	Qualification / Expertise of Person Responsible
Chapter 10: Historic Environment (prepared by LUC)	**Melissa Conway BA (Hons) MA MCIfA** is an experienced historic environment consultant with a strong track record in development assessments, setting, historic characterisation, strategic planning, landscape survey and heritage asset management. This is underpinned by particular skills in landscape analysis, aerial photography, setting and GIS (ArcGIS and MapInfo). She has particular experience of renewables (wind and solar), transport schemes, housing, commercial premises, urban renewal, ports and major infrastructure schemes. Since 2014 she has undertaken expert witness work on wind energy and housing schemes. Her experience spans the UK and she has particular knowledge of Wales's historic environment from work on renewables developments and on road schemes as well as the routeing stage of the Towy Usk and Vyrnwy Frankton Projects.
Chapter 11: Traffic and Transport (prepared by LUC)	**Neil McAlpine BA (Hons) MSc** has worked within transport planning and engineering sector for almost 20 years in both the academic and consultancy sectors. Neil expanded his academic knowledge base into practical examples by specialising in development planning, urban design and appraisal. Neil has particular expertise in assessing how transport interacts with the surrounding environment and minimising the impact of traffic on all road users with emphasis on the most vulnerable. Neil has undertaken EIA and planning assessment for on and offshore windfarms, battery storage units, solar farms, sub stations as well as residential and mixed use development in both the urban and rural environment. Neil is a successful project manager and director working in both the public and private sector having managed and lead teams throughout the UK, Middle East and Asia.
Chapter 12: Noise and Vibration (prepared by Hoare Lea)	**Matthew Cand (Dipl Eng PhD MIOA)** is an associate director and project lead with Hoare Lea and a member of the Institute of Acoustics. He graduated from the Ecole Polytechnique in France, and holds a Doctor of Philosophy degree from Imperial College London. Matthew is an expert in the assessment of wind farm noise and is one of the authors of the Institute of Acoustics Good Practice Guide (IOA GPG). Matthew has worked over 16 years on more than 60 wind farm schemes and has provided expert witness at several wind farm hearings and inquiries. He has led the assessment of noise from the Kendoon to Tongland 132kV power line Reinforcement Project, in Dumfries and Galloway. This included both an assessment of construction impacts as well as operational noise impacts from the overhead lines (corona discharge in wet conditions). Hoare Lea's previous work in Wales includes leading the assessment of noise from the Brechfa Forest West Wind Farm (in Carmarthenshire) which was consented in March 2013 as well as the Carnedd Wen and Llandinam Wind Farms (in Powys). These sites all required extensive discussion and agreement with local authority specialists and expert witness support at the examination stage. Brechfa Forest West was the first wind farm scheme to be considered as a NSIP and was subsequently consented. They also gave evidence regarding the Llandinam and Carnedd schemes in the mid-Wales conjoined planning inquiry.
Chapter 13: Water Resources (prepared by Yellow Sub Geo)	**Gareth Owen** has twenty years' experience in providing geological and hydrogeological investigations and assessments, supporting a wide range of projects. He has a solid background in geology and specialises in the detailed assessment of environmental impact of development. He has supported many developments through the EIA process, on sites across England and Wales. Gareth's particular strength lies in the ability to translate technical information into the language of EIA, on subjects including ground conditions, land quality, geomorphology, hydrology, flooding, and water resources. Gareth has project managed technical topic area input to numerous EIAs for windfarms across mid and south Wales and has recent experience of delivering similar services under DNS applications for large-scale solar in Wales. Gareth and his team are currently working on the nearby Nant Mithil windfarm project, and the associated off-site works and grid connection projects. Gareth is also currently leading his team on two other similar projects in Mid and South Wales. Gareth has experience as environmental regulator for Powys, as part of his role as Earth Science Officer for CCW (now part of NRW).

Chapter	Qualification / Expertise of Person Responsible
Chapter 14: Ground Conditions, Geology and Hydrogeology (prepared by Yellow Sub Geo)	**Gareth Owen,** as above.
Chapter 15: Soils and Agriculture (prepared by Arcadis)	**Dr Zhigang Liu BSc MSc PhD CSci MISoilSCi FACTS** is a Chartered Soil Scientist and qualified FACTS fertiliser advisor with over 30 years' experience in both agricultural and construction industry. His expertise focuses on Soil & Agricultural Land Classification (ALC) surveys, Soil Management Planning, Environmental Impact Assessment, soil nutrient advice, precision farming technologies and crop advice etc. Zhigang has undertaken soil surveys over 30,000ha farmland across the UK and advised farmers on soils. He has also conducted Environmental Impact Assessment and soils/ACL surveys as Agriculture and Soils discipline lead on a range of Nationally Significant Infrastructure Projects such as High Speed 2, A303 Stonehenge, East West Rail, South Lincolnshire Reservoir & Fen Reservoir and Cambridge Wastewater Treatment Plant Relocation.
Chapter 16: Air Quality (prepared by Arcadis)	**Stephen Pyatt Msc, Bsc (hons), CEnv, MIES, MIAQM** is a chartered environmental scientist with over 20 years experience in air quality assessments. Stephen is an expert in air quality assessments for both construction and operation impacts of a range of developments from small to large infrastructure. He is also an expert in air quality monitoring for both baseline air quality assessments and monitoring impacts such as construction. Stephen currently advises National Highways on policy and research in air quality and co authored the Design Manual for Roads and Bridges (DMRB) LA105 Air Quality Standard. He has also investigated mitigation measures that can be implemented on the strategic road network. He has led on a range of Nationally Significant Infrastructure Projects such as Silvertown Tunnel and Lower Thames crossing. He has also acted as an expert witness.
Chapter 17: Cumulative Effects (prepared by LUC)	**Kate Wigley BSc (Hons) MA MIEMA CEnv** and **Jessica Pearce BSc,** as above.

Appendix B

Proposed Structure of the ES

Vyrnwy Frankton OHL Environmental Statement Structure

Volume I: Non-Technical Summary

Volume II Main Text:

- Chapter 1: Introduction
- Chapter 2: Consideration of Alternatives
- Chapter 3: Project Description
- Chapter 4: The Environmental Impact Assessment
- Chapters 5 to 15: Landscape and Visual Impact Assessment; Ecology; Ornithology; Historic Environment; Traffic and Transport; Noise and Vibration; Water Resources, Ground Conditions, Soils and Agriculture; Air Quality; Other EIA topics.
- Chapter 16: Summary of Significant Effects

Volume III: Figures

Volume IV: Appendices

Appendix C

List of Proposed Consultees

List of Potential Consultees

The following consultees will be contacted by the Planning Inspectorate in relation to the scope of the EIA:

- Welsh Government (Soil Policy & Agricultural Land Use Planning Unit/ Department for Climate Change)
- Health and Safety Executive
- UK Government (Department for Energy and Climate Change)
- Natural Resources Wales (NRW)
- Natural England West Midlands
- Environment Agency
- Powys Country Council (PCC)
- Shropshire Council
- Transport Directorate of the Welsh Government
- National Highways
- Hafren Dyfrydwy
- Dŵr Cymru Welsh Water
- Severn Trent Water
- Cadw
- Historic England
- Archaeological advisors to the local authority;
  - Clwyd Powys Archaeological Trust; and
  - Historic Environment Team.
- NHS England
- Powys Teaching Health Board
- Shropshire Community Health NHS Trust
- Welsh Ambulance Services NHS Trust
- Mid and West Wales Fire and Rescue Service
- Shropshire Fire and Rescue Service
- Police and Crime Commissioner for Dyfed-Powys
- Police and Crime Commissioner for West Merica
- Dyfed-Powys Local Resilience Forum
- Equality and Human Rights Commission
- Shropshire Hills Area of Outstanding Natural Beauty
- The Joint Nature Conservation Committee
- Royal Commission on The Ancient & Historical Monuments of Wales
- Civil Aviation Authority
- Powys County Council Highways
- Shropshire Council Highways
- Transport for Wales
- National Highways

- The Coal Authority
- The Office of Gas and Electricity Markets
- National Grid Electricity Transmission plc
- National Grid Electricity System Operator Limited
- UK Power Distribution Ltd
- SP Energy Networks
- United Utilities
- The Crown Estate Commissioners
- The Office for Nuclear Regulation
- National Assembly For Wales Post Office
- The Forestry Commission

The following consultees will be contacted in relation to the provision of information to inform the EIA:

- Local authority conservation advisory staff:
  - Powys County Council; and
  - Shropshire Council.
- Regionally Important Geological Site groups
- Royal Society for the Protection of Birds (RSPB)
- Wildlife Trusts
- Curlew Wales Partnership
- Raptor Groups
- Woodland Trust
- North and Mid Wales Trunk Road Agent (NMWTRA)

Appendix D

Figures