

GREEN GEN TOWY TEIFI

Scoping Report

May 2024



www.greengentowyteifi.com



RSK GENERAL NOTES

Project No.: 663927

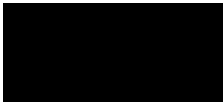
Title: Towy Teifi Grid Connection

Client: Green GEN Cymru

Date: 1st May 2024

Office: Manchester

Status: Final

Author	Molly Bonser	Reviewer(s)	Rob Edwards
			
Date:	15 th March 2024	Date:	15 th March 2024
			Juliet Richards
			
		Date:	1 st May 2024

RSK Environment Ltd (RSK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and RSK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by RSK for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of RSK and the party for whom it was prepared.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Environment Ltd.

CONTENTS

1	INTRODUCTION.....	1
	Background	1
	Green Generation Energy Networks Cymru Limited	2
	Definition of an EIA.....	2
	Requirement for EIA.....	2
	Purpose of the report.....	3
	References.....	8
2	DESCRIPTION OF THE NATURE AND PURPOSE OF THE PROPOSED SCHEME	9
	Need for the proposed scheme	9
	The proposed scheme location	11
	The proposed scheme description.....	14
	Approach to addressing uncertainty	20
	References.....	20
3	CONSIDERATION OF ALTERNATIVES	22
	Introduction	22
	Strategic option development	22
	Overview of the routing process	23
	Proposed approach to assessing alternatives	24
	References.....	25
4	APPROACH TO EIA.....	26
	Introduction	26
	Consultation	26
	General difficulties and uncertainties	27
	Defining the study area	27
	Establishing baseline conditions.....	28
	Establishing future baseline conditions.....	28
	Approach to mitigation.....	28
	Assessment of likely significant effects.....	30
	Opportunities for enhancing the environment	31
	References.....	31
5	ENVIRONMENTAL FACTORS PROPOSED TO BE SCOPED OUT OF FURTHER ASSESSMENT	32
	Introduction	32
	Climate	33
	Population and human health	35
	Socio-economics	36
	Material assets	37
	Major accidents and disasters	38
	Electric and magnetic fields.....	39
	Decommissioning	40

Scoping questions	41
References.....	41
6 LANDSCAPE AND VISUAL	43
Consultation	43
Study area	43
Data sources to inform the EIA baseline characterisation.....	44
Surveys to inform the EIA baseline characterisation.....	45
Baseline conditions	45
Additional (secondary and tertiary) mitigation	51
Description of likely significant effects	51
Matters to be 'scoped in' to further assessment.....	52
Matters to be 'scoped out' of further assessment	55
Opportunities for enhancing the environment	56
Proposed assessment methodology.....	56
Difficulties and uncertainties.....	58
Landscape and visual scoping questions	58
References.....	59
7 BIODIVERSITY	60
Consultation	60
Study area	60
Data sources to inform the EIA baseline characterisation.....	61
Surveys to inform the EIA baseline characterisation.....	62
Approach to bat surveys and assessment	63
Baseline conditions	65
Additional (secondary and tertiary) mitigation	68
Description of likely significant effects	69
Matters to be 'scoped in' for further assessment	71
Matters to be 'scoped out' of further assessment	72
Opportunities for enhancing the environment	74
Proposed assessment methodology.....	74
Difficulties and uncertainties.....	76
Ecology scoping questions	76
References.....	76
8 CULTURAL HERITAGE	78
Consultation	78
Study area	78
Data sources to inform the EIA baseline characterisation.....	78
Surveys to inform the EIA baseline characterisation.....	80
Baseline conditions	81
Additional (secondary and tertiary) mitigation	83
Description of likely significant effects	83
Matters to be 'scoped in' to further assessment.....	84
Matters to be 'scoped out' of further assessment	84

Opportunities for enhancing the environment	85
Proposed assessment methodology.....	85
Difficulties and uncertainties	87
Cultural heritage scoping questions.....	87
References.....	87
9 AIR.....	88
Consultation	88
Study area	88
Data sources to inform the EIA baseline characterisation.....	88
Surveys to inform the EIA baseline characterisation.....	89
Baseline conditions	89
Additional (secondary and tertiary) mitigation	89
Description of likely significant effects	90
Matters to be 'scoped in' to further assessment.....	90
Matters to be 'scoped out' of further assessment	91
Proposed assessment methodology.....	92
Difficulties and uncertainties	93
Air quality scoping questions	93
References.....	94
10 NOISE AND VIBRATION.....	96
Consultation	96
Study area	96
Data sources to inform the EIA baseline characterisation.....	96
Surveys to inform the EIA baseline characterisation.....	96
Baseline conditions	97
Additional (secondary and tertiary) mitigation	97
Description of likely significant effects	98
Matters to be 'scoped in' to further assessment.....	98
Matters to be 'scoped out' of further assessment	99
Opportunities for enhancing the environment	99
Proposed assessment methodology.....	99
Difficulties and uncertainties	101
Noise scoping questions	101
References.....	102
11 TRAFFIC AND MOVEMENT.....	103
Consultation	103
Study area	103
Data sources to inform the EIA baseline characterisation.....	104
Surveys to inform the EIA baseline characterisation.....	105
Baseline conditions	105
Additional (secondary and tertiary) mitigation	106
Description of likely significant effects	106
Matters to be 'scoped in' to further assessment.....	107

Matters to be ‘scoped out’ of further assessment	108
Opportunities for enhancing the environment	108
Proposed assessment methodology.....	109
Difficulties and uncertainties	110
Traffic and movement scoping questions	110
References.....	111
12 GEOLOGY AND HYDROGEOLOGY	112
Consultation	112
Study area	112
Data sources to inform the EIA baseline characterisation.....	112
Surveys to inform the EIA baseline characterisation.....	113
Baseline conditions	113
Additional (secondary and tertiary) mitigation	115
Matters to be scoped into further assessment	116
Matters to be ‘scoped out’ of further assessment	117
Opportunities for enhancing the environment	119
Proposed assessment methodology.....	119
Difficulties and uncertainties	120
Geology and hydrogeology scoping questions	120
References.....	121
13 LAND AND SOIL	123
Consultation	123
Study area	123
Data sources to inform the EIA baseline characterisation.....	123
Surveys to inform the EIA baseline characterisation.....	124
Baseline conditions	124
Additional (secondary and tertiary) mitigation	126
Description of likely significant effects	126
Matters to be ‘scoped in’ to further assessment.....	127
Matters to be ‘scoped out’ of further assessment	127
Proposed assessment methodology.....	128
Difficulties and uncertainties	128
Scoping questions	128
References.....	129
14 WATER.....	130
Consultation	130
Study area	130
Data sources to inform the EIA baseline characterisation.....	130
Surveys to inform the EIA baseline characterisation.....	131
Baseline conditions	131
Additional (secondary and tertiary) mitigation	133
Description of likely significant effects	134
Matters to be scoped into further assessment	134

Matters to be scoped out of further assessment	134
Opportunities for enhancement	138
Proposed assessment methodology.....	138
Difficulties and uncertainties	139
Scoping questions	140
References.....	140
15 CUMULATIVE EFFECTS.....	141
Proposed assessment methodology.....	141
Determining significant cumulative effects.....	145
Difficulties and uncertainties	145
References.....	146

TABLES

Table 1-1 Scoping information requirements.....	4
Table 1-2 PEDW scoping information requirements	4
Table 1-3 Scoping report structure	6
Table 3-1 Public consultation events held to date	24
Table 4-1 Embedded (primary) environmental mitigation measures.....	29
Table 5-1 Assumed high level emissions calculations	34
Table 5-2 Comparison of potential emissions with Wales's carbon budget.....	34
Table 5-3 Changes and effects of material consumption and waste disposal.....	37
Table 6-1 Preliminary viewpoint locations	49
Table 6-2 Landscape and visual matters proposed to be 'scoped in' to the EIA	52
Table 6-3 Landscape and visual matters proposed to be 'scoped out' of EIA.....	55
Table 7-1 Summary of relevant designated sites.....	66
Table 7-2 Biodiversity matters proposed to be 'scoped in' to the EIA	71
Table 7-3 Biodiversity matters proposed to be 'scoped out' of the EIA	72
Table 8-1 Cultural heritage matters proposed to be 'scoped in' to the EIA.....	84
Table 8-2 Cultural heritage matters proposed to be 'scoped out' of the EIA	84
Table 8-3 Criteria for assessing heritage asset importance.....	86
Table 9-1 Air quality matters proposed to be 'scoped in' to the EIA	90
Table 9-2 Air quality matters proposed to be 'scoped out' of the EIA.....	91
Table 10-1 Noise matters proposed to be 'scoped in' to the EIA	98
Table 10-2 Noise matters proposed to be 'scoped out' of the EIA	99
Table 11-1 Available traffic count data summary	104
Table 11-2 Traffic and movement matters proposed to be 'scoped in' to the EIA	108
Table 12-1 Geology and hydrogeology matters proposed to be 'scoped in' to the EIA	116
Table 12-2 Geology and hydrogeology matters proposed to be 'scoped out' of the EIA	118
Table 13-1 Descriptions of the soil associations encountered in the study area	125
Table 13-2 Land and soil matters proposed to be 'scoped in' to the EIA	127
Table 13-3 Land and soil matters proposed to be 'scoped out' of the EIA	127
Table 14-1 Cycle 3 (2021) watercourse classification.....	132
Table 14-2 'Water' matters proposed to be 'scoped in' to the EIA.....	134

Table 14-3 'Water' matters proposed to be 'scoped out' of the EIA.....	135
--	-----

APPENDICES (see separate volumes)

Note, where technical appendices (Appendix 6 onwards) are included, these mirror the chapter number of the environmental factor they relate to, for ease of reference. Therefore, appendix numbering is not numerically sequenced.

VOLUME 1

Appendix 1 – The Preferred Route

Appendix 2 – Proposed Tower Types

Appendix 3 – Summary of the Holford Rules

Appendix 4 – Proposed Structure of the Environmental Statement

Appendix 6 – Landscape and Visual Figures

Appendix 6.1 – Preliminary Indicative Zone of Theoretical Visibility

Appendix 6.2 – National Landscape Character Areas

Appendix 6.3 – Designated Landscapes

Appendix 6.4 – LANDMAP Geological Landscape Overall Evaluation

Appendix 6.5 – LANDMAP Historic Landscape Overall Evaluation

Appendix 6.6 – LANDMAP Habitats Landscape Overall Evaluation

Appendix 6.7 – LANDMAP Visual Sensory Overall Evaluation

Appendix 6.8 – Access Routes Overview

Appendix 6.9 – Preliminary Viewpoints and PRoW (Public Right of Way)

VOLUME 2

Appendix 7 – Biodiversity Figures

Appendix 7.1 – Biodiversity Study Area

VOLUME 3

Appendix 13 – Land and Soil Figures

Appendix 13.1 – Predicted ALC (Agricultural Land Classification)

Appendix 14 – Water Figures

Appendix 14.1 – Watercourses

Appendix 14.2 – Flood Map for Planning

Appendix 14.3 – Cycle 3 (2021) Rivers and Waterbodies map

Appendix 14.4 – Proposed Survey Walkover Locations

1 INTRODUCTION

Background

- 1.1 This document has been prepared by RSK Environment Limited on behalf of Green Generation Energy Networks Cymru Limited (the 'applicant'). It relates to a proposal for the construction of a 132 kilovolt (kV) overhead line (OHL) in southwest Wales, approximately 52 kilometres (km) in length and a new 132 kV substation (hereafter referred to as 'the proposed scheme'). It will provide a grid connection from a proposed Energy Park at Lan Fawr, located east of Llanddewi-Brefi and southeast of Tregaron, which will comprise approximately 40 wind turbines. It will terminate at the new 132 kV substation, which will be located adjacent to a proposed National Grid 400 kV substation, south of Carmarthen (known as the Llandyfaelog Substation and hereafter referred to as 'the proposed National Grid substation').
- 1.2 The proposed scheme will be a 'Development of National Significance' according to the Planning (Wales) Act 2015. Developments of National Significance (DNS) are infrastructure development projects of national importance to Wales, and planning applications for DNS are decided by the Welsh Ministers. The DNS consenting process is specific to Wales and includes bespoke requirements for pre-application consultation to take place during the project development process.
- 1.3 This report accompanies a request for an EIA scoping direction by the applicant, which is being sought from Planning and Environment Decisions Wales (PEDW) in accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (as amended) (hereafter referred to as 'the EIA Regulations'). For the purposes of Regulation 33(2)(d) of the EIA Regulations, this request for an EIA scoping direction is made in relation to a DNS.
- 1.4 At this stage, it is envisaged that the proposed scheme will comprise the following elements:
- 132 kV OHL;
 - 'L7' steel lattice towers (or similar) with a standard height of 27 metres (m) and average span length of 250 m (assumed to be approximately 208 towers in total);
 - Approximately 52 km of double circuit OHL from the proposed Lan Fawr Energy Park to the proposed National Grid substation;
 - A new 132 kV substation, adjacent to the proposed National Grid substation; and
 - Temporary construction ancillary development works including 25 m x 25 m working area around the base of each standard tower (increasing to 50 m x 50 m for angle towers, if required), temporary access tracks, winching and pulling areas and construction compounds.
- 1.5 The purpose of this report is to define the proposed scope of the Environmental Statement that will be prepared in accordance with the EIA Regulations and will accompany the applicant's DNS application.
- 1.6 Construction of the proposed scheme is anticipated to commence in 2027.

Green Generation Energy Networks Cymru Limited

- 1.7 The applicant is a business in the Bute Energy Group, which promotes and develops new grid infrastructure to distribute clean, green energy. The applicant's approach is aligned with Future Wales and the Welsh Government's ambitions for unlocking renewable energy generation in Wales. The approach also aligns with the (United Kingdom) UK Government's net zero targets.
- 1.8 The applicant 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. In consultation with the Welsh Government, Local Authorities and the private sector, the applicant is also keen to explore how others can use its infrastructure to the benefit of local communities in Wales.

Bute Energy

- 1.9 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.
- 1.10 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 onshore renewable power generation in Wales swiftly and at scale, helping to bring down energy costs and contribute towards achieving net zero.

Definition of an EIA

- 1.11 The term 'Environmental Impact Assessment' (EIA) describes a procedure that must be followed for certain types of project before it can be given 'consent'. The procedure is a means of drawing together, in a systematic way, an assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for avoiding, preventing, reducing or, if possible, offsetting them are properly understood by the public and the authority granting consent (the 'determining authority') before it makes its decision.

Requirement for EIA

- 1.12 The EIA Regulations require that, before consent is granted for certain types of development, an EIA must be undertaken. The EIA Regulations set out the types of development that must be subject to an EIA (referred to as Schedule 1 development) and the types of development that may be subject to an EIA depending on certain parameters and/or their potential to give rise to significant environmental effects (referred to as Schedule 2 development).
- 1.13 The proposed scheme does not fall under any of the types of development set out in Schedule 1 of the EIA Regulations. However, the proposed scheme is of a type and scale described in Schedule 2 of the EIA Regulations, as follows:

"Energy industry

k) Transmission of electrical energy by overhead cables. Development to provide an electric line installed above ground with a nominal voltage of 132 kilovolts;”

- 1.14 Regulation 5(2) of the EIA Regulations requires that if either of the following events are to occur, a development is determined to be a development requiring EIA:

“a) the submission by the applicant or appellant in relation to that development of a statement referred to by the applicant or appellant as an environmental statement for the purposes of these Regulations; or

b) the adoption by the relevant planning authority of a screening opinion to the effect that the development is EIA development”.

- 1.15 Therefore, the applicant has notified Planning and Environment Decisions Wales (PEDW) of the intention to prepare and submit an Environmental Statement in support of the DNS application without prior request for an EIA screening direction, under Regulation 31(1) of the EIA Regulations.

Purpose of the report

- 1.16 This report, which accompanies a request to PEDW for an EIA scoping direction, is made in relation to a DNS as defined in Section 62D of the Town and Country Planning Act 1990.
- 1.17 In accordance with Regulation 33 of the EIA Regulations, a person who is minded to make an EIA application may ask PEDW to state in writing their opinion as to the scope and level of detail of the information to be provided in the Environmental Statement. Therefore, this report has been prepared in accordance with Regulation 33(2) of the EIA Regulations and Appendix 3 of PEDW’s DNS procedural guidance.
- 1.18 The purpose of this report is to ensure that the subsequent EIA is focused on the key impacts likely to give rise to significant environmental effects, and to obtain agreement on the EIA approach and scope. As well as identifying matters to be considered in the EIA, this report also identifies those matters that are not considered necessary to assess further. This approach is in line with the general aim to undertake proportionate EIA, as advocated by industry best practice.
- 1.19 Whilst this report seeks to establish the overall framework for the EIA in relation to the environmental factors and associated effects, the exact scope of the EIA will be influenced by the scoping direction received, the on-going design evolution of the proposed scheme, and through on-going baseline data collection (e.g. field surveys etc.). In this regard, a list of ‘scoping questions’ is presented within each environmental factor assessment table (Chapter 6), the aim of which is to assist the determining authority and its consultees in forming the scoping direction.
- 1.20 Where further evidence justifies a change to the scope of the EIA, this will be explained in the Environmental Statement along with confirmation of whether the change has been agreed with relevant consultees.
- 1.21 Table 1-1 sets out the information required to be included with a request for an EIA scoping direction, and where the information can be found within this report under Regulation 33(2) of the EIA Regulations.

Table 1-1 Scoping information requirements

Information Required	Location within this Report
A plan sufficient to identify the land.	Appendix 1 – Preferred route
A brief description of the nature and purpose of the development, including its location and technical capacity.	Chapter 2 – Description of the nature and purpose of the proposed scheme Appendix 2 – Proposed Tower Types
An explanation of the likely significant effects of the development on the environment.	Chapter 5 – Environmental factors proposed to be scoped out of the EIA Chapter 6 to 14 inclusive (environmental factor-specific chapters) Chapter 15 – Cumulative Effects Appendix 6 – Landscape and Visual figures Appendix 7 – Biodiversity figures Appendix 13 – Land and Soil figures Appendix 14 – Water figures
A statement that the request is made in relation to a DNS for the purposes of section 62D of the 1990 Act.	Chapter 1 - Introduction
Such other information or representations as the person making the request may wish to provide or make.	Chapter 1 – Introduction (an introduction to the applicant and Bute Energy in paragraphs 1.7 to 1.10) Chapter 3 – Consideration of alternatives Appendix 3 – Summary of the Holford Rules

- 1.22 Appendix 3 of PEDW's DNS procedural guidance (paragraphs 3.14-3.15) sets out additional information to be included as part of a request for an EIA scoping direction, which is summarised in Table 1-2. This scoping report also complies with the requirements contained in paragraph 3.16 whereby the elements of the proposed scheme likely to have a significant environmental effect have been identified and, where there is uncertainty, as much detail has been provided as possible or a worst case scenario has been assumed.

Table 1-2 PEDW scoping information requirements

Information required	Location within this report
An outline of the main alternatives considered and the reasons for selecting a preferred option	Chapter 3 – Consideration of alternatives Appendix 3 – Summary of the

Information required	Location within this report
	Holford Rules
Results of desktop and baseline studies where available	Chapter 6 to 14 inclusive (environmental factor-specific chapters)
A record of consultation undertaken with relevant bodies (including any public engagement) to date	Chapter 3, Table 3.1 – Public consultation events held to date Chapter 6 to 14 inclusive (environmental factor-specific chapters)
Referenced plans presented at an appropriate scale to convey clearly the information and all known aspects associated with the proposal	Appendix 1 – Preferred route Appendix 6, 7, 13 and 14 inclusive (Landscape and Visual, Biodiversity, Land and Soil and Water figures)
Guidance and best practice to be relied upon, and whether this has been agreed with the relevant bodies (for example the statutory nature conservation bodies or local authorities) together with copies of correspondence to support these agreements	Chapter 6 to 14 inclusive (environmental factor-specific chapters)
Methods used or proposed to be used to assess impacts and the significance criteria framework used	Chapter 6 to 15 inclusive (environmental factor-specific chapters and cumulative effects chapter)
Any mitigation proposed and the extent to which these are likely to reduce impacts	Chapter 2 – Description of the nature and purpose of the proposed scheme Chapter 4 – Approach to EIA Chapter 5 – Environmental factors proposed to be scoped out of the EIA Chapter 6 to 14 inclusive (environmental factor-specific chapters)
Where impacts from consequential or cumulative development have been identified, how applicants intend to assess these impacts in the Environmental Statement	Chapter 4 – Approach to EIA Chapter 15 – Cumulative effects
An indication of any European designated nature conservation sites that are likely to be significantly affected by the proposed scheme and the nature of the likely significant impacts on these sites	Chapter 7 – Biodiversity Appendix 7 – Biodiversity Figures
Key factors covered as part of applicants' scoping exercise	Chapter 5 – Environmental factors proposed to be scoped out of the

Information required	Location within this report
	EIA Chapter 6 to 14 inclusive (environmental factor-specific chapters)
An outline of the structure of the proposed Environmental Statement	Appendix 4 – Proposed Structure of the Environmental Statement

- 1.23 In accordance with the EIA Regulations, the Environmental Statement will be based on the scoping direction received.

Report structure

- 1.24 Table 1-3 presents the structure of this report alongside details of the relevant technical specialist responsible for each section of this report. All technical specialists are part of RSK Environment Ltd, a founding member of the Institute of Environmental Management and Assessment (IEMA) 'EIA Quality Mark' scheme; members are considered capable of producing high-quality environmental impact assessments on a consistent basis and ensure professional competency in environmental and sustainability disciplines.

Table 1-3 Scoping report structure

Chapter	Technical specialist
Chapter 1 Introduction	Dr Juliet Richards, 7+ years, IEMA Molly Bonser, 1 year, IEMA Graduate
Chapter 2 Description of the nature and purpose of the proposed scheme Sets out the objectives for the proposed scheme and describes its location and design to date.	Dr Juliet Richards, 7+ years, IEMA Molly Bonser, 1 year, IEMA Graduate
Chapter 3 Reasonable alternatives considered Sets out alternatives considered to date as part of a Grid Connection Routeing Study. Sets out proposed approach to demonstrating how alternative options for the design and routeing of the proposed scheme have been considered and how consultation feedback has been used to inform this.	Dr Juliet Richards, 7+ years, IEMA Molly Bonser, 1 year, IEMA Graduate
Chapter 4 Approach to EIA Sets out the general approach and methods to be employed. Includes information on consultation and approach to coordinating technical assessments.	Dr Juliet Richards, 7+ years, IEMA Molly Bonser, 1 year, IEMA Graduate

Chapter	Technical specialist
Chapter 5 Environmental factors proposed to be scoped out of further assessment Sets out the environmental factors, other aspects of the environment and elements of the proposed scheme that are proposed to be excluded from the EIA.	Dr Juliet Richards, 7+ years, IEMA Molly Bonser, 1 year, IEMA Graduate
Chapter 6 to 14 inclusive Environmental factors proposed to be scoped into further assessment Sets out information on environmental factors that will be included in the EIA. Includes information on technical assessment methodologies, proposed study areas and consultees, likely significant effects, anticipated mitigation, proposed methods of assessment, factor-specific study areas. Note, where technical appendices are provided, these are numbered to reflect the environmental factor chapter number they relate to. These are: Appendix 6 – Landscape and Visual Appendix 7 – Biodiversity Appendix 13 – Land and Soil Appendix 14 - Water	Landscape and Visual Zachary Ford, 12 years, CMLI Dan Leaver, 20+ years, BLD, CMLI Biodiversity Kailey O'Brien, 5+ years, MCIEEM Mark Lang, 17 years, MCIEEM, Chartered Ecologist Cultural Heritage Jen Richards, , 20+ years, MCIFA, Chris Osborne, 6 years, ACIFA Air and Climate Dr Aastha Dhingra, 7 years, MIEnvSc, MIAQM Dr Srinivas Srimath, 25+ years, MIEnvSc, MIAQM, PIEMA Noise and Vibration Jamie Slater, 12+ Years, MIOA Thomas Dalton, 8 Years, MIOA Traffic and movement Amy Friel, 12 years, MCIHT Stephen Heritage, 25 years, MCIHT Geology and Hydrogeology Tony Morton, 25 years, CGeol, SiLC Andrew Prezewieslik, Cgeol Land and Soil Darren Ingram, 20 years, MIAgrE, MISoilSci Water Alison Cadge, 19 years, MCIWEM, C.WEM Ryan Whitfield, 7 years, MCIWEM
Chapter 14 Cumulative assessment Sets out the proposed approach and	All technical specialists listed above Dr Juliet Richards, 7+ years, IEMA

Chapter	Technical specialist
overarching methodology for assessing cumulative effects.	Molly Bonser, 1 year, IEMA Graduate

References

Planning (Wales) Act. (2015). Available at: <https://www.legislation.gov.uk/anaw/2015/4/contents/enacted>.

Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations (2017). Available at: <https://www.legislation.gov.uk/wsi/2017/567>

Welsh Government (2019). Future Wales: The National Plan. Updated 2021. Available at: <https://www.gov.wales/future-wales-national-plan-2040>

Welsh Government. (2019). Developments of national significance (DNS): procedural guidance. Available at: <https://www.gov.wales/developments-national-significance-dns-procedural-guide>

2 DESCRIPTION OF THE NATURE AND PURPOSE OF THE PROPOSED SCHEME

Need for the proposed scheme

- 2.1 The 2008 Climate Change Act, which was amended in 2019, requires the Secretary of State to ensure that the net UK carbon account for 2050 is at least 100 percent lower than the 1990 baseline (paragraph 1). This is often referred to as the net zero target.
- 2.2 The 2008 Act also requires the Secretary of State to set legally binding carbon budgets at five-year intervals beginning in 2008, 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.
- 2.3 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.
- 2.4 The Environment (Wales) Act 2016 also requires the Welsh Government to reduce greenhouse gas emissions 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 a target for at least 70 percent of Wales's electricity consumption to be met using renewable generation by 2030.
- 2.5 In April 2019, the Welsh Government declared a climate emergency. As part of its plan to tackle this emergency, the Welsh Government brought forward policies to encourage innovative ways of creating energy that are sustainable, secure and cost effective. This includes Future Wales and the twelfth 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's international commitments and our target to generate 70 percent of consumed electricity by renewable means by 2030 in order to combat the climate emergency"* (page 95).
- 2.6 The climate change emergency and energy prices rises have brought into focus the need for change and in early 2023, the Welsh Government published a consultation on a proposed target to meet 100% of Wales's electricity consumption to be met using renewable energy by 2035.
- 2.7 Onshore wind development will play a critical role in assisting the Welsh Government to meet its renewable targets. Central to this are the Pre-assessed Areas for Wind Energy 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. Future Wales confirms that *"there is a presumption in favour of largescale wind energy development ... in these areas"* (page 95). Outside of these areas, Future Wales confirms that a positive policy framework still exists.
- 2.8 It has long been acknowledged by the Welsh Government, energy generators and network operators that a key challenge with respect to delivering Wales's net zero

obligations is the fact that the strongest renewable resources are generally in areas that have the lowest existing electricity network capacity, essentially 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 United Kingdom and Welsh Governments' 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 developments across Wales"* (page 99) adding that the Welsh Government is *"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 new renewable energy development and associated grid infrastructure in Wales.

- 2.9 In addition to the energy parks that will be directly connected to the grid, Bute Energy is proposing to develop new energy parks across Wales that are geographically remote from existing high voltage electricity infrastructure. A number of the proposed energy parks will be located in South West Wales - referred to as the South Wales Western Cluster of 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 One Grid Connection Strategy.
- 2.10 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 a strategic renewable energy generation hub.
- 2.11 Operation of infrastructure at 132 kV within England and Wales is classified as 'Electricity distribution'. These assets are in the main owned and operated by Distribution Network Operators. However, in order to increase competition in the electricity distribution market, the Office of Gas and Electricity Markets, as the energy regulator for Great Britain, now licenses Independent Distribution Network Operators. Once licensed by Office of Gas and Electricity Markets, Independent Distribution Network Operator are able to develop, operate and maintain electricity distribution networks. Independent Distribution Network Operator connect their networks onwards into the local distribution network or transmission network.
- 2.12 The applicant applied for an Independent Network Distribution Operator licence in October 2022. In April 2024, OFGEM confirmed that they are 'minded to grant' an Independent Network Distribution Operator licence to the applicant. Determination on the application is expected in the coming months. This will allow the applicant 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 also enables the applicant to deliver efficient and reliable grid infrastructure in Wales, opening broader opportunities for connections in the future.
- 2.13 As with Distribution of Network Operators, an Independent Distribution Network Operator holds an electricity licence under Section 6(1)(c) of the Electricity Act 1989. Distribution Network Operators and Independent Distribution Network Operator licences also share the same Standard Licence Conditions. This places specific requirements on an Independent Distribution Network Operator, including *"to develop and maintain an efficient, co-ordinated, and economical system of electricity distribution"* (Section 9(1)(a)).

- 2.14 As a licence holder, the applicant would be required to adhere to the Electricity Act 1989, including Schedule 9, which confirms that the licence “*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 shall 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*” (Schedule 9 (1)(a) and (1)(b)).
- 2.15 With oversight of the development of both the connection infrastructure promoted by the applicant 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.
- 2.16 As a Welsh-based company, and a prospective Independent Distribution Network Operator licence holder, the applicant will play a proactive role in the progression towards achieving Net Zero in Wales. Bute Energy Group will support the development of the proposed energy parks and, through the proposed connection to the national electricity transmission system promoted by the applicant, will also be able to support the efficient and timely connection of future renewable energy projects across Wales, demonstrating the benefits of the Independent Distribution Network Operator framework.

The proposed scheme location

- 2.17 This chapter provides a description of the proposed scheme’s location for the purposes of identifying the environmental receptors that it may affect. The approximate location and alignment of the proposed scheme was identified as part of a routeing study, which was undertaken to consider various alternative route corridors for the OHL and to identify the least environmentally sensitive route. The methodology and results of the routeing study are presented in the Towy Teifi Routeing and Consultation Document (January 2024), which is available at <https://greengentowyteifi.com/en/documents/>.
- 2.18 The proposed scheme will provide a connection from the proposed Lan Fawr Energy Park located east of Llanddewi-Brefi and southeast of Tregaron, which will terminate at the proposed National Grid substation south of Carmarthen, via an adjacent, new 132 kV substation¹. The overall route is approximately 52 km in length and will follow in a northeast to southwest direction, passing within the administrative boundaries of Ceredigion County Council and Carmarthenshire County Council. The figure in Appendix 1 shows the preferred route (shown in green, from north to south), together with the alternative routes (shown in grey) that were considered within an overall preferred corridor (shown with a blue boundary). It also shows a substation siting area, which covers the anticipated location of the proposed National Grid substation and the applicant’s new 132 kV substation adjacent.
- 2.19 The preliminary location of the proposed scheme is represented by a 200 m wide preferred route and, as the iterative design process continues during the EIA, the preferred route will be refined to the width of the proposed alignment of infrastructure required for the operation of the proposed scheme, as well as the temporary infrastructure

¹ The proposed National Grid substation will be the subject of a separate planning application by National Grid and does not form part of the proposed scheme to which this report relates. The new 132 kV substation adjacent to the proposed National Grid substation **may** form part of the applicant’s DNS application and it has therefore been included as part of the proposed scheme, for the purpose of EIA scoping.

required for construction of the proposed scheme. The final, detailed alignment of the OHL and associated towers will be considerably narrower, allowing specific physical or environmental features within the preferred route to be avoided during the detailed design.

- 2.20 It should be noted that, whilst the preferred route represents the location of the proposed scheme, it is likely that subsequent design iterations to mitigate environmental impacts and take account of feedback, will deviate the final alignment and site boundary outside of the current preferred route. This is particularly relevant in relation to receptors such as scheduled monuments, where the final alignment will be designed to avoid impacting the wider setting of a receptor, but the geographical extent of a setting impact is not defined with any certainty at this stage of scoping.
- 2.21 As such, although the focus of EIA scoping is on the indicative 200 m preferred route and the new 132 kV substation adjacent to the proposed National Grid substation, it is requested that the wider area of the overall preferred corridor is also considered in forming an EIA scoping direction.
- 2.22 For ease of reference, the proposed scheme has been divided into sections², as follows:
- Section 1: Lan Fawr to Lampeter;
 - Section 2: Lampeter to Llanllwni;
 - Section 3: Llanllwni to Alltwalis;
 - Section 4: Alltwallis to Rhydargaeau; and
 - Section 5: Rhydargaeau to Llandyfaelog.
- 2.23 The route is, on the whole, located in a predominantly rural area comprising a mix of fields and hedgerows enclosing pasture, with scattered farms, small linear and clustered settlements, and individual dwellings. It will cross a variety of landscapes, including semi-urban areas, plantation, woodland, agricultural land and open land at the foothills of the hills and mountains to the south and east. It generally follows relatively low-lying land below 150 m Above Ordnance Datum (AOD) but includes limited sections at a higher elevation of up to 300 m AOD.

Section 1 Lan Fawr to Lampeter

- 2.24 This section of the route is approximately 11 km in length. It commences at the proposed Lan Fawr Energy Park located east of Llanddewi-Brefi and southeast of Tregaron. It heads west to Lanfair Clydogau, before turning southwest towards Lampeter. It continues in a southwest direction, skirting around the eastern boundaries of the settlement of Ram and crossing the A482, before reaching the start of Section 2 at Parc-y-Rhos.
- 2.25 Section 1 broadly follows the alignment of the Afon Teifi, which is approximately 450 m to the west and separated from the proposed scheme by the B4343. It is located within the eastern side of the Afon Teifi valley on the hillslopes that rise to the east and north to the adjacent, steeper uplands of the Cambrian Mountains.
- 2.26 The route in this section crosses several tributaries of the Afon Teifi as well as several minor roads. The dominant land use within Section 1 is agricultural, mostly comprising

² Each section of the preferred route is labelled numerically (1 for Section 1, 2 for Section 2 etc.) and denoted by its geographical alignment within the overall preferred corridor (E for an eastern alignment, C for a central alignment and W for a western alignment).

grassland and occasional forestry, with scattered tourist facilities/ holiday accommodation.

Section 2 Lampeter to Llanllwni

- 2.27 This section of the route is approximately 13 km in length. It commences at Parc-y-Rhos, southeast of Lampeter, and continues in a southwest direction through the Afon Teifi valley, broadly following the alignment of the Afon Teifi. It passes the village of Llanybydder approximately 400 m to the north, before joining Section 3 at Llanllwni.
- 2.28 Section 2 is characterised by hilly ground and the proposed scheme has been routed to avoid the steeper slopes around summits such as Mynydd Pencarreg and Mynydd Llanbyther.
- 2.29 The route in this section would cross several tributaries of the Afon Teifi as well as several minor roads, including the B4337 west of Ty-Mawr. The route also crosses the A485 north of Aber-Giar. The dominant land use within Section 2 is agricultural, mostly comprising grassland and occasional forestry, with scattered tourist facilities/ holiday accommodation.

Section 3 Llanllwni to Alltwalis

- 2.30 This section of the route is approximately 9 km in length. It commences south of Llanllwni and follows a more southerly direction, winding between the village of Pencader to the west and the smaller settlements of New Inn and Gwyddgrug to the east, before reaching the start of Section 3 at Alltwalis.
- 2.31 Section 3 of the route is characterised by rolling hills with generally more open views, interspersed by river valleys. To the east of the proposed scheme, the terrain rises up towards Brechfa Forest. The proposed scheme broadly follows the alignment of the A485 throughout this section, crossing the A485 at Caeau-Gwynion.
- 2.32 The route in this section crosses several tributaries of the Afon Teifi as well as several minor roads, including the B4336. The dominant land use within Section 3 is agricultural, mostly comprising grassland and occasional forestry, with scattered tourist facilities/ holiday accommodation.

Section 4 Alltwalis to Rhydargaeau

- 2.33 This section of the route is approximately 4 km in length. It commences south of Alltwalis and continues in a southerly direction. It skirts around the eastern boundary of the settlement of Pontarsais before joining the start of Section 5 to the east of Rhydargaeau.
- 2.34 Section 4 of the route is located within the Pembroke and Carmarthen foothills, with gently rolling hills, wooded valley slopes and broad valley floors. The proposed scheme maintains an eastern alignment relative to the A485.
- 2.35 The route in this section crosses various tributaries of the Afon Teifi as well as some minor roads. The dominant land use within Section 4 is agricultural, mostly comprising grassland and occasional forestry, with scattered tourist facilities/holiday accommodation and visitor attractions.

Section 5 Rhydargaeau to Llandyfaelog

- 2.36 This section of the route is approximately 15 km in length. It commences to the east of Rhydargaeau and continues south for a short distance towards Peniel. It then turns southeast to move away from Peniel before switching back towards the southwest, crossing the A40 between the settlement of White Mill to the east and Abergwili to the west. The route continues towards the southwest, crossing the Afon Towy and A48, maintaining distance from Carmarthen before turning west at Cwmffrwd and south to the proposed National Grid substation, via a new 132 kV substation, south of Carmarthen.
- 2.37 Section 5 of the route to the north is located within the Pembroke and Carmarthen foothills, passing through hilly terrain, wooded valley slopes and broad valley floors. The proposed scheme maintains a western alignment relative to the A485. As this section of the route continues southwards through undulating terrain, it enters the lowlands of the Afon Towy valley with wide, open fields.
- 2.38 The route in this section crosses several minor roads and tributaries, but also the more major A40 and A48 which pass from east to west. It also crosses the Afon Towy and its associated floodplain. The dominant land use in this section of the route is agricultural, with enclosed fields of pasture and some forestry. Tourist and recreational features and facilities become more abundant along this section of the route, with slightly larger towns and villages such as Peniel, Abergwili and Carmarthen located west of the proposed scheme.

The proposed scheme description

Overhead line infrastructure

- 2.39 The proposed scheme will be a double circuit OHL approximately 52 km in length, comprising overhead cables supported on 'L7' steel lattice towers (or similar) with six cross-arms (three on each side), as shown in Appendix 2. The required voltage for the OHL is 132 kV.
- 2.40 There are three types of 'L7' steel lattice tower (or similar) as follows:
- Suspension towers, used to support OHLs along straight sections of the connection route;
 - Angle towers, used particularly (but not exclusively) to support OHLs at points where the route changes direction; and
 - Terminal towers, used where the OHL terminates into a substation or onto an underground cable section via a separate cable sealing compound or platform.

Tower heights and span length

- 2.41 The standard height for an 'L7' steel lattice tower (or similar) is 27 m, and the section of OHL between the towers is known as the 'span', with the distance between the towers being known as the 'span length'. The average span length is approximately 250 m, but this can be increased or decreased depending on the requirements of the terrain or intermediate obstacles like water bodies or roads. In these limited locations it may be necessary to have taller towers to accommodate longer spans and the assessment in the EIA will take this into account.

- 2.42 The towers are used to regulate the statutory safety clearances that are required for conductor height, which is determined by the voltage of the OHL and the span length between the two towers.

Tower colour

- 2.43 As towers are fabricated from galvanised steel, it is not possible to colour the towers to camouflage them for all times of the 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.

Ancillary development and temporary working

- 2.44 To facilitate the construction of the proposed scheme, ancillary development will be required. Ancillary development will include working areas around towers, temporary access tracks, winching/pulling areas and construction compounds/laydown areas. The ancillary development will be temporary and will be removed and the ground re-instated following the completion of construction of the proposed scheme.

New 132 kV substation

- 2.45 A new 132 kV substation will be required to convert the voltage of the alternating current (AC) from its original value to a value that is more suitable for distribution or transmission via the proposed National Grid substation. The main components of the new 132 kV substation are transformers, circuit breakers, and switchgear. This substation is expected to have a footprint of approximately 75 m x 85 m, with additional area around the site for planting to provide biodiversity and visual impact mitigation. It will be located adjacent to the proposed National Grid substation, essentially forming a single compound.
- 2.46 The precise location is wholly dependent on where the proposed National Grid substation will be sited, but is anticipated to be located within the National Grid 'Substation Siting Area' shown in Appendix 1.

Construction features and methods

- 2.47 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.
- 2.48 Standard good practice construction measures such as use of industry best practice and adherence to a Construction Environmental Management Plan (CEMP) will be implemented during construction.

Access

- 2.49 Prior to constructing the OHL, temporary accesses will be installed as necessary and laydown/ storage areas established. Any trees that may affect the OHL safety clearances will be removed or pruned. Existing entrances to fields will be used, where possible, to minimise the need to create new entrances that may require removal of vegetation. The use of existing tracks and existing watercourse crossings will be maximised, with the upgrading of these if necessary. Any upgrades, particularly those involving structural

changes, will likely be retained and will be subject to the relevant additional consents such as Ordinary Watercourse Consent and Flood Risk Activity Permit.

- 2.50 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 proposed scheme. This will involve the removal and storage of topsoil and the placement of suitable haul road forming materials.
- 2.51 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.
- 2.52 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.

Tower foundations

- 2.53 The tower 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 3 and 5 m depth, and 3 m x 3 m width/ length.
- 2.54 The reinforced concrete foundations consist of approximately 9-17 tonnes (t) of concrete per tower, dependent on the type (suspension or tension).
- 2.55 Earthmoving equipment, such as tracked excavators, will be used. Dependent on ground conditions, there may be a requirement to install piled foundations in a small number of tower locations.

Tower delivery

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

Erection of towers

- 2.57 The towers will be erected using a mobile crane, the delivery of which will require abnormal load notification. Construction would likely start with the tower body, followed by the cross arms and finally the insulators. Alternatively, the towers may be partly assembled on the ground, before lifting in sections.

Delivery of conductors and stringing equipment

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

Insulator and conductor erection and tensioning

- 2.59 Once the towers have been erected the stringing of the conductors will be undertaken, which requires temporary 'pulling/ stringing' areas at tower locations approximately every 3 to 4 km along the proposed scheme. These temporary pulling areas are approximately 20 m x 50 m width/ length.
- 2.60 At each of the tower locations, a winch and a tensioner will be set up at the opposite ends of the string section. The wires are placed in blocks which hang from the insulators and

the winch 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.

- 2.61 The weight of an 'L7' steel lattice (or similar) tower is between 5 and 9 t approximately of steel, dependent on the type and the height. There will be 12 conductors and one earthwire per tower, which will have a combined weight of approximately 12.8 t per km.

Temporary working

- 2.62 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 an underground cable.
- 2.63 'L7' steel lattice tower (or similar) locations have a typical working area of approximately 25 m x 25 m for standard towers and 50 m x 50 m 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.

Clearance and reinstatement

- 2.64 Following commissioning of the proposed scheme, all compounds and temporary accesses will be reinstated and restored to former conditions and/ or in accordance with the conditions of any planning permission. There may be some exceptions to this where the benefit of retaining them (for example, structural upgrades to existing accesses and bridges) outweighs that of restoring them to their former condition.
- 2.65 During reinstatement, opportunities identified during the EIA process and agreed with Natural Resource Wales to provide net benefits for biodiversity will be delivered (see Chapter 7 'Biodiversity').

Construction timescales

- 2.66 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' and 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 is expected to be approximately 4 months per tower.

Operation and maintenance

- 2.67 Most OHL components are maintenance free, the exposed elements which suffer from corrosion, wear, deterioration and fatigue, will require inspection approximately every 12 months and periodic maintenance over the lifespan of the proposed scheme. OHL conductors generally require refurbishment after approximately 40 years however the fittings and insulators may require replacing sooner (approximately 20 to 25 years).
- 2.68 Any felled wayleave areas also would also be managed to maintain the required clearances whilst the connection remains active. Walkover surveys or flyovers would identify where there is a requirement to clear wayleaves of new growth.

Embedded (primary) mitigation measures

- 2.69 Embedded mitigation measures are intrinsic features that are built into the design to avoid or reduce the level of significant effects that could be experienced during construction and operation of the proposed scheme.
- 2.70 As further consultation is carried out the design of the proposed scheme will mature further. The environmental assessment will continue to influence the design, to help avoid and reduce potentially significant effects. The Environmental Statement will document all the embedded mitigation measures that have been developed during the design of the proposed scheme, which will focus on the following:
- Routing and siting of infrastructure to avoid and reduce impacts upon receptors. This will be through, for example and where possible to do so, the positioning of towers to avoid key views (as recorded on OS Maps, published landscape character assessments and Local Development Plans, for example), or the avoidance of direct impacts upon notable habitats;
 - Placement of towers to avoid coming into proximity to residential and other sensitive receptors, where possible; and
 - Placement of towers outside fluvial floodplains and spanning of cable over flood zones and watercourses, where possible.

Underground cabling infrastructure

- 2.71 Undergrounding of the cables could be appropriate along sections of the 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.
- 2.72 Using open cut trenching as the method for installation, undergrounding of cables would require a corridor of approximately 25 m width along which all vegetation would need to be removed to allow sufficient working area. 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.
- 2.73 At this early stage in the development of the proposed scheme, 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.
- 2.74 In determining where along the preferred route it is appropriate to consider underground cables, the applicant will firstly identify those areas that are subject to the greatest visual impacts (or impacts upon setting) before subsequently considering the capacity of the receiving environment to receive such an excavation.
- 2.75 Underground cables will be considered in the most sensitive landscape areas or where the presence of OHL will be particularly dominant and impactful upon visual receptors.
- 2.76 If it is deemed appropriate to consider underground cables, the applicant will consider and appraise the subsequent impacts that will arise from the excavation 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.

- 2.77 Underground cables will only be proposed where the balance of effects is justified whilst similarly considering the increased cost and viability of the proposed scheme. Any justification will be clearly explained in the Environmental Statement.

Underground cable construction

- 2.78 In the event that underground cables form part of the design of the proposed scheme, 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 25 m 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.
- 2.79 There are two standard techniques that can be used to install underground cables; standard open cut installation and trenchless installation, and both may be required on the proposed scheme.
- 2.80 Standard open cut installation usually 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 would be excavated for cabling to be installed and covered.
- 2.81 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 drilling/ boring methods to pass beneath features.
- 2.82 Underground cable construction duration will be dependent on ground conditions and the length of cable.

Proposed scope for assessment of underground cables

- 2.83 In the event that underground cables form part of the design of the proposed scheme, it is proposed that the following environmental factors will consider underground cable locations and include them in their assessments, where significant effects are predicted:
- Landscape and visual: in relation to temporary impacts on visual amenity during construction, including the associated impacts of vegetation clearance, and in relation to above ground structures such as terminal supports and cable sealing ends;
 - Geology and hydrogeology: in relation to impacts on groundwater quality and subsurface flowpaths, and in relation to impacts arising from the excavation of peaty soils (where unavoidable);
 - Biodiversity: in relation to indirect effects on due to disturbance of, and temporary loss of, habitat; and
 - Cultural heritage: in relation to impacts on the setting of above ground heritage assets and impacts to buried archaeology.

Approach to addressing uncertainty

- 2.84 In order to define the proposed scheme and determine where detail is to be included at the DNS application stage and where it may be deferred until after consent is granted, the applicant will identify the level of flexibility required (e.g. in relation to the size of the towers or construction methods).
- 2.85 Many promoters of renewable energy projects seek to maximise flexibility in their consents, given the long lead in times to consent and subsequent engagement of engineering, procurement, and construction (EPC) contractors. It is typical for large infrastructure projects to include the ability to alter the final design of a scheme by having 'limits of deviation' or a 'micro-siting allowance'.
- 2.86 In order to maintain flexibility in the design, it is the applicant's intention to use the 'Rochdale Envelope' approach within parameter ranges. The Rochdale Envelope is an acknowledged way of dealing with an application comprising EIA development, where details of a project have not been fully resolved by the time the application is submitted. The term is used to describe those elements of a scheme that have not yet been finalised, but yet can be accommodated within certain limits and parameters allowing the likely significant effects of a project to be presented in the Environmental Statement as a 'worst case'. It also provides the opportunity to assess aspects of a development where the detailed design is to be developed by the applicant and approved by the determining authority under a planning condition, subsequent to the planning consent being made.
- 2.87 Furthermore, such flexibility may be useful where a change in the design or capacity of the proposed scheme is anticipated, but not yet certain. Therefore, it may be possible that a particular element of the design will be subject to ongoing technological advancements. It will be important that a lack of flexibility in the DNS application does not unduly hinder the applicant's ability to consider and adopt such future technological advancements. This is of particular importance to maintaining flexibility due to the rapid pace of change in renewable energy technologies.
- 2.88 It is therefore necessary for the EIA to assess an 'envelope' within which the works will take place. To remain in accordance with the EIA Regulations, it will be essential that the parameters are defined to ensure that 'likely significant effects' are identified, rather than unrealistically amplified effects, which could be deemed unlikely. These parameters will be considered in detail by the technical authors in the Environmental Statement to ensure the realistic 'worst case' effects of the proposed scheme are assessed for each potential receptor.

References

- Climate Change Act. (2008). Available at: <https://www.legislation.gov.uk/ukpga/2008/27/contents>.
- Climate Change Committee. (2020). Sixth Carbon Budget. Available at: <https://www.theccc.org.uk/publication/sixth-carbon-budget/>.
- Department for Energy Security and Net Zero & Department for Business, Energy and Industrial Strategy (2021). Net Zero Strategy: Build Back Greener. *Policy Paper*. Available at: <https://www.gov.uk/government/publications/net-zero-strategy>.
- Electricity Act. (1989). Available at: <https://www.legislation.gov.uk/ukpga/1989/29/contents>.

Green Gen Cymru (2024). Information Hub. Green Gen Towy Teifi Routeing and Consultation Document. Available at: <https://greengentowyteifi.com/en/documents/>.

National Infrastructure Planning (2018). Advice Note Nine: Rochdale Envelope. Version 3. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/#2>

The Environment Act (Wales). (2016). Available at: <https://www.legislation.gov.uk/anaw/2016/3/contents/enacted>

Welsh Government (2021). Future Wales: The National Plan 2040. Available at: <https://www.gov.wales/future-wales-national-plan-2040>

Welsh Government (2024). Planning Policy Wales. 12th Edition. Available at: https://www.gov.wales/sites/default/files/publications/2024-02/planning-policy-wales-edition-12_1.pdf

3 CONSIDERATION OF ALTERNATIVES

Introduction

- 3.1 Paragraph 2 of Schedule 4 (information for inclusion in environmental statements) to the EIA Regulations (which is given effect where relevant to the particular development by Regulation 18(3) of the EIA Regulations) states that an Environmental Statement should include:

“A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the applicant or appellant which are relevant to the proposed development and its specific characteristics and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”.

- 3.2 While it is not a requirement of the EIA Regulations to include information concerning the reasonable alternatives studied by the developer in an EIA scoping request, Appendix 3 of the PEDW guidance recommends the inclusion of an outline of the main alternatives considered and the reasons for selecting a preferred option. and so this chapter includes such an outline.

Strategic option development

- 3.3 In early 2023, the applicant undertook an appraisal of grid connection options to determine the most appropriate solution to connect the proposed Lan Fawr Energy Park to the national grid. This was compiled into the applicant's 'Updated Phase One Grid Connection Strategy' (Green GEN Cymru, 2024).
- 3.4 The Phase One Grid Connection Strategy assessed and considered 11 potential connection options, within 3 broad geographical zones. These were the North Zone (including the existing substations in Trawsfydd, Shrewsbury, Ironbridge and an option for a new substation in Lower Frankton), the South-East Zone (including the existing substations in Walham, Rhigos, Rassau and an option for a new substation in Abergavenny) and the South-West Zone (including the existing substations in Swansea North, Pembroke and an option for 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.
- 3.5 The appraisal process concluded that the most appropriate solution was to construct new OHL connections and substation in the Carmarthen area in the South-West Zone. The South Wales Energy Parks will be connected to this new substation by 132 kV grid connections.
- 3.6 The appraisal considered potential environmental impacts that the connection of the South Wales Energy Parks could have, as was available at that stage of their development, with the measures that may be implemented to avoid, minimise or mitigate impacts.
- 3.7 Overall, the analysis concluded that a route to a new substation in the Carmarthen area would offer the most appropriate solution having considered the environmental, technical and financial cost.

Overview of the routeing process

- 3.8 Having identified that a 132 kV connection to a new substation in the Carmarthen area was the most appropriate solution, RSK undertook a routeing appraisal on behalf of the applicant, to identify the most appropriate route for the OHL connection. The methodology and findings of the routeing appraisal are presented in the applicant's 'Routeing and Consultation Document' (Green GEN Cymru, 2024), which includes multiple figures of route options and relevant environmental and construction constraints, with appended option appraisal summary tables.
- 3.9 The overall approach taken to routeing by the applicant acknowledges that the main effects of an OHL are related to landscape and visual impacts. 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, by screening with tree planting), a comparative route appraisal is the primary way in which visual effects may be reduced through the selection of a route alignment that is least impactful from a visual perspective. However, there are other environmental and technical constraints that influence the selection of a preferred route alignment, which need to be taken into account alongside, and balanced with, landscape and visual effects.
- 3.10 It is generally accepted across the electricity industry that the guidelines developed by the late Lord Holford in 1959 for routeing OHL (known as '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 identifying an appropriate route for the proposed scheme. A summary of the Holford Rules is provided in Appendix 3.
- 3.11 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 1989. 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):
- Visual amenity;
 - Cultural heritage including archaeology;
 - Ecology and ornithology;
 - Hydrology, hydrogeology, geology and water resources;
 - Landscape character;
 - Land uses including mineral operations, agriculture and forestry; and
 - Recreation.
- 3.12 Identification of the study area was also informed by Holford Rule 1, which requires avoidance altogether of areas of high amenity value. A high-level desk-based review was undertaken to identify areas of highest amenity value within the initial study area. Other areas were noted as 'non-absolute' constraints for the identification of corridors. It was not possible for the corridor to avoid these entirely due to the geographic scale and location of the study area. However, corridor selection sought to minimise the length of overlap of the proposed scheme with these areas. Technical routeing considerations were also considered and mapped where appropriate.

Proposed approach to assessing alternatives

- 3.13 The routing appraisal undertaken to date has utilised GIS-based datasets sourced from relevant organisations such as Natural Resources Wales and Cadw, to map environmental and physical constraints within a broad study area of 10 km either side of a direct line between the proposed Lan Fawr Energy Park and the proposed National Grid substation. With the various datasets visible on the map, a systematic process of route identification was undertaken, which gradually reduced the search area from a 20 km wide study area down to a preferred corridor up to 7 km wide and finally, to a preferred route that is 200 m in width. The preferred route is shown in Appendix 1, together with the alternative routes considered within preferred corridor.
- 3.14 The appraisal process sought to draw out distinctions between different route corridor options to enable the relative strengths and weaknesses of each to be identified. Specialist desk studies, Geographical Information System mapping, professional judgement and landscape-focused field observations were utilised to identify a preferred route.
- 3.15 Following the identification of a preferred route, 6 non-statutory public consultation events were held during February 2024 at different locations along the current preferred route (shown in Table 3-1 below).

Table 3-1 Public consultation events held to date

Public consultation event location	Date	Relevant section of route corridor
Llanllwni Church Community Hall, Llanllwni, Pencader, SA39 9DR	7 th February 2024 2pm – 7pm	Section 2 and 3
Alltwalis Community Centre, The Old School, Alltwalis, Carmarthen, SA32 7EB	8 th February 2024 2pm – 7pm	Section 3 and 4
St Peter's Civic Hall, 1 Nott Square, Carmarthen, SA31 1PG	9 th February 2024 2pm – 7pm	Section 5
Cellan Millenium Hall, Tre Cynon, Lampeter, SA48 8HU	22 nd February 2024 2pm – 7pm	Section 1
Aberduar Baptist Chapel, Glanduar, Llanybydder, SA40 9RS	23 rd February 2024 2pm – 7pm	Section 2
Peniel Community School, Peniel, Carmarthen, SA32 7AB	24 th February 2024 10am – 2pm	Section 5

- 3.16 Feedback from these events will help to further refine the preferred route, which will form the site boundary for undertaking detailed field surveys relating to the environmental factors to be included in the EIA. The results of the field surveys will be used to define the detailed design of the OHL alignment, tower placement and temporary accesses and

compounds. Mitigation measures that can be embedded into the detailed design will also be described as part of the consideration of alternatives.

- 3.17 The Environmental Statement will include an ‘Alternatives’ section, which will present a description of the process that the applicant has followed to identify and develop the route and final design of the grid connection. It will also describe the reasons for the selection of the final design along with any environmental reasons that have informed the decision.

References

Electricity Act (1989). c. 29. Available at: <https://www.legislation.gov.uk/ukpga/1989/29/contents>.

Green GEN Cymru (2024). Routeing and Consultation Document. Phase one consultation 2024. Available from: <https://greengentowyteifi.com/en/documents/>.

Green Gen Cymru (2024). Updated Phase One Grid Connection Strategy. Available from: <https://greengentowyteifi.com/en/documents/>.

Lord Holford (1959) The Holford Rules. As updated. Available from: <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf>.

The Town and County Planning (Environmental Impact Assessment) (Wales) Regulations (2017). Available at: <https://www.legislation.gov.uk/wsi/2017/567/contents/made>.

The Town and Country Planning (Environmental Impact Assessment) (Wales) (Amendment) Regulations (2019). Available at: <https://www.legislation.gov.uk/wsi/2019/299/regulation/2/made>.

4 APPROACH TO EIA

Introduction

- 4.1 This chapter sets out the overall approach that will be taken to the EIA for the proposed scheme.
- 4.2 The Environmental Statement will contain the information specified in Schedule 4 of the EIA Regulations. The approach to the assessment has been informed by current best practice guidance.
- 4.3 An overview of the guidance and methodology adopted for each environmental factor is provided within the respective environmental factor chapters of this EIA Scoping Report.
- 4.4 The environmental factors listed under Regulation 4(2) of the EIA Regulations are presented below:
- Population and human health;
 - Biodiversity;
 - Land and soil (factors combined for the purposes of reporting);
 - Water;
 - Air;
 - Climate;
 - Material assets;
 - Cultural heritage;
 - Landscape; and
 - The interaction between the above factors.
- 4.5 It should be noted that although not listed as specific environmental ‘factors’ under Regulation 4(2) of the EIA Regulations, the following are also considered within this EIA Scoping Report:
- Major accidents and disasters;
 - Socio-economics and tourism;
 - Noise and vibration;
 - Traffic and movement; and
 - Electric and magnetic fields.
- 4.6 The proposed structure of the Environmental Statement is set out in Appendix 4. It should be noted that this does not reflect all of the environmental factors listed above as separate chapters, for the following reasons:
- Some are proposed to be scoped out of the EIA; or
 - Some are included in the scope of the EIA, but assessed under a broader environmental factor heading.

Consultation

- 4.7 The applicant recognises that finding a route for the proposed scheme is a complex process. Therefore, three rounds of preapplication consultation will be carried out as follows:

- Round One: public consultation on the preferred route for the proposed scheme, starting 2024;
- Round Two: public consultation on a detailed route alignment for the proposed scheme, including proposed tower locations, access routes and working areas, likely starting in early 2025; and
- Round Three: public consultation on our proposed DNS application, likely starting in Autumn 2025.

4.8 As part of the EIA process, consultation will be undertaken with a range of statutory and non-statutory consultees. It is anticipated at this stage that consultees will include:

- Ceredigion County Council;
- Carmarthenshire County Council;
- Natural Resources Wales;
- Cadw;
- Welsh Government, as the Highways Authority for Wales;
- Individuals living and working within the *consultation zone* (area approximately 1 km either side of the preferred route);
- Seldom heard groups;
- People with an interest in land;
- Prescribed and non-statutory stakeholders; and
- Local stakeholder organisations.

General difficulties and uncertainties

- 4.9 Factor specific difficulties and uncertainties are set out in the relevant chapters of this EIA Scoping Report. The key general uncertainty relates to the current lack of a fixed design, which applies to several of the environment factors.
- 4.10 The refined route alignment and siting of the proposed scheme infrastructure (proposed tower locations) are not yet defined or fixed, creating uncertainty regarding the likely site-specific impacts of the proposed scheme. To minimise uncertainty, a reasonable worst case scenario approach will be taken, in line with the Rochdale Envelope (see paragraph 2.74) when assessing each of the factors within the EIA, and these scenarios will vary depending on the specific factor.

Defining the study area

- 4.11 Study areas have been defined individually for each environmental factor, taking into account the geographic scope of the potential impacts relevant to that factor and the information required to assess those impacts. The proposed study areas are described within each environmental factor assessment chapter (Chapters 6 to 14).
- 4.12 It should be noted that the study areas and associated buffers for specific survey types described in each of the environmental factor chapters will extend to include the new 132 kV substation, which will be located adjacent to the proposed National Grid substation. The precise location is wholly dependent on where the proposed National Grid substation will be sited, but is anticipated to be located within the National Grid 'Substation Siting Area' shown in Appendix 1.

Establishing baseline conditions

- 4.13 Environmental effects of the proposed scheme will be described in the Environmental Statement in relation to the extent of changes to the existing baseline environment as a result of the construction and operation of the proposed scheme. The baseline environment will comprise the existing environmental characteristics and conditions, based upon desk-top studies and field surveys undertaken and information available at the time of the assessment.
- 4.14 Baseline conditions will be established by:
- Site visits and surveys;
 - Desk based studies; and
 - Modelling.
- 4.15 The baseline conditions for each environmental factor will be set out within the respective assessment chapters.
- 4.16 There is potential that data obtained from third parties is not up to date. The origin of all third-party data used will be clearly identified, alongside any difficulties and uncertainties.

Establishing future baseline conditions

- 4.17 Paragraph 3 of Schedule 4 to the EIA Regulations requires consideration of the likely evolution of the current state of the environment (baseline scenario) in the absence of the proposed scheme, as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge (the 'future baseline'). Whilst there are considerable limitations to the predictions that can be made about natural baseline conditions at a future point in time, reasonable effort will be made to characterise the future baseline in the absence of the proposed scheme in each factor assessment. In addition, some assessments require projections to account for future change, such as traffic growth within the assessment of likely significant effects associated with the proposed scheme.

Approach to mitigation

- 4.18 Mitigation can be relied on to reduce any potential significant effects from the proposed scheme. The sequential steps of the mitigation hierarchy are as follows:
- Avoidance – take measures to avoid creating impacts from the outset;
 - Minimisation – measure taken to reduce the duration, intensity and extent of the impact if they cannot be avoided;
 - Restoration – measures taken to improve ecosystems following exposure to unavoidable impacts; and
 - Offset – measure taken to compensate for any residual impacts.
- 4.19 The Institute of Environmental Management and Assessment's (IEMA) 'Environmental Impact Assessment Guide to Shaping Quality Development' (2015) refers to three distinct forms of mitigation:
- Primary - an intrinsic part of the project design;

- Secondary - typically described within the factor chapters of the ES, but often are secured through planning conditions and/or management plans; and
- Tertiary - required regardless of any EIA, as it is imposed, for example, as a result of legislative requirements and/or standard sectoral practices.

- 4.20 For the purposes of this EIA Scoping Report and the Environmental Statement, embedded 'primary' mitigation measures will form part of the proposed scheme for which planning permission is sought and for which the EIA will be undertaken.
- 4.21 Table 4-1 describes the currently known embedded (primary) environmental mitigation measures that are considered to be an inherent part of the proposed scheme i.e. the project design principles adopted to avoid or prevent adverse environmental effects, based on the design of the proposed scheme to date. It should be noted that these will likely evolve over the course of the design process, up to submission of the DNS application.
- 4.22 These embedded (primary) environmental mitigation measures should not be confused with additional (secondary and tertiary) mitigation measures proposed in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment, which are described under the 'Additional (secondary and tertiary) mitigation measures' section within each environmental factor assessment chapter (Chapter 6 to 14 inclusive).

Table 4-1 Embedded (primary) environmental mitigation measures

Environmental factor	Embedded (primary) environmental mitigation measure
Landscape Land and soil Water Noise Biodiversity Cultural heritage Population and human health	The identification of the route options sought to avoid the following features, so far as practicable: • Special Protection Areas; • Special Areas of Conservation; • Ancient Woodland; • Sites of Special Scientific Interest; • National Nature Reserves; • Scheduled Monuments; • Registered Historic Parks and Gardens; • Important Bird Areas; • Conservation Areas; and • Major Settlement Boundaries.
Landscape Land and soil	Identification of a route that avoids existing infrastructure and previously consented projects and the identification of a route that avoids the following features: • Steep slopes, avoiding gradients > 22 degrees where possible; • Areas of high ground; • Operational, consented or proposed wind farms; • Existing 132 and 33 kV OHL; • Other third party infrastructure; and • Peaty soils.

Environmental factor	Embedded (primary) environmental mitigation measure
Landscape Population and human health	Using route design and existing landscape features to minimise landscape and visual impact, guided by the Holford Rules, as follows: • Follow the grain of the landscape; • Minimise the exposure of towers on ridges and skylines; • Use woodland and topography as background to the line or as a foreground to screen; and • Avoid complex terrain.

Assessment of likely significant effects

- 4.23 The Environmental Statement will report on the likely significant environmental effects for the site preparation, earthworks and construction (hereafter referred to as ‘construction’) and operational (i.e. once completed and in use, inclusive of maintenance activity) phases of the proposed scheme.
- 4.24 The following criteria will be taken into account when determining significance:
- The receptors/ resources (natural and human) which would be affected and the pathways for such effects;
 - The geographic importance, sensitivity or value of receptors/resources;
 - The duration (short-term, medium-term or long-term); permanence (permanent or temporary) and changes in significance (increase or decrease);
 - Reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
 - Environmental and health standards (e.g. local air quality standards) being threatened; and
 - Feasibility and mechanisms for delivering mitigating measures, e.g. Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment.
- 4.25 The method for assessing significance of effects varies between environmental factors but, in principle, will be based on the environmental sensitivity (or value/importance) of a receptor/resource and the magnitude of change from the baseline conditions. The approach to assessing the significance of effects for each individual factor is outlined within each environmental factor chapter (Chapter 6 to 12 inclusive).
- 4.26 Summary of effect tables that summarise the likely significant effects associated with each of the environmental factors will be provided in the Environmental Statement at the end of each factor assessment chapter. These tables will outline sensitive receptors, additional mitigation measures and residual effects. A distinction will be made between direct, indirect, secondary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects.
- 4.27 Cumulative effects will be presented as a single coordinated assessment, which will consider the following cumulative developments:

- Those that are the subject of an application for consent and which have been submitted to the relevant determining authorities but not yet determined (or are the subject of a valid appeal);
- Those that are consented but not operational; and
- Those under construction.

4.28 The assessment of cumulative effects will also consider intra-project effects (i.e. those where more than one environmental factor impacts upon the same receptor, the combination of which results in a significant effect that would not otherwise occur as a result of each environmental factor individually).

Opportunities for enhancing the environment

4.29 Where possible, there will be a commitment to identifying opportunities for enhancement within the relevant environmental factor assessments. Enhancement is defined as a measure that is over and above what is required to mitigate the adverse effects of a project. Therefore, any identified enhancement measures will not be taken into account when determining the significance of effects.

4.30 Enhancement measures will be assessed in accordance with steps set out in Planning Policy Wales (Welsh Government, 2024).

References

IEMA (2015) Environmental Impact Assessment Guide to: Shaping Quality Development. November 2015. Available at: <https://www.iema.net/download-document/236680>.

Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf.

Welsh Government (2024) Planning Policy Wales [online]. Available at: https://www.gov.wales/sites/default/files/publications/2024-02/planning-policy-wales-edition-12_1.pdf.

5 ENVIRONMENTAL FACTORS PROPOSED TO BE SCOPED OUT OF FURTHER ASSESSMENT

Introduction

- 5.1 Regulation 18(3)(f) of the EIA Regulations requires an Environmental Statement to include *“any of the additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.”*
- 5.2 As part of the EIA process and based on the information available to date, there are a number of environmental factors, as listed under Regulation 4(2) of the EIA Regulations or listed in Schedule 4 to the EIA Regulations, for which it is considered an assessment as part of the EIA is not justified, and therefore will not be considered in the Environmental Statement. Assessment is considered not to be justified where it is not relevant to the specific characteristics of the proposed scheme and to the environmental features likely to be affected.
- 5.3 A review undertaken by IEMA considered whether or not Environmental Statements are delivering their intended purpose. It identified a need to ensure that an Environmental Statement is proportionate to the nature of the impacts and that every element within an Environmental Statements needs to be justified and ‘earn its place’ (IEMA, 2017).
- 5.4 This chapter therefore provides details of the factors and effects that are proposed to be ‘scoped out’ of the EIA, provides information to justify this reasoning and outlines what alternative approach is proposed for some of the factors.
- 5.5 Reflecting IEMA guidance on delivering proportionate EIA (IEMA, 2017), the factors and effects proposed to be scoped out assume that relevant embedded mitigation measures are in place. The overriding design principle for the proposed scheme will be to seek to avoid or minimise impacts on sensitive receptors, for example, by locating towers as far away as possible from watercourses.
- 5.6 During the course of the assessment and preparation of the Environmental Statement, it may be necessary to revise and revisit the scope of the EIA as further detail on the proposed scheme and the baseline environment emerges. Should additional information identify a need to include, or justify the removal of factors from the scope of the Environmental Statement, the justification will be clearly presented along with any supporting information.
- 5.7 The proposed scope of the EIA is based on a final design comprising new 132 kV substation adjacent to the proposed National Grid substation, OHLs and associated towers only. The potential to include underground cabling in the scope of the EIA is described in Chapter 2.

Scoping questions

- 5.8 It should be noted that, at the end of this chapter and each of the following environmental factor chapters, a series of ‘scoping questions’ has been provided to highlight the key

scoping considerations associated with the environmental factor just described and to assist PEDW in setting out a scoping direction.

Climate

- 5.9 An assessment of climate has two factors (as set out in paragraph 4 of Schedule 4 to the EIA Regulations):
- Greenhouse gas emissions (GHG) ; and
 - Impacts relevant to adaptation.
- 5.10 The proposed scheme is intended to support the transition of electricity supply from fossil fuel to renewable energy sources, in order to meet climate change targets. As such, the proposed scheme is fully in line with the measures necessary to achieve the UK's trajectory towards net zero.

Greenhouse gas emissions

- 5.11 Notwithstanding that the proposed scheme will facilitate the transfer of renewable low carbon energy produced at the proposed Lan Fawr Energy Park, as well as future energy park installations, to export electricity to the proposed National Grid substation, the construction of the proposed scheme will have some inherent carbon costs associated with the materials that will be used.
- 5.12 The Welsh Government has set carbon 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.
- 5.13 GHG emissions will be inevitable during the construction phase. Main GHG emissions sources are likely to be through land use change, fuel consumption and the embodied GHG emissions of materials. It is not expected that the GHG emissions from construction will compromise the ability of the UK to meet its carbon reduction targets, and can therefore be viewed as not significant.
- 5.14 The construction of the proposed scheme will require steel and concrete to construct the towers as follows:
- Steel for use in towers will equate to approximately 1,040 – 1,872 t; and
 - Concrete will equate to approximately 1,872 – 3,536 t.
- 5.15 Overall, in 2022, Wales produced approximately 373,000 t of steel according to the Welsh Government's 'StatsWales' statistics. The proposed scheme will require between 1,040 and 1,872 t of steel (based on 208 towers) which is less than 0.99 % of the total steel produced in Wales in 2022.
- 5.16 Approximately 40 million t of concrete are produced in the UK according to statistics published on Gov.UK (2023). The proposed scheme will require between 1,872 and 3,536 t of concrete (based on the assumption of 208 towers) which is less than 0.01 % of the total concrete produced in the UK in 2022.
- 5.17 High level emissions calculations were performed based on initial expectations of material required as presented in paragraph 5.14. Based on the principle of conservatism the highest quantity of materials presented as part of the range were assumed, with concrete

assumed to be RC 40/50 CEM I and steel to be structural steel made up of 20% recycled content. The associated emissions are presented in the table below.

Table 5-1 Assumed high level emissions calculations

Material	Weight (t)	Emissions (tCO ₂ e)
RC 40/50 CEM I	3,536	601
Structural Steel - 20% recycled content	1,872	4,699

- 5.18 These emissions were then compared against Wales's carbon budget, taken as a percentage of the UK's carbon budget, as displayed in the table below.

Table 5-2 Comparison of potential emissions with Wales's carbon budget

Carbon budget	UK Carbon budget level (MMtCO ₂ e)	Wales Carbon budget level (MMtCO ₂ e)	Estimated project emissions (ktCO ₂ e)	Percentage of Wales Carbon Budget
4th (2023 – 27)	1,950	143	5.30	0.0037%
5th (2028 – 32)	1,725	126	5.30*	0.0042%*

- 5.19 Construction emissions were also displayed against the 5th carbon budget, illustrating the percentage difference in contribution should construction works be delayed into the following period.
- 5.20 Construction emissions were assigned within the 4th carbon budget, reflecting the construction timeline currently assumed. While minor emissions would be associated with the 5th and 6th carbon budget, these would be a result of the operational phase, and were therefore excluded from this high level assessment as this phase is only expected to account for a minority of emissions from the proposed scheme's lifecycle.
- 5.21 Emissions associated with the construction of the proposed scheme would account for 0.0037% of Wales's carbon budget during the 4th period, and would therefore be insignificant.
- 5.22 Emissions associated with the operation of the proposed scheme would be limited to activities such as maintenance, and would therefore likely fall outside the materiality threshold defined by IEMA. Aligned with IEMA guidance, a project that causes minor adverse or negligible effects is deemed to be not significant. A project with minor adverse effects is defined as *“fully in line with measures necessary to achieve the UK's trajectory towards net zero”* and *“fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type”* (IEMA, 2022. p. 26).

- 5.23 Given that the proposed scheme is anticipated to be small in scale with regards to the quantity of materials required (in a national context), emissions from the proposed scheme are not anticipated to be significant. This was confirmed in initial high level calculations relating to the emissions caused by the construction of the proposed scheme. Furthermore, there are indirect benefits associated with the proposed scheme, which is intended to facilitate the connection of the proposed Lan Fawr Energy Park to the grid. Assessment of GHG emissions is therefore proposed to be scoped out of the EIA.

Impacts to relevant adaptation

- 5.24 UKCP18 projections suggest that climate change will lead to hotter drier summers, warmer wetter winters, increased likelihood of extreme weather events (e.g., heat waves, high rainfall events) and sea-level rise (Met Office, 2024). Due to the embedded resilience of grid connections to high heat and wind speeds, and the distance of the proposed scheme from coastline; these factors are not expected to significantly impact on the construction or operation of the proposed scheme.
- 5.25 Consideration of this aspect will be given within the relevant environmental factor chapters in the Environmental Statement, where applicable. This includes the identification of the likely consequences during construction and operation on the following:
- Consequences of climate change for baseline conditions and/ or assessment findings; and
 - The resilience of mitigation measures to any projected changes in extreme weather, including heavy rainfall events.

Population and human health

- 5.26 It is proposed that the consideration of the potential effects to population and human health as a result of the proposed scheme will not be presented as a factor-specific assessment chapter in the Environmental Statement and will instead be covered through the findings of other factor assessments undertaken as part of the EIA process. This is due to the inherent nature of potential impacts on health and wellbeing that are associated with other factors that will be scoped into the EIA such as:
- Air quality;
 - Visual impacts;
 - Noise and vibration; and
 - Traffic impacts.
- 5.27 These environmental factor assessments will identify relevant sensitive receptors that make up the baseline environment that could be affected by the proposed scheme such as nearby residents, road users, users of recreational features such as public footpaths and sporting facilities, and other community services such as schools, hospitals and places of worship.
- 5.28 Where there are intra-project effects (where a single receptor is potentially affected by more than one source of environmental impact), this would be considered in the intra-project cumulative effects assessment.

Socio-economics

- 5.29 Paragraph 4 of Schedule 4 to the EIA Regulations requires an Environmental Statement, where relevant to the development and the environment likely to be significantly affected, to consider the likely significant effects upon the environment, which includes “*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.*”
- 5.30 It is therefore proposed that socio-economics is scoped out of the EIA, for the following reasons:
- There is not a definitive connection between the inclusion of the word ‘population’ in Schedule 4 of the EIA Regulations and any assumption that this requires an assessment of the impacts upon businesses and financial matters as these are not considered ‘environmental’ in nature; and
 - Neither government or competent bodies such as IEMA and Highways England (which published the Design Manual for Roads and Bridges (DMRB), containing the most comprehensive compendium of methodologies for environmental assessments) has published guidance stating an intention for socio-economics to be included as an environmental factor within the process of EIA.
- 5.31 It is evident from both the EIA Regulations and published guidance 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.
- 5.32 Therefore, it is considered that the most appropriate way to present all relevant socio-economic aspects for consideration within the DNS process is to submit a separate ‘Socio-economic Information’ document to accompany the DNS application. This will present information on the following:
- Construction investment;
 - Construction employment demands;
 - Temporary impact upon farming operations;
 - Temporary accommodation requirements; and
 - The Bute Energy Community Benefit Fund.
- 5.33 The EIA will, however, cover aspects of socio-economics through other factor assessments that are scoped into the EIA. These are, for example:
- Traffic and movement: the effects of the proposed scheme on road users due to traffic delays (including tourist visitors and local residents);
 - Landscape and Visual Impact: the effects of the proposed scheme on views from footpaths and other areas that may be considered to attract recreational visitors to these areas;
 - Noise and Vibration: the effects of noise and vibration on sensitive receptors that may include tourist accommodation as well as residential dwellings; and
 - Air Quality: the effects of construction dust on sensitive receptors that will may include tourist accommodation or visitor attractions.

Material assets

- 5.34 Material assets can be defined as “*substances used in each lifecycle stage of a development, with particular focus on the construction, operation and maintenance, and decommissioning or ‘end of life’ (deconstruction, demounting, demolition and disposal) phases*” (IEMA, 2020a. p 13). Material assets can include ‘materials’ (i.e. physical resources that are used across the lifecycle of a development) and ‘excavated arisings’ (i.e. soil, rock, or similar resource generated by excavations).
- 5.35 Waste is defined as “*any substance or object which the holder discards or intends or is required to discard*”, according to the Waste Framework Directive 2008. This definition includes any substances or object that is discarded for disposal or that has not been subject to acceptable recovery (including reuse and recycling). The main impacts (changes) and effects (consequences) of materials consumption and waste disposal are presented in Table 5-1 below.

Table 5-3 Changes and effects of material consumption and waste disposal

Matter	Direct Impact	Adverse effect	Applicable development phase
Materials	Consumption of resources	Depletion of resources, resulting in the temporary or permanent degradation of the natural environment.	Construction
Waste	Generation and disposal of waste	Reduction in landfill capacity. Unsustainable use or loss of resources to landfill resulting in the temporary or permanent degradation of the natural environment.	Construction

- 5.36 An Environmental Statement needs only to include the information that is relevant to the proposed scheme and to the environment likely to be affected, as set out by Regulation 18(3)(f). As such, the indirect impacts typically associated with materials consumption and waste disposal (e.g. release of GHGs, water consumption, odour emissions) are not considered to be relevant or significant due to the nature and purpose of the proposed scheme. Similarly, the indirect impacts of any off-site waste management facilities and material production facilities are expected to be assessed (and where necessary, mitigated) under the planning and permitting regime for those sites and thus do not form part of an EIA for a development that uses such facilities for material supply or waste management.
- 5.37 A description of the potential streams and volumes of construction materials and waste disposal will be described within the proposed scheme chapter of the Environmental Statement. In addition to this, the outline CEMP will set out how construction materials and waste will be managed on site, and opportunities to recycle waste will be explored. Where possible, development-specific commitments for sustainable resource management will be presented within the Environmental Statement.

- 5.38 As part of the detailed CEMP (following the submission of the DNS application), there would be a requirement to develop and implement a Site Waste Management Plan and Materials Management Plan in advance of the construction works.
- 5.39 It is also not intended to remove significant quantities of excavated arisings from the site during construction (there are currently no demolition works proposed, for example). There may, however, be a need to remove some soils from the site for treatment or disposal, if found to be contaminated, and it is not practical to treat this onsite. However, where possible, soil arisings will be balanced through a cut and fill exercise to retain volumes on site.
- 5.40 For the operational phase, the potential streams and volumes of construction materials and waste disposal will be described within the proposed scheme chapter within the Environmental Statement. There will be relatively little waste produced during the operation phase and the requirement for material assets will be limited to maintenance and replacement parts, as required.
- 5.41 During decommissioning, the removal of any material assets and waste will be recycled or disposed of in accordance with good practice and market conditions at that time. If items can be recycled, this will be the first choice option.
- 5.42 Taking the above into account, and given the total demand for concrete and steel is a tiny fraction of UK and Welsh productions as described for GHGs in paragraphs 5.9 to 5.25, significant impacts on material assets as a result of the proposed scheme are not anticipated and therefore, it proposed to scope this out of the EIA.

Major accidents and disasters

- 5.43 The requirement to consider major accidents and disasters in UK EIA practice was introduced via the EIA Regulations in 2017.
- 5.44 Paragraph 8 of Schedule 4 to the EIA Regulations requires that an Environmental Statement, where relevant to the proposed development and the environment likely to be affected, includes: *“A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.”*
- 5.45 The EIA Regulations state in Regulation 4(3b) that an EIA needs to consider the vulnerability of their development to major accidents and disasters as well as any consequential significant environmental 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.

- 5.46 It has been determined that an assessment of major accidents and disasters is not required for the proposed scheme, and is therefore scoped out of further assessment. Justification for this conclusion is presented below.
- 5.47 The potential major accidents and disasters that could arise due to the proposed scheme have been appraised from the definition of both man-made and natural hazards within the Major Accidents and Disaster in EIA Primer (IEMA, 2020b) 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.
- 5.48 The applicant will apply a comprehensive risk management framework both during construction and operation of the proposed scheme to reduce risks and to ensure the risk of significant effects are as low as reasonably practicable and not significant. The proposed scheme will also be designed to manage vulnerabilities to fire risk and to withstand the extremes of the UK climate (including climate change predictions) and therefore external impacts on the OHL are not considered to be significant.
- 5.49 Risks relating to Major Accidents and Disaster presented in the EIA Primer (IEMA, 2020b) address risks that cannot be mitigated through good working and construction practices to a level that is as low as reasonably practicable. Following the process in the flow chart provided in Figure 1 of the IEMA Primer, it was determined that all of the risks listed above can be mitigated through good working and construction practices to a level that is as low as reasonably practicable (ALARP).
- 5.50 Therefore, the likelihood of these potential major accident and disaster events is considered so low that the risks are considered to not be significant and it is appropriate to scope this factor out of the Environmental Statement.

Electric and magnetic fields

- 5.51 An Electric and Magnetic Field (EMF) can occur naturally but they are also produced by any equipment that generates, distributes or uses electricity.
- 5.52 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 proposed scheme will operate at 132 kV 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).
- 5.53 The UK power frequency is 50 hertz (Hz), which is therefore the principal frequency of the EMFs produced, which are also known as Extremely Low Frequency (ELF) EMFs.
- 5.54 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 microteslas (μT). 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 45 m from an OHL (background levels being typical to those in an average home in the UK).

- 5.55 Due to the designed voltages and currents, the maximum possible exposure directly underneath the proposed OHL is anticipated to be 38.9 μT , which is a similar level of exposure to using a hairdryer or walking close to microwave when it's cooking.
- 5.56 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 μT (Energy Networks Association, 2012), 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.

Decommissioning

- 5.57 When the operational life of the proposed scheme ends, it is possible the infrastructure may be re-equipped with new conductors, insulators and refurbished. However, the OHL may also be fully decommissioned.
- 5.58 The EIA Regulations do not require assessment of the decommissioning phase of a development. The activities, plant and programme required to decommission the proposed scheme cannot be defined with any reasonable certainty, which renders any assessment at this stage inconsequential in terms of assigning significance to potential impacts. For clarity, it is assumed that decommissioning works will mirror the construction phase but are likely to have a lower environmental impact. Therefore, decommissioning has been excluded from the technical assessments.
- 5.59 Decommissioning will, however, take account of the environmental legislation and technology available at that point in time, with notice being given to PEDW and the local planning authorities in advance of commencing such works. It is recognised that baseline conditions may have changed as a result of climate change and further assessment of the environmental baseline may be necessary. Decommissioning would be timed to minimise its environmental impact and all necessary licenses or permits would be acquired.

Scoping questions

- Do you agree that an assessment of Climate can be scoped out of the EIA process, noting that the consequences of climate change will be considered in individual environmental factor assessments and the standalone FCA?
- Do you agree that assessment of operational impacts on Population and Human Health can be scoped out of the EIA?
- Do you agree that potential impacts to Population and Human Health incurred during construction can be sufficiently assessed and presented in other environmental factor chapters, such as noise?
- Do you agree that an assessment of Socio-economics can be scoped out of the EIA on the basis that it is not an environmental factor under the EIA Regulations and that a 'Socio-economic Information' report will be prepared and submitted with the DNS application?
- Do you agree that an assessment of Material Assets can be scoped out of the EIA on the basis that no significant effects are predicted?
- Do you agree that an assessment of Major Accidents and Disasters can be scoped out of the EIA on the basis that no significant effects are predicted?
- Do you agree that an assessment of EMF can be scoped out of the EIA on the basis that not significant effects are predicted?
- Do you agree that assessment of environmental impacts associated with decommissioning can be scoped out of the EIA on the basis that this is not a requirement of the EIA Regulations, noting the high level of uncertainty associated with assessing the decommissioning phase and noting that PEDW will be consulted at that stage of the proposed scheme?

References

- Energy Networks Association (2012). Electric and Magnetic Fields, the Facts. Published January 2012. Available from: <https://www.nationalgrid.com/sites/default/files/documents/13791-Electric%20and%20Magnetic%20Fields%20-%20The%20facts.pdf>.
- Gov.UK. (2023). Building Materials and component statistics. National Statistics. Available at: <https://www.gov.uk/government/collections/building-materials-and-components-monthly-statistics-2012#2023-monthly-bulletins>.
- ICNIRP (2020). ICNIRP Guidelines for Limiting Exposure to Electromagnetic Fields (100 kHz to 300 GHz). Available at: <https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf>.
- IEMA (2017). Delivering Proportionate EIA. Available at: <https://www.iema.net/resources/reading-room/2017/07/18/delivering-proportionate-eia>.
- IEMA (2020a). Guide to Materials and Waste in Environmental Impact Assessment. March 2020. Available at: <https://www.iema.net/resources/reading-room/2020/03/30/materials-and-waste-in-environmental-impact-assessment>.
- IEMA. (2020b). Major Accidents and Disasters in EIA: A Primer. Available at: <https://www.iema.net/resources/blog/2020/09/23/iema-major-accidents-and-disasters-in-eia-primer>.
- IEMA (2022). Assessing Greenhouse Gas Emissions and Evaluating their Significant. 2nd Edition. Available at: https://s3.eu-west-2.amazonaws.com/iema.net/documents/knowledge/policy/impact-assessment/J35958_IEMA_Greenhouse_Gas_Guidance-1.pdf.

Met Office (2024). UK Climate Projections (UKCP18). Available at: <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp>.

Stats Wales. (2023). Iron and Steel Production by year, measure and area. Welsh Government. Available at: <https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Economic-Indices/Indices-of-Production-and-Construction/ironandsteelproduction-by-year-measure-area>.

Waste Framework Directive (2008). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008L0098-20180705>.

6 LANDSCAPE AND VISUAL

Consultation

- 6.1 Consultation in relation to landscape and visual matters commences with production and submission of this EIA Scoping Report. No prior consultation to inform the Landscape and Visual Impact Assessment (LVIA) has been undertaken to date.
- 6.2 Following submission of the EIA Scoping Report, discussions will be held with Natural Resources Wales (NRW), Ceredigion County Council and Carmarthenshire County Council to review the finer detail of the LVIA. Agreement will be sought on a selection of assessment viewpoints to be used in the LVIA including the illustrative techniques to be used for any visualisation of the proposed scheme. We would also seek to obtain the draft Landscape Character Assessment (LCA) which has been commissioned by Carmarthenshire County Council to inform the LVIA.

Study area

- 6.3 Best practice guidance for the assessment of landscape and visual effects (Guidelines for Landscape and Visual Impact Assessment – GLVIA 3) published by the Landscape Institute and IEMA (2013) states:

“Scoping should ... identify the area of landscape that needs to be covered in assessing landscape effects. This should be agreed with the competent authority, but it should also be recognised that it may change as the work progresses, for example as a result of fieldwork, or changes to the proposal. The study area should include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner.”

And:

“Scoping should identify the area that needs to be covered in assessing visual effect, the range of people who may be affected by these effects and the related viewpoints in the study area that will need to be examined. The study area should be agreed with the competent authority at the outset and should consider the area from which the proposed development will potentially be visible. The emphasis must be on a reasonable approach which is proportional to the scale and nature of the proposed development.”

- 6.4 To assist in the determination of an appropriate and proportionate study area for the LVIA, a preliminary indicative Zone of Theoretical Visibility (ZTV) plan has been prepared and is presented in Appendix 6.1. The ZTV illustrates the ‘worst case scenario’ of visibility based upon a 28 m high structure along the length of the central alignment. The purpose of the ZTV at this stage is simply to identify the maximum possible extents of visibility and to help identify potential visual receptors. At this stage the specific final route and tower locations is unknown and therefore the ZTV is indicative only and based on towers being placed every 220 m along the central alignment of the proposed route corridor along the central alignment of the proposed route corridor.
- 6.5 It should be noted that the ZTV presented in Appendix 6.1 takes account of the screening effect of significant blocks of woodland and buildings, but does not take account of walls,

hedgerows, tree lines, or smaller tree groups. As is typical for all such ZTVs, the visibility shown on the plans is exaggerated and the actual extent of visibility of any OHL would be considerably more constrained than is indicated on the preliminary ZTV. Based on analysis of the ZTV, field work undertaken to date and past experience of similar projects, it is considered unlikely that there would be anything greater than minor adverse effects and distant visibility of the proposed towers beyond 3 km from where they are located and at such distances the effects would in no circumstances be significant. However, it is proposed that an initial study is undertaken of an area extending to 5 km from the boundary of the route corridor, to ensure that any sensitive viewpoints or designated landscapes, which potentially have longer distance views of the OHL are identified. Following this initial work, the LVIA study area will focus on the landscape within 3 km of the central alignment of the route corridor, but with potentially occasional outliers up to 5 km in distance as agreed with Natural Resources Wales (NRW), Ceredigion County Council and Carmarthenshire County Council.

- 6.6 It is therefore proposed that a 3 km study area offset from the boundary of the route corridor is adequate and proportionate for the consideration of construction phase and operational phase landscape and visual effects arising as a result of the proposed scheme. As explained above initial survey and assessment work would also identify potential outlier receptors between 3 and 5 km from the boundary of the route corridor.
- 6.7 The 3 km study area assumes the full length of the proposed scheme would comprise an OHL. Should the final design proposals include sections of underground cabling, the study area for these sections (excluding sealing end compounds and terminal towers) would reduce to 500 m from the central alignment of the proposed scheme due to the lack of permanent above ground features in these sections and the relatively low heights of construction equipment used for cable laying. The underground cable will not result in any significant effects on landscape and visual amenity beyond 500 m and therefore, this is considered an appropriate study area for any underground sections that may become necessary.

Data sources to inform the EIA baseline characterisation

- 6.8 The LVIA will draw upon information in the following published landscape character assessments from NRW:
- National Landscape Character Area (NLCA) 21 Bryniau'r Canolbarth (Cambrian Mountains);
 - NLCA 25 Bro Ceredigion;
 - NLCA 33 Cymoedd Gwendraeth (Gwendraeth Vales);
 - NLCA 40 Dyffryn Teifi (Teifi Valley);
 - NLCA 41 Dyffryn Tywi (Tywi Valley);
 - NLCA 42 Bryniau Dyfed (Pembroke and Carmarthen Foothills);
 - NLCA 44 Bröydd Taf a Chleddau (Taf and Cleddau Vales); and
 - NLCA 45 Aberoedd Taf, Tywi a Gwendraeth (Taf, Tywi and Gwendraeth Estuaries).
- 6.9 The NLCA are presented in Appendix 6.2.

- 6.10 The LVIA will map and consider relevant NRW LANDMAP datasets within the study area, based on guidance set out in 'Using LANDMAP in Landscape and Visual Impact Assessments GN46' (Natural Resources Wales, 2023).
- 6.11 The LVIA will consider relevant policy and guidance contained within:
 - Carmarthenshire Local Development Plan (LDP) 2006 – 2021 and emerging update; and
 - Ceredigion LDP 2007 – 2022 and Replacement LDP 2018 – 2033.
- 6.12 We understand that Carmarthenshire County Council has commissioned a Landscape Character Assessment for its authority area. This document is currently not available, however we would wish to use this document (or a draft) if available when the LVIA is prepared.

Surveys to inform the EIA baseline characterisation

- 6.13 Visits to the study area landscapes have already been undertaken including visiting all the settlements along the proposed route corridor, walking Public Rights of Way (PRoW) and establishing potential views of the OHL.
- 6.14 Further site visits will be undertaken throughout 2024 and 2025 and photography representing the baseline views from a range of locations (viewpoints) within the study area taken. The location of the viewpoints will be agreed through further consultation with statutory consultees.
- 6.15 Where possible and where access to private property can be arranged, visits will also be made to selected residential properties to assess the potential for visual effects on residential amenity.

Baseline conditions

Landscape designations

- 6.16 Landscape designations within the study area are presented in Appendix 6.3.
- 6.17 No part of the route corridor is within an international or national landscape designation.
- 6.18 Between 4.5 and 7 km of the preferred route to the north is within the Teifi Valley Special Landscape Area (SLA) within the Ceredigion authority. There are two further sections of the preferred route, both up to 3 km, within the Teifi Valley SLA, but within the Carmarthenshire authority. These SLA are fundamentally the same, but are separated by the local authority boundary. To the east of Carmarthen, the preferred route runs for 3.6 km through the Tywi Valley SLA (which broadly covers the same landscape as Dyffryn Tywi (Tywi Valley) Historic Landscape Wales, within the Carmarthenshire authority.
- 6.19 Descriptions of the Carmarthenshire SLA are provided in Appendix 4 of the Carmarthenshire LDP. Other SLAs within the study area but outside the preferred route are:
 - North Eastern Uplands;
 - Llanllwni Mountain;
 - Carmarthenshire Bay and Estuary;

- Carmarthenshire Limestone Ridge (over 3 km+ from the preferred route boundary); and
 - North Ceredigion Uplands (outside the ZTV).
- 6.20 The LVIA will consider the potential for the proposed scheme to affect the landscape characteristics and qualities of all the SLAs in the study area.
- 6.21 It is understood that Carmarthenshire County Council is currently preparing a new Local Development Plan in which the local SLA designations may be removed. If this occurs, the SLA as identified and distinct landscape character areas would not be assessed, however the existing designation and reasoning would feed into the identification and assessment of local landscape character areas (see below for further information) as it remains a useful tool for describing and assessing the baseline landscape.

Landscape characters

- 6.22 The preferred route passes through the following NLCA:
- NLCA 21 Bryniau'r Canolbarth (Cambrian Mountains);
 - NLCA 33 Cymoedd Gwendraeth (Gwendraeth Vales);
 - NLCA 40 Dyffryn Teifi (Teifi Valley);
 - NLCA 41 Dyffryn Tywi (Tywi Valley);
 - NLCA 42 Bryniau Dyfed (Pembroke and Carmarthen Foothills); and
 - NLCA 45 Aberoedd Taf, Tywi a Gwendraeth (Taf, Tywi and Gwendraeth Estuaries).
- 6.23 The LVIA will consider the potential for the proposed scheme to affect the landscape characteristics and qualities of all the NLCAs that are coincident with the route corridor.
- 6.24 The following NLCAs are within the study area but are not crossed by the preferred route, as shown in the figure in Appendix 6.2. Any impacts from the proposed scheme would therefore be indirect and, due to the scale of the NLCA in comparison to the scale of the proposed scheme, would not be significant. Therefore, it is proposed to scope the following NLCAs out of the EIA:
- NLCA 25 Bro Ceredigion; and
 - NLCA 44 Bröydd Taf a Chleddau (Taf and Cleddau Vales).

LANDMAP

- 6.25 LANDMAP is an all-Wales Geographical Information System (GIS) based landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated into a nationally consistent dataset. In Wales, LANDMAP is the formally adopted methodology for landscape assessment and is advised by Planning Policy Wales. LANDMAP Guidance Note 46: Using LANDMAP in Landscape and Visual Impact Assessments (Natural Resources Wales, 2023), provides information on what LANDMAP information should be used in LVIA.
- 6.26 LANDMAP is comprised of five spatial datasets of information known as Landscape Habitat, Visual & Sensory, Historic Landscape, Cultural Landscape and Geological Landscape. With the exception of Cultural Landscape, aspect areas are given an overall evaluation classification of low, moderate, high or outstanding; these overall evaluation classifications are presented in Appendices 6.4, 6.5, 6.6 and 6.7.

- 6.27 Within the LVIA we will use the LANDMAP datasets to inform our understanding of the existing landscape baseline of the study area, its key characteristics and its value. With respect to the overall evaluations provided by NRW these will feed into our classification and value of the landscape within the study area.

Carmarthenshire Landscape Character Assessment (CLCA)

- 6.28 There are no published local landscape character assessments currently covering the study area, however, it is understood that Carmarthenshire County Council has commissioned a local assessment to be undertaken. If this is available within the timeframe of the EIA it would be used to inform the assessment and all the identified local character areas within the study area would be scoped in.
- 6.29 Should the CLCA not be available when the assessment work commences, the LVIA will be formed of a bespoke assessment to identify and map local LCAs within the study area. These local LCAs would be identified based upon the NLCAs, LANDMAP datasets, boundaries within the study area that are currently identified SLAs, and site survey work. The local LCAs would be identified in consultation with the relevant stakeholders and would be of a scale suitable for the subsequent assessment work.
- 6.30 No local landscape character assessment is available for the section of study area within the Ceredigion local authority boundary and a similar exercise would be undertaken for this landscape.

Visual receptors

- 6.31 Visual receptors are “*the different groups of people who may experience views of the development*” (Landscape Institute and IEMA, 2013, paragraph 6.3). In order to identify those groups who may be significantly affected an initial review of the ZTVs, baseline studies and preliminary site visits has been undertaken. When preparing the LVIA this work will be expanded on and considered in more detail.
- 6.32 The different types of groups assessed would encompass local residents; people using key routes such as roads; people within accessible or recreational landscapes; people using PRoW or the National Cycle Network (NCN); people visiting key viewpoints; holiday makers and tourists.

Settlements

- 6.33 From the north to the south, the route corridor runs through a landscape which is host to various small settlements and numerous scattered properties. The largest settlements within the study area are Lampeter close to its northern end, and Carmarthen close to its southern end.
- 6.34 The route corridor is either coincident with, or near to, a series of villages including, from north to south, Cellan, Cwmann, Ram, Pencarreg, Llanbydder, Ty-Mawr, Llanllwni, New Inn, Gwyddgrug, Pencarder, Alltwalis, Rhydargaeau, Peniel, White Mill, Abergwili, Llangunnor, Cwmffrwd and Idole.

Key routes

- 6.35 From north to south the key routes within the study area are:

- B4343 is orientated broadly parallel to the preferred route for approximately 5.3 km from the northern end of the line to Cwmann;
- A482 heads south-east out of Lampeter and is crossed by the preferred route to the east of Cwmann;
- A485 is orientated broadly the same as the preferred route for 32 km from Lampeter to the northern edge of Carmarthen, with the route crossing the road twice;
- B4337 heads south-east out of Llanybydder and is crossed by the preferred route;
- B4336 is crossed by the preferred route to the immediate west of Llanllwni;
- A40 is crossed by the preferred route north-east of Carmarthen at White Mill;
- B4300 is crossed by the preferred route 3.4 km east of Carmarthen;
- A48 is crossed by the preferred route south-east of Carmarthen at Nantycaws;
- B4309 is crossed by the preferred route to the north-east of Idole, close to the junction with B4306; and
- A484 is orientated broadly the same as the preferred route for its southern 3.7 km from Idole to the proposed southern connection point.

Recreational Routes

- 6.36 Recreational users of PRow and trails would likely be the most sensitive visual receptors of any change in the landscape, as these receptors would be assumed to be enjoying and appreciating the landscape and its scenery within pursuit of their recreational activity.
- 6.37 There are no national trails within the study area. The regional Celtic Way Trail is crossed by the proposed scheme to the north of White Mill. The Wales Coast Path is not crossed by the preferred route, but is within the southern end of the study area where the path follows the mouth of the River Towy.
- 6.38 National Cycle Network (NCN) Route no.82 is in proximity to the northern end of the preferred route near Lampeter and Llanybydder. NCN no.47 is crossed by the preferred route where it crosses the landscape to the south of the River Towy near Nantycaws. NCN no.4 is in proximity to the southern end of the proposed scheme to the south of Idole.
- 6.39 A review of the PRow in Ceredigion County Council and Carmarthenshire County Council indicates that a dense series of PRow connect the landscape throughout the study area, as presented in Appendix 6.8 and Appendix 6.9.

Preliminary viewpoints

- 6.40 A list of preliminary viewpoints, which would represent the different Visual Receptor Groups identified, is set out in the table below. The viewpoint list will be updated over time based upon site survey work and engagement with statutory consultees and would include a final number of approximately 32 viewpoints; though this could increase or decrease as deemed necessary as the site survey work and consultation progresses. The preliminary viewpoints are presented, with the indicative ZTV, in Appendix 6.1 and Appendix 6.9.
- 6.41 The preliminary viewpoints are indicators only and each viewpoint would need to be micro sited by the photographer on the ground ensuring the most open view possible towards the OHL, but also taking account of other considerations including whether it is safe to take the photography; some local roads within the study area are narrow and enclosed by hedgerows and may be unsafe for photography.

- 6.42 Due to the local topography and forestry within the study area, the majority of identified receptors lie to the west of the proposed scheme, and/ or, in close proximity to the A485. However, the viewpoints have been selected to ensure representative views are included from all directions, including the higher ground to the east where suitable.
- 6.43 Impacts on individual viewpoints would not be assessed within the LVIA; the selected viewpoints are representative of the landscape within the study area and would be linked to relevant Visual Receptor Groups within the LVIA chapter.

Table 6-1 Preliminary viewpoint locations

Preliminary Viewpoint	X Ref	Y Ref	Reason
A – Llanfair Clydogau PRoW CE/57/10	264458	249976	PRoW near northern end of route
B – All Saints Church, Tafnardy	261349	249718	Settlement, B-road (alternative location from PRoW across the road from the church)
C – Cellan	260425	248968	Settlement (specific VP location tbc on ground)
D – A482 at Lampeter	258169	247544	Settlement, A-road, river valley
E – A482 nr Ram	258622	246191	A-road and high ground views
F – Rhiwlas, PRoW 58/16	259461	246076	PRoW and views with Lampeter as a backdrop
G – Pencarreg	255183	244427	Local road with open view across valley to the north
H – B4337 at Rhdybont	253633	243527	Settlement, B-road
I – Llanybydder, PRoW 15/16	252608	243259	PRoW on southern edge of settlement
J – Highmead, NCN 42	250619	243698	NCN route on higher ground with view across valley to the east (tbc as potential safety issue with location)
K – A485 (Section 2)	250959	242391	A-road between Llanybydder and Llanllwni (location tbc on ground due to landform separating road and preferred route)
L – Llanllwni, PRoW 14/12	248619	239120	Settlement, PRoW, A-road (specific VP location tbc on ground)
M – Llanllwni Monument	251753	238788	Point of interest with wide open views from high ground to the west
N – B4336 at	244854	239263	B-road with views east of mountain

Preliminary Viewpoint	X Ref	Y Ref	Reason
Llanfihangel-ar-Arth			backdrop
O – New Inn, PRoW 13/94	247594	236856	Settlement, PRoW, A-road
P – Pencader, PRoW 13/41	244796	235990	PRoW on eastern edge of Settlement
Q – Junction A485/B459	245165	233254	A-road and B-road
R – Alltwallis, PRoW 13/70	244425	231941	PRoW above Alltwallis with view across valley
S – A485 at Pontarsaris	244272	228647	Settlement, A-road
T – A485 at Rhydargaeau (north)	244008	227094	Settlement, A-road
U – A485 at Rhydargaeau (south)	243838	226306	Settlement, A-road
V – Rhydargaeau Road	245604	226076	View west from high ground
W – Pant y Fedwen, Peniel	243695	224283	Settlement
X – Merlins Hill	245753	221575	Local landmark, PRoW, SM and wide views
Y – A40 at White Mill	246464	221454	Settlement, A-road
Z – Llangunnor, PRoW 28/31 nr B4300	245569	219929	PRoW in River Towy valley
BA – Nantycaws, PRoW 28/23	245781	218439	PRoW on north-west edge of settlement
BB – A48	243705	218271	A-road viewing east as you exit Carmarthen
BC – A484 at Llandyfaelog, Cwmffrwd	242568	216695	Settlement, A-road
BD – Junction B4309/B4306	242849	216046	Junction of B-roads with open view of landscape to the north
BE – Lon yr Ysgol, Idole	242315	215583	Settlement
BF – Bancycafel, PRoW 29/13	242137	214194	PRoW near southern end of route

Additional (secondary and tertiary) mitigation

Construction

- 6.44 Consideration will be given to the site selection for compounds and equipment laydown areas to minimise landscape and visual effects as far as practicable. There is, however, limited potential for secondary mitigation of short-term landscape and visual construction effects.
- 6.45 Lighting of any construction compounds would be designed to minimise light spillage and visual intrusion.
- 6.46 Existing trees, woodlands and hedgerows would be protected in accordance with best practice for construction in proximity to trees and in accordance with relevant British Standards.

Operation

- 6.47 Due to the nature of OHLs, the proposed scheme is likely to give rise to effects on landscape and visual receptors that cannot be fully mitigated. However, the proposed route of the OHL takes account of the potential landscape and visual effects of the proposed scheme. Removal or disruption to any existing landscape fabric (e.g. trees, hedgerows) will be minimised to that which is necessary for the implementation of the scheme.
- 6.48 A Landscape and Habitat Mitigation Strategy will be developed in accordance with the principles of good design to integrate the proposed scheme into the landscape and mitigate visual effects as far as practicable, for example with screening planting around the new 132 kV substation adjacent to the proposed National Grid substation. The landscape strategy will be complementary to any biodiversity and other environmental objectives.
- 6.49 A Landscape and Ecological Management Plan (LEMP) will be developed in consultation with relevant consultees to secure the long-term management of the landscape and biodiversity strategy.

Description of likely significant effects

- 6.50 At this stage, prior to any formal assessment and in the absence of fixed development proposals, it is acknowledged that there is the potential for significant landscape and visual effects to arise during construction and operation of the proposed scheme. The LVIA will therefore consider the potential effects upon:
- Landscape fabric;
 - Landscape character; and
 - Visual receptors including residential, transport and recreational receptors.
- 6.51 Sources of effects during the construction of the proposed scheme include:
- Introduction of construction activity and vehicular/personnel movements along the preferred route and on local roads;
 - Construction work associated with track upgrades and construction of temporary and new tracks;

- Construction of site compounds;
- Construction of tower foundations and towers;
- Conductor stringing;
- Introduction of tall vertical structures (steel lattice towers); and
- Forestry and woodland felling.

6.52 Sources of effects during the operation of the proposed scheme include:

- New 132 kV overhead electricity transmission line (OHL) with associated 'L7' steel lattice towers (or similar); and
- Long-term presence of open wayleaves through woodland and tree belts.

6.53 Due to the nature of OHLs, should it be determined that the proposed scheme gives rise to effects on landscape and visual receptors that cannot be fully mitigated, operational phase effects will be assessed in Year 1 only.

6.54 Whilst the ZTV presented in Appendix 6.1 illustrates theoretical visibility up to a 5 km radius, it is likely that any significant effects would not extend this far, as should any of the proposed scheme be visible at this long-distance, it will only occupy a tiny fraction of that view and will not noticeably impact that view. Based on site analysis to date and previous experience of assessing the significance of landscape and visual effects of OHLs, it is considered likely that any significant landscape and visual effects arising from the proposed scheme would be limited to within a distance of approximately 3 km, which forms the extent of the proposed study area for the LVIA.

Matters to be 'scoped in' to further assessment

Table 6-2 Landscape and visual matters proposed to be 'scoped in' to the EIA

Receptor/ element	Phase	Justification
Teifi Valley SLA (in Ceredigion)	Construction and Operation	Preferred route passes through the SLA and is likely to directly affect landscape characteristics of the SLA.
Teifi Valley SLA (in Carmarthenshire)	Construction and Operation	Preferred route passes through the SLA and is likely to directly affect landscape characteristics of the SLA.
Tywi Valley SLA (in Carmarthenshire)	Construction and Operation	Preferred route passes through the SLA and is likely to directly affect landscape characteristics of the SLA.
North Eastern Uplands SLA	Construction and Operation	SLA is within the 3 km study area but would not be directly impacted by the OHL. However, the OHL would potentially be prominent in views from the SLA.
Llanllwni Mountain SLA	Construction and Operation	SLA is within the 3 km study area but would not be directly impacted by the OHL. However, the OHL

Receptor/ element	Phase	Justification
		would potentially be prominent in views from the SLA.
Carmarthenshire Bay and Estuary SLA	Construction and Operation	SLA is within the 3 km study area but would not be directly impacted by the OHL. However, the OHL would potentially be prominent in views from the SLA.
Note that should the new Carmarthenshire County Council LDP remove the SLA designation then the effects on these SLA, as distinct and identified landscape character areas, would be scoped out of the EIA. However, the existing designation and reasoning would feed into the identification and assessment of local landscape character areas.		
NLCA 21 Bryniau'r Canolbarth (Cambrian Mountains)	Construction and Operation	Preferred route passes through the NLCA and is likely to directly affect landscape characteristics of the NLCA.
NLCA 33 Cymoedd Gwendraeth (Gwendraeth Vales)	Construction and Operation	Preferred route passes through the NLCA and is likely to directly affect landscape characteristics of the NLCA.
NLCA 40 Dyffryn Teifi (Teifi Valley)	Construction and Operation	Preferred route passes through the NLCA and is likely to directly affect landscape characteristics of the NLCA.
NLCA 41 Dyffryn Tywi (Tywi Valley)	Construction and Operation	Preferred route passes through the NLCA and is likely to directly affect landscape characteristics of the NLCA.
NLCA 42 Bryniau Dyfed (Pembroke and Carmarthen Foothills)	Construction and Operation	Preferred route passes through the NLCA and is likely to directly affect landscape characteristics of the NLCA.
NLCA 45 Aberoedd Taf, Tywi a Gwendraeth (Taf, Tywi and Gwendreath Estuaries)	Construction and Operation	Preferred route passes through the NLCA and is likely to directly affect landscape characteristics of the NLCA.
Local Landscape Character Areas within the 3 km	Construction and Operation	If the CLCA is available at the time of the assessment the LCA within the study area would be scoped into the EIA. If the CLCA is not yet available

Receptor/ element	Phase	Justification
study area		a task would be undertaken to identify and map local character areas within the study area, based upon the NLCA, LANDMAP datasets, existing SLA and site survey work.
Visual Receptors within 3km study area	Construction and Operation	Visual receptors within 3 km would be grouped based on their locality and proximity to each other. Key visual receptors would include the settlements and key routes detailed above; users of the PRoW within the study area; individual and scattered residential properties in the study area and local roads within the study area.
Users of key recreational routes: Celtic Way Trail Wales Coast Path NCN Route no.82 NCN Route no.47 NCN Route no.4	Construction and Operation	Key recreational routes within the 3 km study area, from which the proposed scheme would be noticeable.
Residential visual amenity	Construction and Operation	Towers will be placed to avoid coming into proximity to residential receptors, where possible. A Residential Visual Amenity Assessment (RVAA) will be undertaken to identify properties within a 150 m radius (see paragraph 6.70 below) from the proposed scheme for which an RVAA may be necessary. The RVAA would be an appendix to the main assessment.
Cumulative landscape and visual effects (CLVIA)	Construction and Operation	Potential for significant CLVIA affects with other consented and proposed projects of a similar type and scale within the study area, to be agreed with consultees. Existing OHL structures form part of the baseline environment will therefore be considered as part of the LVIA, not the CLVIA.

Matters to be ‘scoped out’ of further assessment

Table 6-3 Landscape and visual matters proposed to be ‘scoped out’ of EIA

Receptor/ element	Phase	Justification
Bannau Brycheiniog (Brecon Beacons) National Park	Construction and Operation	The National Park is 17 km from the preferred route at its closest point and its Special Qualities and visitors would not be impacted by the proposed scheme.
Carmarthenshire Limestone Ridge SLA	Construction and Operation	Over 3km from the preferred route and any impacts would be indirect and would not be greater than negligible.
North Ceredigion Uplands SLA	Construction and Operation	A section of the SLA is within 3 km of the preferred route at the northern end of the route, however the SLA is fully outside the ZTV and there would be no impacts on the SLA.
NLCA 25 Bro Ceredigion	Construction and Operation	This NLCA is within the study area but is not crossed by the route corridor. Any impacts from the proposed scheme would be indirect and would not be significant.
NLCA 44 Bröydd Taf a Chleddau (Taf and Cleddau Vales)	Construction and Operation	This NLCA is within the study area but is not crossed by the route corridor. Any impacts from the proposed scheme would be indirect and would not be significant.
Local Landscape Character Areas outside the 3 km study area	Construction and Operation	Local character areas outside the study area (as identified in the CLCA if available; or via initial character appraisal work) would be scoped out of the EIA because any impacts from the proposed scheme would be indirect and would not be significant.
LANDMAP datasets	Construction and Operation	LANDMAP datasets will be used to inform the local landscape character assessment and all LANDMAP datasets within the study area will be referenced as necessary. However, the final EIA would not include an assessment of likely effects on each individual dataset.
Visual Receptors outside 3 km study area	Construction and Operation	Due to the distance from the final route and, usually, intervening landform, vegetation and built form there would not be any significant effects on the visual amenity of receptors over 3 km from the OHL.

Receptor/ element	Phase	Justification
Lighting impacts on landscape character and visual amenity	Construction and Operation	In general, it is anticipated that the proposed scheme would not be lit, except for occasional and temporary construction lighting. Lighting impacts on landscape character and visual amenity would not be greater than negligible adverse.
It is proposed to scope decommissioning out of the LVIA for the reasons provided in Chapter 5.		

Opportunities for enhancing the environment

- 6.55 Due to the nature of OHLs, the proposed scheme may 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 proposed scheme.
- 6.56 A landscape mitigation strategy for the proposed scheme will be developed and this will seek to deliver landscape as well as biodiversity enhancement.

Proposed assessment methodology

- 6.57 The LVIA will be undertaken in accordance with published best practice namely the Guidelines for Landscape and Visual Impact Assessment (Third Edition), (Landscape Institute and IEMA, 2013) and associated technical guidance notes published by the Landscape Institute as detailed below.

“Landscape and Visual Impact Assessment is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and people’s views and visual amenity.” (Landscape Institute and IEMA, 2013, paragraph 1.1).

- 6.58 In addition to the Guidelines for Landscape and Visual Impact Assessment, other associated technical guidance notes of relevance to the assessment published by the Landscape Institute include:
- Technical Guidance Note 06 / 19: Visual Representation of Development Proposals, published by the Landscape Institute (2019);
 - Technical Guidance Note 02 / 21: Assessing landscape value outside national designations;
 - Technical Guidance Note 02 / 19: Residential Visual Amenity Assessment; and
 - Technical Guidance Note 04 / 20: Infrastructure.
- 6.59 Other relevant guidelines for the LVIA are:
- Natural Resources Wales (2023). LANDMAP Guidance Note 46: Using LANDMAP in Landscape and Visual Impact Assessments; and
 - 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).

- 6.60 Wherever possible, identified effects are quantified, but the nature of landscape and visual assessment requires interpretation using professional judgement. In order to provide a level of consistency to the assessment, the prediction of magnitude and assessment of significance of the residual landscape and visual effects will be based on pre-defined criteria.
- 6.61 The Guidelines for Landscape and Visual Impact Assessment (2013) states that *“professional judgement is a very important part of the LVIA”* (paragraph 2.23) and that *“in all cases there is a need for the judgements that are made to be reasonable and based on clear and transparent methods so that the reasoning applied at different stages can be traced and examined by others”* (paragraph 2.24). It goes on to state that *“there are no hard and fast rules about what effects should be deemed ‘significant’ but LVIAs should always distinguish clearly between what are considered to be the significant and non-significant effects”* (paragraph 3.32).
- 6.62 The LVIA will define the existing landscape and visual baseline environment, assess its sensitivity to change, the key landscape and visual related aspects of the proposed scheme, describe the nature of the anticipated changes and assess the effects arising during construction, operation and decommissioning.
- 6.63 Although linked, landscape and visual effects are considered separately. Landscape effects derive from changes in the landscape fabric, which may result in changes to the character, whereas visual effects are the effect of these changes as experienced by people (visual receptors).
- 6.64 A selection of viewpoints, agreement to which will be sought with relevant consultees, will be used in the LVIA to consider effects on different receptor groups, at various distances from the site and to illustrate any particularly sensitive views identified through scoping. The proposed preliminary viewpoints are detailed above and shown in Appendix 6.9.
- 6.65 Annotated photographs will be provided for each of the assessment viewpoints used in the LVIA. The annotated photographs will accord with guidance for ‘Type 1’ visualisations as defined in Landscape Institute Technical Guidance Note 06/19 (Landscape Institute, 2019).
- 6.66 A series of wirelines and photomontages will be presented for key viewpoints (locations to be determined through further consultation). The wirelines and photomontages will be produced using the same base photographs as the annotated photographs and accord with guidance for ‘Type 3’ or ‘Type 4’ visualisations as defined in TGN 06/19 (Landscape Institute, 2019).
- 6.67 Mitigation measures will be developed as appropriate and taken into consideration in the assessment of effects. However, as detailed above, due to the nature of OHLs the proposed scheme may give rise to effects on landscape and visual receptors that cannot be fully mitigated. In these circumstances operational phase effects will be assessed in Year 1 only, since Year 1 represents the worst case scenario when the OHL would be most visible.
- 6.68 The LVIA will conclude by summarising which, if any, effects are considered to be ‘significant’.
- 6.69 As set out within Landscape Institute (2019), Technical Guidance Note 02//19 ‘Residential Visual Amenity Assessment (RVAA)’:

“Changes in views and visual amenity are considered in the planning process. In respect of private views and visual amenity, it is widely known that, no one has ‘a right to a view’” and “It is not uncommon for significant adverse effects on views and visual amenity to be experienced by people at their place of residence as a result of introducing a new development into the landscape. In itself this does not necessarily cause particular planning concern. However, there are situations where the effect on the outlook / visual amenity of a residential property is so great that it is not generally considered to be in the public interest to permit such conditions to occur where they did not exist before.”

- 6.70 The LVIA will present, as an appendix to the main assessment, a residential visual amenity assessment (RVAA) of visual effects on residential properties for any property where there is a possibility that the visual effects may approach the threshold described above. Due to the high threshold required for a RVAA to be applicable it is considered that any property further than 150 m from a new tower would not meet that threshold.

Difficulties and uncertainties

- 6.71 The preliminary indicative ZTV (Appendix 6.1) has been prepared without a detailed final line design being available and as such is indicative only and based on 28 m high towers being located every 220 m along the central alignment of the scoping route corridor.

Landscape and visual scoping questions

- 6.72 Questions relating to the proposed scope and methodology of the LVIA are listed in the box below for statutory consultees to review and respond to.

- Do you agree with the proposed LVIA study area?
- Do you agree that the data sources listed to inform the LVIA are appropriate?
- Do you agree that the surveys proposed to inform the LVIA are appropriate?
- Are any receptors/ assets/ resources not identified that you would like to see included in the LVIA?
- Do you agree with the landscape and visual receptors that are proposed to be scoped in and out of the EIA?
- Do you agree that existing SLA should be scoped out of the EIA if the classification is removed in the new Carmarthenshire LDP, noting their boundaries and characteristics would still be considered and referenced when assessing effects on local landscape character areas?
- Are there any specific viewpoints that you would like us to consider and/ or illustrate as a photomontage?
- Do you agree that due to the nature of OHLs, where the proposed scheme may give rise to effects on landscape and visual receptors that cannot be fully mitigated, operational effects should be assessed based upon the worst case scenario at year 1 only and not future years?
- Are there any other developments which you consider it will be necessary for us to address in a cumulative landscape and visual impact assessment?

References

- 6.73 Carmarthenshire County Council (2014). Local Development Plan 2006-2021. Adopted 2014. Available at: <https://www.carmarthenshire.gov.wales/home/council-services/planning/planning-policy/local-development-plan-2006-2021/>.
- 6.74 Carmarthenshire County Council (2022). Emerging Local Development Plan 2018-2033. Available at: <https://www.carmarthenshire.gov.wales/home/council-services/planning/local-development-plan-2018-2033/>.
- 6.75 Ceredigion County Council (2013). Local Development Plan (LDP1) 2007-2022. Adopted 2013. Available at: <https://www.ceredigion.gov.uk/resident/planning-building-control-and-sustainable-drainage-body-sab/planning-building-control/ceredigion-local-development-plan/adopted-ceredigion-local-development-plan-ldp/>.
- 6.76 Ceredigion County Council (2017). Replacement Local Development Plan (LDP 2) 2018-2033. Available at: <https://www.ceredigion.gov.uk/resident/planning-building-control-and-sustainable-drainage-body-sab/planning-building-control/ceredigion-local-development-plan/replacement-ceredigion-ldp/>.
- 6.77 Landscape Institute (2019). Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals.
- 6.78 Landscape Institute (2019). Landscape Institute Technical Guidance Note 02/19: Residential Visual Amenity Assessment.
- 6.79 Landscape Institute (2020). Landscape Institute Technical Guidance Note 04/20: Infrastructure.
- 6.80 Landscape Institute (2021). Landscape Institute Technical Guidance Note 02/21: Assessing landscape value outside national designations.
- 6.81 Landscape Institute and Institute of Environmental Management & Assessment (IEMA) (2013). Guidelines for Landscape and Visual Impact Assessment. Third Edition.
- 6.82 Natural Resources Wales (2023). Using LANDMAP in Landscape and Visual Assessment GN46. Available at: <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>.
- 6.83 NRW (2023). National Landscape Character Areas (NLCA). Available at: <https://naturalresources.wales/evidence-and-data/maps/nlca/?lang=en#:~:text=NLCAs%20are%20defined%20at%20a,natural%2C%20cultural%20and%20perceptual%20characteristics>.
- 6.84 The Holford Rules: Guidelines for the Routing of New High Voltage Overhead Transmission Lines (with National Grid Company plc (NGC) 1992 and Scottish Hydro-Electric Transmission plc (SHETL) 2003 Notes).

7 BIODIVERSITY

Consultation

- 7.1 Consultation in relation to biodiversity commences with the production and submission of this EIA Scoping Report. No prior consultation to inform the assessment of biodiversity has been undertaken to date.
- 7.2 Following submission of the EIA Scoping Report, discussions will be held with NRW, Carmarthenshire County Council and Ceredigion County Council to provide them with a detailed baseline to inform comments on the proposed assessment and mitigation methodologies.
- 7.3 Once the results of the extended UKHab survey are completed, protected species surveys are likely to be required. The exact scope and in some cases methodology, will be confirmed following the completion of the UKHab survey and where necessary, through consultation with NRW and other relevant stakeholders, including local authorities.
- 7.4 If required, NRW will also be consulted to agree a suitable licensing and mitigation strategy for protected species and/or important habitats during the construction and operation phases, including whether existing data will be sufficient to inform a license application or modification.

Study area

- 7.5 The study area for biodiversity comprises the area that could be directly affected by the proposed scheme plus the following buffer zones (which will be updated as the design progresses and the final route alignment is confirmed), in line with species-specific best practice guidelines. Distances reflect approaches accepted in Habitat Regulation Assessment (HRA) terms as well EIA terms, taking into account the circumstances of the proposed scheme.

Desk Study

- Internationally designated areas: 5 km (10 km for Ramsar/ Special Protection Areas (SPAs)/ Special Areas of Conservation (SACs) designated for bats); on terrestrial sites (SACs), impacts unlikely more than 5 km away, except for Ramsar/ SPAs/ SACs designated for bats, where there may be complex flight lines to consider. These buffers are generally accepted in HRA terms;
- Nationally designated areas and non-statutory designated sites: 1 km; these sites are numerous and 1 km is a reasonable buffer to assess significance;
- Records of extant protected species (from 2002 onwards): 2 km; and
- Areas of potentially nationally important peatland within the preferred route and up to 250 m: based on NatureScot/ Scottish Environment Protection Agency (SEPA, 2017) guidance on Ground Water Dependent Terrestrial Ecosystems (adopted by Welsh Government), which correlate with avoidance distances and actual baseline survey methods.

Field Studies

- Preliminary ecological appraisal (PEA) (using UKHabs) to identify broad habitat types, protection for protected species to be present, and to inform further survey requirements: up to 100 m;
- Any habitats of Conservation Concern subject to National Vegetation Classification (NVC) surveys: up to 100 m;
- Ground Water Dependent Terrestrial Ecosystems (GWDTE): up to 250 m;
- Trees: where they may be directly or indirectly affected by development activity;
- Great Crested Newt (GCN): Habitat Suitability Index and Environmental DNA surveys will be undertaken of ponds within 500 m;
- Other protected species: up to 200 m or wider in exceptional circumstances should survey data suggest that this is necessary;
- Bird flight activity; initially within 500 m with potential to extend if species requiring a larger survey area are identified; and
- Breeding birds: 250 m for lowland enclosed agricultural land; up to 500 m for upland and unenclosed land.

7.6 For the purposes of this Scoping Report, the study area for biodiversity is presented in Appendix 7.1 with a 200 m buffer added to the preferred route, to give an overall study area width of 600 m. This assumes the detailed alignment of the OHL is centred within the preferred route. Once the detailed alignment of the OHL is known, the boundaries of the study area shown in Appendix 7.1 will be adjusted accordingly to accommodate the required species-specific study areas listed above, such as GCN, breeding birds and bird flight activity.

Data sources to inform the EIA baseline characterisation

7.7 The baseline to date 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 areas 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, 2003) – The location of statutory designated sites for nature conservation;
- DataMapWales – Habitats of Principal Importance (Environment Wales Act 2016), Ancient Woodland, Peat Land Map of Wales and Habitat Networks, NRW Phase 1 maps to detect potential Section 7 Priority Habitats and areas of peat, Phase 2 habitat data sets (where applicable); 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.

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

- West Wales Biodiversity Information Centre data search which will include a search for designed sites and protected species records within 2 km of the proposed scheme, extended to 10 km for SPAs, SACs and Ramsar sites;
- NRW Designated Sites Search;
- NRW Ancient Woodland Inventory;
- Designations of legal protected of noteworthy species – Joint Nature Conservation Committee (JNCC) website; and
- Detailed of species and habitats listed on the Carmarthenshire Local Nature Recovery Plan website (Carmarthenshire County Council, 2024).

7.9 The EIA will be based on surveys to be undertaken by the technical specialist team in 2024 and 2025 (see below for more details).

Surveys to inform the EIA baseline characterisation

7.10 Field surveys will be undertaken within the defined study area in line with best practice guidelines endorsed by NRW and Chartered Institute of Ecology and Environmental Management (CIEEM). The defined study area will include the proposed scheme and any appropriate buffers for species specific studies. These surveys will include the following:

Habitat Surveys (June to September 2024)

- Extended Phase 1 habitat survey, to record broad habitat types and their suitability to support protected species; and
- If Habitats of Conservation Concern (including GWDTEs) are identified during the Phase 1 habitat survey, NVC survey will be undertaken to categorise the plant communities present.

Protected Species Surveys

7.11 Once the results of the extended Phase 1 habitat survey are completed, protected species surveys are likely to be required. The exact scope and in some cases methodology, will be confirmed following the Phase 1 habitat survey and where necessary consultation with NRW and other relevant stakeholders (e.g. local authorities). Surveys are expected to be undertaken for the following receptors (where a specific survey season is recommended, this is provided in brackets):

- Badger;
- Otter including a walkover for water vole;
- Red squirrel;
- Pine marten (summer);
- Hazel dormouse (April – November);
- Static detector bat surveys (spring, summer, autumn);
- Ground level tree assessments for bats;
- Ornithological surveys (spring, summer, autumn, winter);
- Habitat Suitability Index and environmental DNA survey of ponds within 500 m of the proposed scheme to assess their suitability for GCNs; and
- GCN population surveys (bottle trapping, torching and egg counts) for any ponds identified to be used by GCN, whose populations are likely to be impacted by proposed development.

Approach to bat surveys and assessment

- 7.12 The 2023 Bat Survey 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*” (Bat Conservation Trust, 2023). Reflecting the guidelines as well as established precedent elsewhere, no bat roost surveys are proposed for individual trees to be removed or lopped 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.
- 7.13 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 (Bat Conservation Trust, 2023). There is an expectation of multiple years to lapse between the completion of the ecology field surveys undertaken as part of the EIA and the commencement of the construction phase. However, static bat detectors will be deployed in suitable habitat within the study area. These will be supplemented by detailed forestry and woodland surveys of woodland blocks, which will also provide an indication of bat suitability. Therefore, an understanding of the bat species, roost suitability and bat activity levels will be gained for the assessment of the proposed scheme. This is considered sufficient baseline data to inform the EIA and all appropriate further surveys would be undertaken post-consent and pre-construction.
- 7.14 This is considered a proportionate approach due to there being a low risk to bats from OHL infrastructure, and a low likelihood of encountering rare bat species along the route in terms of roosting bats in trees/ woodland. This is explained further below.
- 7.15 OHL infrastructure has less of an impact on bats than 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. 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 bat mortality and have little or no noise, lighting or air pollution impacts. Thus, the relevant guidance in the 2023 Bat Guidelines on linear infrastructure projects should be viewed with this in mind (Bat Conservation Trust, 2023).
- 7.16 Recent research (Jérémy S. et al., 2023) 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 lines for feeding on insect prey attracted to ‘corona light’. However, 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 (towers 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,
- 7.17 An Irish study (EirGrid, 2015) looking at hedgerow connections and bat feeding found that there was no significant association between the 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 (page 2)*”.
- 7.18 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 proposed scheme 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 affected by the proposed scheme. Whilst the two species of horseshoe bat are likely present in this part of Wales, they do not roost in trees. Bechstein's bat has a very restricted distribution, and this species is not usually found in this part of Wales based on existing distribution maps. Barbastelle bats are known to occur in this part of Wales based on existing distribution maps. Any impact on small numbers of other tree roosting bats is unlikely to meet the significance test of the EIA Regulations.

7.19 Our proposed approach to bats, reflecting the stages of the development of the proposed scheme, is summarised below:

- **Route corridor options appraisal:** Data searches were undertaken for bat SACs and bat landscape features e.g. woodlands, to avoid where possible direct and indirect impact to these when selecting a preferred route;
- **Refinement of preferred route/ selection of OHL alignment:** 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 identified bat roost and resource potential, as set out in 2023 Bat Guidelines (Bat Conservation Trust, 2023);
- **Detailed design/ EclA and Environmental Statement preparation:** Continue to minimise tree loss through detailed design/ tower siting. 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 published by the Bat Conservation Trust (2023). From this, likely roost activity can be inferred. This is considered sufficient to assess risk to bats for EIA. The EclA will recognise that tree condition is dynamic and that the roost potential of trees will change between assessment and construction. Data presented in the Environmental Statement, therefore, will not represent baseline at construction. 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 Environmental Statement mitigation commitments. Ongoing liaison with NRW will be undertaken as bat data is analysed; and
- **Planning/ licensing/ delivery:** Pre-commencement bat surveys can be conditioned. Detailed tree climb/ emergence/ activity surveys of any trees to be removed as part of mitigation package. Licensing if required.

Approach to great crested newt

7.20 Towers and associated works will be positioned to avoid waterbodies (ponds, ditches etc.) and terrestrial habitat that would require GCN survey. Presence/ absence surveys for GCN may be triggered based on pond proximity to the proposed scheme works, data search results and presence of suitable (connected) terrestrial habitat. Where ponds are identified as requiring survey, presence/ likely absence will be completed using environmental DNA techniques. Where GCN are identified and considered likely to be impacted by the proposals, additional population size class surveys will be conducted, using traditional survey techniques for six visits. In most cases, micro-siting of towers will avoid significant impacts and small amounts of terrestrial habitats impacted (judged by Ecologist and/ or GCN licence habitat impact calculator) can be subject to habitat manipulation under ecological supervision (see discussion on reptiles in Table 7-3). GCN become scarcer in West Wales and absent in the far west of Wales – according to HSI data, the scheme is in zone C (unsuitable for GCN), although there are known to be small

populations within Carmarthenshire. Works would be timed to avoid disturbance to hibernating GCN where surveys identify their presence.

Approach to ornithology

- 7.21 In accordance with NatureScot guidance adopted by NRW (Scottish Natural Heritage, 2017), one full year of ornithological surveys will be completed, in addition to preliminary vantage point surveys undertaken to date. The following field surveys will be undertaken:
- Flight Activity Surveys (a minimum of 20 vantage point locations will be used);
 - Breeding Bird Survey (BBS) comprising up to 4 visits to locations that are likely to support populations of nature conservation importance;
 - Wintering Bird Survey (WBS) comprising 4 visits to key open ground habitats that area likely to support populations of nature conservation importance;
 - Breeding raptor and owl surveys; and
 - Nightjar surveys.
- 7.22 Field surveys will use standard survey methodologies, including raptor survey methods specified in Hardey et al. (2013). Flight activity surveys will comprise timed watches from vantage points, based on the methods described by Band *et al.* (2007).
- 7.23 Ornithology field surveys to inform the baseline for assessment will run for 12 months, across 2024 and 2025. The results of the baseline surveys will be used to inform the detailed alignment of the OHLs and tower locations with the aim of designing these to avoid habitats supporting populations of nature conservation importance wherever possible and to inform the design of any habitat creation or enhancement that may be required to mitigate impacts. The baseline data will also inform scope of tertiary mitigation governing the seasonal timing and supervision of certain construction activities and site preparation.

Approach to arboriculture

- 7.24 A desk study will be undertaken to identify the location of designated trees or woodland, such as ancient semi natural woodland (ASNW), planted ancient woodland site (PAWS), ancient/ veteran trees and trees protected by Tree Preservation Orders or Conservation Areas.
- 7.25 A field study will also be undertaken comprising a Stage 1 baseline tree survey collecting data following guidance from BS5837:2012 (Trees in Relation to Design, Demolition and Construction). Produce Tree Constraints Plan (TCP) showing all tree data recorded to inform design process.
- 7.26 Once the Stage 1 tree survey has been undertaken, the Arboricultural Impact Assessment (Stage 2) will commence, assessing the impact of the proposed scheme on the surveyed arboreal features. The key part of this assessment aims to work with the design team to retain all high value trees and features where possible and to provide solutions to reduce tree loss and impacts to retained trees.

Baseline conditions

- 7.27 The existing ecological baseline conditions will be identified based on the results of the routing study that was undertaken to establish the preferred route. No baseline

conditions for arboriculture will be available until the Stage 1 tree survey has been completed.

- 7.28 The table below lists the international and national sites designated for nature conservation purposes, which were identified within the study area. The distribution of recorded Priority Habitats is shown in Appendix 7.1.

Table 7-1 Summary of relevant designated sites

Site name	Reason for designation
Afon Tywi/ River Tywi SAC	Afon Tywi (River Tywi) SAC, Sites of Special Scientific Interest (SSSI) and tributaries. The primary reasons for the SAC designation are its otter <i>Lutra lutra</i> , and fish populations. Potential impacts include habitat loss, species impact, impact to connectivity and functional land and pollution issues.
Afon Teifi / River Teifi SAC	The preferred route crosses the Afon Teifi SAC and SSSI (and tributaries) in various places and passes within 100 m of the SAC in other areas. The primary reasons for the SAC designation are watercourses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation; Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i> , fish populations, Floating water-plantain <i>Luronium natans</i> and otter <i>Lutra lutra</i> . Potential impacts include habitat loss, species impact, impact to connectivity and functional land and pollution issues.
Carmarthen Bay and Estuaries / Bae Caerfyrddin ac Aberoedd SAC	The Afon Tywi (River Tywi) SAC flows into the Bae Caerfyrddin ac Aberoedd (Carmarthen Bay and Estuaries) SAC, and therefore the proposed scheme, is hydrologically and ecologically connected to this SAC via its tributaries. This SAC is designated for its sandbanks, estuaries, mudflats, sandflats, large shallow inlets and bays, Atlantic salt meadows, plant communities, otter <i>Lutra lutra</i> , and fish populations. Potential impact via pollution.
Elenydd-Mallaen SPA	Elenydd-Mallaen SPA qualifies by supporting internationally important populations of breeding red kite <i>Milvus milvus</i> and merlin <i>Falco columbarius</i> . Also important for a range of upland breeding species including chough <i>Pyrrhocorax pyrrhocorax</i> , and breeding waders like golden plover <i>Pluvialis apricaria</i> and curlew <i>Numenius arquata</i> . Potential impact via functionally linked land.
Afon Tywi / River Tywi SSSI	Afon Tywi / River Tywi supports an important breeding bird community, which includes mute swan <i>Cygnus olor</i> , little ringed plover <i>Charadrius hiaticula</i> , kingfisher <i>Alcedo atthis</i> , and common sandpiper <i>Actitis hypoleucos</i> . In winter, the SSSI is used by waders like curlew <i>Numenius arquata</i> , black-tailed godwit <i>Limosa limosa</i> and oystercatcher <i>Haematopus</i>

Site name	Reason for designation
	<i>ostralegus</i> , and formerly supported white-fronted geese <i>Anser albifrons</i> .
Afon Teifi / River Teifi SSSI	Afon Teifi is of special interest for a range of river types and associated riverside habitats; flowering plants; bryophytes; otter; Cetti's warbler; bottlenose dolphin; brown hairstreak; fish; dragonflies and a variety of other invertebrates as well as both breeding and wintering bird communities. Potential impacts include habitat loss.
Bishops Pond SSSI	It is especially notable for its reed sweet-grass <i>Glyceria maxima</i> swamp.
Allt Penycloed Stream Section SSSI	Designated for geological interest for its ecologically and stratigraphically significant fossils and sediments.
Cae Blaen- dyffryn SSSI	Designated for its unimproved species-rich grassland
Caeau Blaen-bydernyn SSSI	Designated for its mixture of wet grassland communities and the stands of species-rich acid grassland on the drier banks.

- 7.29 Several areas of ancient woodland also occur within 200 m of the preferred route (shown in Appendix 7.1).
- 7.30 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.
- 7.31 A review of aerial photography indicates that the study area is dominated by intensively managed agricultural land, river and stream crossings and hedgerow/ scattered tree field boundaries. Localised stands of woodland are also present, plus large areas of woodland. Small areas of lowland fens and reedbeds, plus various grassland habitats also occur in the preferred route. 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.
- 7.32 Initial desk studies have identified the presence of several bird species of nature conservation importance within and adjacent to the preferred route, including migratory wildfowl populations, 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.
- 7.33 Some sections of the preferred route are adjacent to areas known to be used by wintering birds, including migratory wildfowl such as swans and ducks, waders and gulls.

Future Baseline

- 7.34 The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed as part of the proposed scheme. Large parts of land within the preferred route 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 similar to the current baseline. Where changes arise from other future developments these would be considered in the cumulative assessment of the Environmental Statement, as appropriate.

Additional (secondary and tertiary) mitigation

- 7.35 Where effects are assessed as being significant, within the context of the EIA Regulations, mitigation measures will be identified 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.

Construction

- GCN licence (if required) to provide details of mitigation (unknown at this stage);
- Roosting bats, including a licence (if required) to provide details of mitigation (unknown at this stage);
- Hazel dormice licence (if required) to provide details of mitigation (unknown at this stage);
- Production and implementation of a CEMP to include the safeguard of the following receptors during construction:
 - Priority habitats;
 - Reptiles;
 - Common nesting birds (including ground nesting);
 - Foraging and commuting bats;
 - Priority species including brown hare, red squirrel, polecat and hedgehog;
- Pre-construction badger survey;
- Production of a LEMP outlining how the scheme will benefit biodiversity; and
- Following completion of the Arboricultural Impact Assessment, an Arboricultural Method Statement (Stage 3) will detail how the retained trees and features are to be protected during the construction phase until completion.

Operation

- Any mitigation required to protect priority habitats and species, including the passage of breeding and non-breeding birds across the site;
 - Implementation of a LEMP;
 - Continued adherence to condition and monitoring requirements for European Protected Species licence submissions for GCN, bats and hazel dormice (if required); and
 - Continued adherence to the Arboricultural Method Statement during maintenance activities.
- 7.36 Field data will be collected in a way that enables a biodiversity benefit assessment to be made. The proposed scheme will follow the Welsh Net Biodiversity Benefit (NBB) and DECCA framework approach, including the 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: 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; and
- Aspects of ecosystem resilience (adaptability, recovery and resistance): ecosystem resilience is a produce of the above four attributes. Adaptability, recovery and resistance to/ from a disturbance are defining features of ecosystem resilience.

7.37 A Green Infrastructure Statement will be produced which will identify how the step-wise approach has been used to maintain and enhance biodiversity in accordance with the DECCA framework. The Green Infrastructure Statement may either be a stand-alone document or may also be incorporated into a Habitat Management Plan. Input from ecology, landscape and visual disciplines will be incorporated.

Description of likely significant effects

- 7.38 The adoption of embedded mitigation measures to avoid or minimise adverse impacts upon ecological features resulting from the proposed scheme will continue to form part of the iterative design process.
- 7.39 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 Environmental Statement. This will include the specification of any species-specific buffers as necessary.
- 7.40 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.
- 7.41 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.
- 7.42 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 licensing will be sought to enable works that would otherwise be unlawful, in line with licence conditions and supporting Species Protections Plans.
- 7.43 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 where appropriate, which may include the rigors of the species licensing process. The species licensing process requires detailed and targeted mitigation and if necessary biodiversity compensation;
- The development and application of a CEMP, which will set out guidance on compliance with nature conservation legislation and policy;
- Production of a Pollution Prevention Plan as part of the CEMP and adherence to Guidelines on Pollution Prevention, 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 the proposed scheme specific mitigation during construction.

Ornithology

- 7.44 The adoption of embedded mitigation measures to avoid or minimise adverse effects upon ornithological features resulting from the proposed scheme will continue to form part of the iterative design process.
- 7.45 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 Environmental Statement.
- 7.46 A Bird Protection Plan will be prepared to ensure legislative compliance and accordance with current good practice guidance. This will be incorporated into any CEMP and overseen by an EcoW.
- 7.47 The assumption is that the clearance of vegetation likely to support breeding birds would be avoided during the bird breeding season (March to August inclusive) and clearance of vegetation likely to support wintering birds would be avoided during the wintering bird season (November to February inclusive). Where this would be required, an EcoW will undertake a disturbance risk-assessment as part of the Bird Protection Plan and will supervise the work to ensure that disturbance is avoided or minimised. Where active nests are discovered, suitable no disturbance buffers would be maintained until chicks have fledged. Where possible, scheduling construction and maintenance activities outside certain periods would be proposed for seasonally sensitive species.

Arboriculture

- 7.48 Significant effects are not anticipated on the basis that the need for tree felling would be avoided as part of the detailed design of the route alignment and tower placement. A Stage 1 tree survey will be undertaken, which will inform whether or not significant effects are likely to occur as a result of the proposed scheme. Any felled trees are expected to be 'replaced' by re-planting woodland areas and delivering other net benefit to biodiversity.

Matters to be 'scoped in' for further assessment

- 7.49 The following receptors / elements are proposed to be scoped into the assessment.
- 7.50 This scoping report is based on the understanding of the proposed scheme prior to undertaking a Preliminary Ecological Appraisal and prior to details of the final alignment and ancillary works such as haul road and compounds being confirmed. As the design of the scheme progresses, further review of receptors to be assessed as part of the EIA will be undertaken.

Table 7-2 Biodiversity matters proposed to be 'scoped in' to the EIA

Receptor/ element	Phase	Justification
Statutory Designated Sites (SPAs, SACs and SSSIs)	Construction	Direct and indirect effects on statutory designated areas for nature conservation purposes as a result of construction phase of the proposed scheme (i.e. SACs and SSSIs) where the design is unable to avoid potential impact to these sites. 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	Direct and indirect effects on local statutory designated areas for nature conservation purposes as a result of the construction phase of the proposed scheme, where the design is unable to avoid potential connectivity with these sites.
Habitats on Welsh list, GWDTEs	Construction	Direct and indirect effects arising from permanent loss and/ or fragmentation during the construction phase of the proposed scheme on habitats of conservation concern.
Breeding, wintering / passage birds	Construction Operation	Effects on breeding and wintering/passage bird populations could occur because of disturbance (e.g. due to noise) and/ or displacement during construction and as a result of collision mortality during the operational phase of the proposed scheme.
Bat activity, hazel dormouse, otter, red squirrel, pine marten, GCN, vascular and non-vascular plants, and invasive non-native species	Construction	Direct and indirect effects during construction due to disturbance (e.g. noise) / displacement 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 micro-sited to avoid waterbodies (ponds, ditches etc.) and habitat that would require GCN survey. Small amounts of terrestrial habitats impacted can be

Receptor/ element	Phase	Justification
		subject to habitat manipulation under ecological supervision (see discussion on reptiles in paragraph 7.20 and Table 7.3 below). GCN become scarcer towards the west of Wales and absent the in the far west of Wales – according to Habitat Suitability Index (HSI) the preferred route is in zone C (unsuitable for GCN).

Matters to be ‘scoped out’ of further assessment

Table 7-3 Biodiversity matters proposed to be ‘scoped out’ of the EIA

Receptor/ element	Phase	Justification
International and national sites designated for biodiversity.	Operation	The operational life of the proposed scheme will not involve any direct/ indirect impacts to the designated sites, as the detailed alignment of the OHL and the tower locations will be designed to avoid or span these receptors. Once constructed, operational activities will be limited to vegetation management in the corridor underneath the OHL and therefore additional impacts on international and national designated sites are not anticipated.
Local (statutory) sites designated for biodiversity and ancient woodlands.	Operation	The operational life of the proposed scheme will not involve any direct / indirect impacts to the designated sites, as the detailed alignment of the OHL and the tower locations will be designed to avoid or span these receptors. Once constructed, operational activities will be limited to vegetation management in the corridor underneath the OHL and therefore additional impacts on local designated sites and ancient woodlands are not anticipated.
Habitats on Welsh list, GWDTEs	Operation	The operational life of the proposed scheme will not involve any direct / indirect impacts to these habitats, as the detailed alignment of the OHL and the tower locations will be designed to avoid or span these receptors. Once constructed, operational activities will be limited to vegetation management in the corridor underneath the OHL and therefore additional impacts on habitats are not anticipated.
Bat activity,	Operation	Impacts not expected to be significant in EIA terms.

Receptor/ element	Phase	Justification
hazel dormouse, otter, red squirrel, pine marten, GCN, vascular and non- vascular plants, and invasive non-native species.		Once constructed, operational impacts will be limited to vegetation management in the corridor underneath the OHL and therefore additional impacts on protected plant and animal species are not anticipated.
Invertebrates, fish, brown hare, harvest mouse, hedgehog, fungi	Construction Operation	Impacts not expected to be significant in EIA terms. Once constructed, operational impacts will be limited to vegetation management in the corridor underneath the OHL and therefore additional impacts are not anticipated.
Bats – roosting	Construction Operation	Detailed surveys of trees that may need to be felled is seen as mitigation, as the bat roost potential of trees is likely to change between assessment stage and the start of construction. No bat roost surveys are proposed to inform the Environmental Statement for individual trees that may need to be removed during the construction phase, as this would be an unreasonably high level of survey work to carry out given the anticipated amount of forestry likely to be affected. Static bat detectors will be deployed in suitable habitat within the study area and these will be 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 proposed scheme. This is considered sufficient baseline data to inform the Environmental Statement and as stated above, appropriate surveys would be undertaken prior to construction.
Badger	Construction Operation	Impact not considered to be significant in EIA terms. Where badger setts occur in the vicinity of proposed tower bases or associated works/ compounds, micro-siting will be proposed to retain badger setts – these cases may require a walkover badger survey.
Water vole	Construction Operation	Impact not considered to be significant in EIA terms. Water vole activity is mostly restricted to areas close to river banks and stream banks – these would be spanned and remain unaffected. A walkover for water vole signs will be included as part of otter survey above and should signs of water vole be identified the water vole will be scoped into the Environmental

Receptor/ element	Phase	Justification
		Statement.
Reptiles	Construction Operation	Impact not considered to be significant in EIA terms. Impact can be avoided by use of 'habitat manipulation under ecological supervision'. This technique includes hand searching 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 10 cm, leaving for 24 hours (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 and reptiles will be scoped into the Environmental Statement. If required these will be targeted to the highest suitability habitats and those areas likely to support less widespread species such as adder.
It is proposed to scope decommissioning out of the biodiversity assessment for the reasons provided in Chapter 5.		

Opportunities for enhancing the environment

- 7.51 Biodiversity enhancements that achieve net biodiversity benefit will be considered following (i.e. additionally to) implementation of the stepwise approach of firstly avoiding, then minimizing, mitigating and as a last resort compensating for adverse impacts in the environment in a development. This process is detailed in Planning Policy Wales (paragraph 6.4.15) as the step wise approach. Consideration of placemaking and other benefits (e.g. health, wellbeing, climate adaptation, access to green space etc.) to make a genuine contribution to ecosystem resilience will be considered at this stage.
- 7.52 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 assessment methodology

Ecology and ornithology

- 7.53 The EcIA will follow the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland, referred to here as 'the CIEEM Guidelines' (CIEEM, 2018).
- 7.54 The Environmental Statement will provide a detailed description of the existing baseline for biodiversity within the study area, along with the assessment of the potential effects of the proposed scheme on the identified important ecological features, taking account of embedded and standard good practice measures to avoid and minimise significant impacts where possible.

- 7.55 Relevant international, national and local legislation policy and guidance will be referenced to determine the importance (or sensitivity) of 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.
- 7.56 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.
- 7.57 The importance of ecological features will be defined in a geographical context from 'Local' to 'International/ in line with CIEEM guidelines.
- 7.58 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.
- 7.59 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 proposed scheme. The maintenance of existing favourable conservation status for affected habitats and species, at the appropriate geographic scale, will be a key judgement for evaluating effect significance.
- 7.60 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.
- 7.61 The effects of the proposed scheme will be assessed in isolation and in combination with other relevant large-scale developments within 5 km of the proposed scheme as well as intra-project cumulative effects.

Arboriculture

- 7.62 The arboricultural survey and report will be carried out following guidance from the British Standard 5837: 2012 Trees in relation to design, demolition and construction.
- 7.63 During the tree survey, trees within and adjacent to the proposed scheme will be objectively categorised to ascertain their suitability for retention and identify above- and below-ground constraints.
- 7.64 A pre-development tree survey report will be prepared which will provide all the information gathered during the survey including: tree condition; suitability for retention; and constraints. The report will be supported by a Tree Constraints Plan which shows the position of each of the trees or group of trees in the vicinity of the site including their canopy spreads and initial Root Protection Areas. Each tree or group of trees will be colour coded to identify their relative retention category.
- 7.65 The arboricultural impact assessment comments on the proposed design with the aim of highlighting and, where possible, mitigating tree issues. The arboricultural impact assessment report considers implications that the proposed scheme will have on retained trees and importantly considers the implications that retained trees will have on the

proposed scheme. The assessment will contain advice regarding appropriate construction methods in the vicinity of trees and will include sections detailing their recommended retention and removal, conflicts between retained trees and the development and methods for resolving any conflicts that may have been highlighted. A Tree Retention Plan will be produced to accompany the original Tree Constraints Plan. It will identify trees for retention/ removal.

- 7.66 The arboricultural method statement contains exact details for specialised working methods in and around trees. Specifications of protective fencing and or other measures necessary for protecting trees are specified together with appropriate signage. The tree protection plan specifies the location of any of the above together with the construction exclusion zone.

Difficulties and uncertainties

- 7.67 The main uncertainty relates to field work, which is required to confirm the presence/ absence of ecological features within the study area and therefore, the final scope of the EIA.

Ecology scoping questions

- 7.68 Questions relating to the proposed scope and methodology of the EcIA and arboricultural assessment are listed in the box below for statutory consultees to review and respond to.

- Do you agree with the proposed consultees?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Do you agree that the surveys proposed to inform the EIA baseline characterization are appropriate?
- Are any receptors/ assets/ resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/ matters that are proposed to be scoped in and out of the EIA?

References

Band, W., Madders, M. & Whitefield, D.P. (2007). Developing field and analytical methods to assess avian collision risk at wind farms.

Bat Conservation Trust (2023). Bat Surveys for Professional Ecologists. Good Practice Guidelines. Available at: <https://www.bats.org.uk/resources/guidance-for-professionals/bat-surveys-for-professional-ecologists-good-practice-guidelines-4th-edition>.

Bright, P., Morris, P. and Mitchell-Jones, T. (2006), The Hazel Dormouse Conservation Handbook (2nd edition), Peterborough, English Nature.

CIEEM (2018) Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland. Chartered Institute of Ecology and Environmental Management, Winchester.

Collins, J. (2016) Bat Surveys-Good Practice Guidelines 3rd edition. London: Bat Conservation Trust.

Dean, M., Strachan, R., God, D. & Andrews, R. (2016) The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Matthews and Paul Chanin. The Mammal Society, London.

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.

Carmarthenshire County Council (2024). Carmarthenshire Nature Partnership. [Online]. Available at: <https://www.carmarthenshire.gov.wales/home/council-services/planning/biodiversity/carmarthenshire-nature-partnership/>.

English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough.

English Nature (2002). Badgers and Development. English Nature, Peterborough.

Gilbert, G., Gibbons, D. W., & Evans, J. (1998) Bird Monitoring Methods: a manual of techniques for key UK species. RSPB.

Google Earth (2023).

Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide to survey and monitoring (3rd Edition). The Stationery Office, Edinburgh.

Jérémy S. P. Froidevaux, Gareth Jones, Christian Kerbiriou and Kirsty J. Park (2023) Acoustic activity of bats at power lines correlates with relative humidity: a potential role for corona discharges. Available at: <https://doi.org/10.1098/rspb.2022.2510>.

Magic Maps (2024). Available at: <https://magic.defra.gov.uk/magicmap.aspx>.

Natural Resources Wales (2023). Badgers- A Guide For Developers. Available at: <https://naturalresources.wales/media/696694/badgers-a-guide-for-developers.pdf?mode=pad>.

NatureScot. (2016). Guidance - Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. Available at: <https://www.nature.scot/guidance-assessment-and-mitigation-impacts-power-lines-and-guyed-meteorological-masts-birds>.

Scottish Natural Heritage (2016). Guidance - Assessing Connectivity with Special Protection Areas (SPAs), Version 3. Available at: <https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20special%20protection%20areas.pdf>.

Scottish Natural Heritage (2017) Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2. Available at: <https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms>.

SEPA (2017). Land Use Planning System (SEPA) Guidance Note 31. Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Available at: <https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf>.

8 CULTURAL HERITAGE

Consultation

- 8.1 To date, consultation with The Trust for Welsh Archaeology (Heneb) (formerly Dyfed Archaeological Trust) has been limited to the acquisition of HER data ahead of the initial routeing study. In determining the proposed scheme, a study buffer of 3 km was used for designated and non-designated historic assets. This was agreed as being sufficient by DAT's local planning archaeologist.
- 8.2 Following EIA Scoping, it is anticipated that the following organisations will be consulted as part of the EIA:
- DAT; and
 - CADW.

Study area

- 8.3 The proposed study area for the historic environment assessment is the area that will be directly, physically affected by the proposed scheme plus a 3 km radius from the proposed scheme for designated historic assets and a 1 km radius for non-designated historic assets.
- 8.4 The proposed extent of the study area will allow the identification of assets and development of an appropriate understanding of their context and significance. Following the identification of the proposed scheme, the smaller 1 km study area for non-designated heritage assets was proposed, for the following reasons:
- The northern part of the proposed scheme is largely within the corridor of the Afon Teifi valley. Changes to the setting of non-designated historic assets outside of the valley beyond 1 km from the proposed scheme are considered unlikely as a result of the proposed scheme; and
 - In the southern part of the proposed scheme, the landscape is more developed, crossed by several major roads as well as proximity to the town of Carmarthen. In this area it is considered unlikely that the presence of additional infrastructure beyond 1 km from non-designated heritage assets will result in a significant effect.
- 8.5 As the iterative design process continues, the proposed scheme will be refined to comprise the detailed alignment of all infrastructure required for the operation of the proposed scheme, as well as the temporary infrastructure required for its construction. Whilst the study areas used for the EIA will be realigned to match any refinement in the extent of the proposed scheme, it is proposed that they remain as the area that may be directly physically affected by the proposed scheme plus a 3 km buffer for designated and a 1 km buffer for non-designated historic assets.

Data sources to inform the EIA baseline characterisation

- 8.6 The following sources of information have been reviewed during desk-based research to inform this Scoping Report:
- Data on designated historic assets in the initial routing study area;
 - DAT Historic Environment Record (HER) data for the initial routing study area;

- Published information on registered historic landscapes available on the Dyfed Archaeological Trust website;
- Historic and current Ordnance Survey mapping available online; and
- Recent digital aerial photography (available via Google Earth).

8.7 In addition to the sources listed above, the following information sources will be used to inform the historic environment assessment:

- Archaeological and architectural records from the National Monuments Record Wales, obtained as a digital data extract from the Royal Commission for Ancient and Historic Monuments Wales;
- LANDMAP data for Historic Landscape and Cultural Landscape;
- Historic maps and plans held in the Carmarthenshire archive;
- Welsh Government Lidar data;
- Geological data available online from the British Geological Survey;
- Portable Antiquities Scheme data;
- Readily available published sources and unpublished archaeological reports;
- The results of any archaeological evaluation investigations conducted to support the EIA; and
- The proposed scheme ZTVs to assist in the identification of assets which may be susceptible to effects related to setting change.

Desk-based assessment

8.8 The desk-based assessment will collate information from the data sources listed in the section above, in addition, the assessment will be informed by a targeted walkover survey which will cover infrastructure locations and historic assets likely to experience effects related to setting change. Should any hitherto unidentified historic assets be identified during the walkover survey an appropriate record (i.e. location, extent apparent form of and significance of assets) will be made. A photographic record will be made of the walkover and site visits and a selection of images utilized in the baseline reporting.

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

- Baseline context for assets, including appropriate archaeological and historical background;
- Identification of assets susceptible to effects – commentary on their heritage significance, including contribution of setting; and
- Likely effects on assets as a result of:
 - Direct physical effects;
 - Change in setting.

8.10 The HEDBA will include information derived from asset-specific assessment as necessary. The following studies are likely to be required:

- Assessment of the Significance of Impact of Development on Historic Landscapes 2 (ASIDOHL2); and
- Geophysical Survey.

- 8.11 The Environmental Statement 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 proposed scheme.

ASIDOHL2

- 8.12 An ASIDOHL2 report will be prepared in line with the guidance for this assessment process (Cadw, Countryside Council for Wales and Welsh Assembly Government, 2007). This will cover the effects to the registered historic landscape(s) traversed by the proposed scheme. At the time of preparing this Scoping Report, the proposed scheme directly interacts with two registered historic landscapes: the Tywi Valley Landscape of Outstanding Historic Importance (LOHI) and a section of the southern part of the Upland Ceredigion LOHI. The ASIDOHL2 report will cover those registered historic landscapes that the proposed scheme directly interacts with (i.e. would physically have infrastructure within).

Surveys to inform the EIA baseline characterisation

- 8.13 It is expected that some form of site visits and geophysical survey will be required to inform the EIA, both to aid design evaluation and to provide appropriate baseline information in the Environmental Statement. It is not possible at this stage to determine exactly where each survey would be required.
- An initial field visit will be conducted largely from publicly accessible locations, to support the initial understanding of the baseline.
 - This should be supported by visits to designated heritage assets crossed by the route (including Three Round Cairns SE of Blaen Carreg SM (CM084), Pen Lan round barrow Cemetery SM (CM313), and Merlin's Hill Hillfort SM (CM170)).
 - A secondary field visits will be carried out once a design freeze has been implemented.
 - This will support the desk-based setting assessment of designated and non-designated heritage assets outside the route. Access to private property may be required to assess some designated heritage assets.
 - Where appropriate, the site visit will also assess designated and non-designated heritage assets that are directly affected by ground-based infrastructure.
 - Following the secondary field visit, specific locations affected by ground-based infrastructure may require a geophysical survey or evaluation.
- 8.14 Should the proposed scheme design include areas of undergrounding, this will result in larger areas needing to be surveyed.
- 8.15 Further consultation will be undertaken with Cadw and DAT, as appropriate, to establish the scope and extent of the survey that will be required, once the detailed design and alignment of the proposed scheme is known.

Baseline conditions

Archaeological and historical context to the study area

- 8.16 The following historic assets are wholly or partly within the study area:
- 43 Scheduled monuments;
 - 143 Listed buildings:
 - 8 Grade II*;
 - 135 Grade II;
 - 2 Conservation Areas;
 - 2 Registered Historic Parks and Gardens;
 - 3 Registered Historic Landscapes:
 - Tywi Valley LOHI;
 - Upland Ceredigion LOHI; and
 - 1198 DAT HER entries.
- 8.17 The proposed scheme commences in the upland area the southern end of the Cambrian Mountains. The route runs southeast along the western side of the Teifi River valley, as far as Maesycrugiau, before turning south and crossing undulating terrain towards Carmarthen. The route traverses the Towy River valley to the west of Carmarthen and terminates to the south of the town.
- 8.18 The proposed scheme passes through a largely rural landscape, though it traverses varied topography over a long distance, as a result, the study area encompasses a broad range of historical assets of all periods. Specific assets are referred to, where relevant, in the following contextual overview of the study area.

General overview of the historic environment

- 8.19 The Neolithic and Bronze Age, prehistoric periods, are represented in the historical record largely in the form of Religious, Ritual and Funerary monuments mainly comprising Standing Stones and Round Barrows. These monuments are largely found on the western slopes of the Teifi River Valley, as well as in the valley itself, and at the southern end of the proposed scheme. A number of these monuments are designated scheduled monuments, including Pen Lan Round Barrow Cemetery (SM No. CM313), which the proposed scheme passes over and Three Round Cairns SE of Blaen Carreg (SM No. CM084), to which the route passes within 10 m.
- 8.20 Evidence for Iron Age activity is less present in the historical record than evidence for the activity in the Neolithic and Bronze Age. It mainly comprises defended enclosures, which survive as earthworks on highlands to the west of the Afon Teifi Valley and in the river valley itself. In the southern part of the proposed scheme, the study area interacts with the scheduled Merlins Hill Hillfort (SM No. CM321), the monument comprises a single large rampart that crowns the flat-topped hill.
- 8.21 The Roman period is represented in the historical record mainly in the form of roads, several of which traverse the study area. The DAT HER record provides projected routes for some of these roads by linking known road sections.
- 8.22 Evidence of early medieval activity within the study area mainly comes from place names. The study area contains numerous names with the prefix 'Llan' which indicates the

presence of an early Christian church site and associated settlement. Many of these developed into villages in the medieval period. Several designated medieval defensive sites are within the study area, these mainly comprise earthen mottes that will have had a wood or stone tower constructed upon them, and surrounding ditches. Also dated to this period within the study area are several churches and chapels, as well as historic assets that provide evidence of agricultural activities.

- 8.23 Most listed buildings and HER entries are of post-medieval date. The activity of this period is recorded in most parts of the study area, predominantly providing evidence of agriculture in the form of farmsteads and farmhouses, and their associated features including field systems, sheepfolds, and trackways. There are also many quarries of post-medieval date throughout the study area, reflecting the importance of and ready access to, building stone during the period. In addition, historic assets associated with mining and the transport network are prevalent within the landscape. Two registered parks and gardens, located within the study area, are dated to this period. Maesycrugiau Hall (RPG No. PGW(Dy)3(CAM)) is located approximately 330 m to the west of the route corridor, and is a formal terraced garden with ponds, a summer house and woodland. Bishop's Palace, Abergwili (RPG No. PGW(Dy)59(CAM)) is located on the north bank of the River Tywi, approximately 800 m to the west of the route corridor. The garden is of historic interest as a nineteenth-century woodland garden with rich arboreal flora.
- 8.24 Few designated historic 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, as well as agricultural and religious monuments.

Registered Historic Landscapes

- 8.25 The registered historic landscapes of Tywi Valley LOHI and Upland Ceredigion LOHI represent areas in which the historic landscape (i.e. the landscape which exists at present and the historic processes responsible for this) is considered to possess a degree of coherence and significance warranting inclusion on the Register of Historic Landscapes in Wales. The historic landscapes have evidence of human activity stretching back millennia. The Tywi Valley LOHI is primarily a lowland, farming landscape. Upland Ceredigion comprises a series of upland plateaus which are deeply dissected by the valleys of the Rivers Rheidol, Ystwyth, and their tributaries. The archaeology of Upland Ceredigion is characterised by evidence of the exploitation of natural resources. Many of the key characteristics of the LOHIs are recognised as historic assets in their own right. These span historic rural settlements (conservation areas and listed buildings), high-status designed landscapes (registered historic parks and gardens) and prehistoric ritual and defensive features (scheduled monuments).
- 8.26 Each LOHI is divided into historic landscape areas (HLCAs) based on key characteristics. The Tywi Valley LOHI has 4 HLCAs within the proposed scheme and 7 HLCAs within the study area. The Upland Ceredigion has one HLCA in the route and study area.

Future baseline

- 8.27 Whilst no significant changes to the historic environment baseline are anticipated, the following may occur:
- Further historic assets are discovered;

- The status of some historic assets changes, i.e. assets currently non-designated may become designated and vice versa;
- Historic assets may become better understood due to advances in knowledge and/ or technology;
- The condition of assets may change due to climate change and/or changes in rural regimes in the post-Brexit subsidy environment; and
- Some 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).

8.28 The Environmental Statement will address this uncertainty over baseline with appropriate post-scoping consultation with relevant consultees to establish cut-off dates for baseline data gathering and realistic future baseline scenarios to be assessed.

Additional (secondary and tertiary) mitigation

- 8.29 Owing to the nature of the proposed scheme, it is envisaged that additional mitigation is likely to focus on addressing direct effects to historic assets, particularly those to below-ground historic assets (archaeological features and deposits). The approach to mitigation will be guided by industry common practice and appropriate procedures as laid out in the relevant Chartered Institute for Archaeologists (CIfA) standards and guidance documents and consultation with relevant historic environment advisory bodies (e.g. DAT).
- 8.30 In the first instance, the proposed scheme will seek to avoid and minimise effects through design. This will primarily be achieved by close involvement of cultural heritage specialists in the design process so that potential impacts are highlighted at an early stage and design interventions can be made to avoid or minimise harm to assets. The specialists will also provide input to the CEMP to design realistic control measures to avoid accidental damage to historic assets during the construction period.
- 8.31 Secondary mitigation may include recommendations to underground one or more sections of the final alignment of the proposed scheme, where potential significant effects on the setting of historic assets may occur. It is proposed that geophysical surveys will be undertaken in areas that may be proposed for undergrounding, where there is potential for unrecorded buried archaeological remains or where there are known archaeological remains whose extent is unclear.

Description of likely significant effects

- 8.32 At this stage, the following potential effects, including cumulative effects, appear to have the potential to arise as a result of the proposed scheme:
- Direct physical effects to historic assets within the proposed scheme arising during the construction period; and
 - Effects related to setting change for assets within the study area during the operational period.
- 8.33 On the basis of the work undertaken to date, the professional judgement of the assessment team and experience from other similar projects, it is unlikely that the following potential effects will arise, which will be mitigated through embedded mitigation measures, specifically design and standard good practice construction measures:

- Direct physical effects during operation and maintenance (since physical effects will only occur during construction);
- Direct physical effects to assets beyond the proposed scheme boundaries during operation; and
- Direct physical effects to assets beyond the land required for construction during the construction period.

Matters to be 'scoped in' to further assessment

Table 8-1 Cultural heritage matters proposed to be 'scoped in' to the EIA

Receptor/ element	Phase	Justification
Direct physical effects to historic assets within the proposed scheme arising during the construction period	Construction	Potential for significant effects in the event that excavations and other construction activities are located in proximity to heritage assets, that could result in physical damage.
Effects related to setting change for assets within the study area during the operational period	Operation	Potential for Likely Significant Effects

Matters to be 'scoped out' of further assessment

Table 8-2 Cultural heritage matters proposed to be 'scoped out' of the EIA

Receptor/ element	Phase	Justification
Direct physical effects during operation	Operation	Direct physical effects will only occur during construction
Direct physical effects to assets beyond the proposed scheme footprint	Construction/ Operation	There will be no direct physical effects to assets beyond the proposed scheme as direct physical effects can only occur within the locations where construction work will take place.
Effects related to setting change for assets during the construction period.	Construction	Construction will not require long-term fixed infrastructure, such as cranes, so any associated change in setting is unlikely to result in significant effects to historic assets.
Assessment of effects during decommissioning is proposed to be scoped out of the EIA for the reasons set out in Chapter 5.		

Opportunities for enhancing the environment

- 8.34 Through the baseline assessments and environmental impact assessments, opportunities to enhance the understanding and preservation of the historic environment where they arise will be highlighted. This may result from mitigation that would result in a documentary archive and opportunities to report on historic assets, preservation in situ or conservation of historic assets.

Proposed assessment methodology

Legislation, policy and guidance

- 8.35 The assessment of effects of the proposed scheme on the historic environment will be carried out in accordance with the principles contained within the following documents:
- Welsh Government (2024) Planning Policy Wales 12th edition;
 - Welsh Government (2017) Technical advice note 24: the historic environment;
 - Cadw (2011) Conservation Principles for the sustainable management of the historic environment in Wales;
 - Cadw (2017) Setting of Historic Assets in Wales;
 - Cadw (2017) Heritage Impact Assessment in Wales;
 - Cadw, Countryside Council for Wales and Welsh Assembly Government (2007) Guide to Good Practice On Using The Register Of Landscapes Of Historic Interest In Wales In The Planning And Development Process (2nd edition) ('ASIDOHL2');
 - Chartered Institute for Archaeologists (CIfA) (2017) Standard and guidance for historic environment desk-based assessment; and
 - IEMA, CifA and IHBC (2021) Principles of Cultural Heritage Impact Assessment in the UK.

Assessment method

Heritage significance

- 8.36 In the historic environment policy and guidance, the significance, hereafter referred to as 'heritage significance' to disambiguate from the EIA concept of 'significance', of a historic asset comprised a series of qualities, known as 'heritage values'. The heritage significance of an asset will be articulated using the heritage values in Conservation Principles (Cadw, 2011). Explanation of heritage significance will include assessment and discussion of whether and how an asset's setting contributes to its heritage significance and allows this to be appreciated.

Importance

- 8.37 Whilst heritage values help describe the heritage significance of assets, they do not articulate the relative importance of assets. For the Environmental Statement, the 'importance' of assets will be described using the criteria provided in the table below.

Table 8-3 Criteria for assessing heritage asset importance

Importance of the asset	Criteria
Very High (International)	World Heritage Sites and other assets of equal international importance, that contribute to international research objectives.
High (National)	Registered Historic Landscapes, Grade I and II* Registered Parks and Gardens, Scheduled Monuments, Protected Wreck Sites, Grade I and II* Listed Buildings, and undesignated historic assets of equivalent importance that contribute to national research objectives. Also Conservation Areas, Grade II Registered Parks and Gardens and Grade II Listed Buildings which have particular characteristics that merit a high level of importance.
Medium (National or Regional)	Conservation Areas, Grade II Registered Parks and Gardens, Grade II Listed Buildings except where their particular characteristics merit a higher level of importance, historic assets on local lists and undesignated assets that contribute to regional research objectives.
Low (Local)	Locally listed historic assets, except where their particular characteristics merit a higher level of importance, undesignated historic assets of local importance, including assets that may already be partially damaged.
Negligible	Identified historic remains of no importance in planning considerations, or historic assets and findspots that have already been removed or destroyed (i.e. 'site of').
Unknown / Uncertain	Historic assets for which a level of importance cannot be defined on current information.

- 8.38 All effects will be assessed in terms of the way in which the proposed scheme will, either physically or through change in setting, affect the heritage significance of the historic asset. This will be articulated with reference to the Conservation Principles' heritage values. In articulating effects, a judgement will be made on the level of harm or benefit a historic asset will experience as a result of the proposed scheme, supported by an appropriate narrative linking this to how the asset will have its heritage significance changed. Assessment of effects related to setting change will be undertaken using the staged approach laid out in the Cadw setting guidance. In articulating effects, a clear statement will be made as to whether the effect is considered to be significant in EIA terms, i.e. constitutes a significant effect. As there is currently no relevant sector guidance covering what constitutes significant environmental effects, this judgment will be made based on the level of direct physical and other effects on each asset. Although this will be evaluated on an asset-by-asset basis, it is expected that an effect on an asset of at least regional significance which results in either its total removal or very much reduces its heritage significance will be a significant effect. This does not rule out significant effects arising as a result of other levels of effect on assets of lower levels of importance. The

potential for such effects to be significant will be kept under review during the course of the EIA.

- 8.39 There is no industry-wide accepted methodology for the assessment of cumulative effects on historic assets within EIA. The assessment of cumulative effects will review the agreed list of cumulative schemes for the proposed scheme and identify whether any further effects (i.e. effects that will not be caused solely by the proposed scheme itself) will arise. This assessment will be undertaken and articulated in the same terms as the assessment of the effects of the proposed scheme in its own right.

Difficulties and uncertainties

- 8.40 Prior to the baseline desk-based assessment and evaluation surveys, it is not possible to provide specifics on which historic assets will be included in the environmental impact assessment. Post-baseline assessment consultation with relevant heritage consultees will be used to confirm which heritage assets are taken forward into the environmental impact assessment.

Cultural heritage scoping questions

- 8.41 Questions relating to the proposed scope and methodology of the cultural heritage assessment are listed in the box below for statutory consultees to review and respond to.

- Do consultees consider the study area appropriate?
- Are there any other relevant consultees who should be consulted regarding this factor?
- Are area consultees aware of any other supplementary guidance of relevance to the assessment of effects on historic assets?
- Is the approach to the assessment of effects, including those effects scoped in and out and the cumulative assessment appropriate?
- Is the approach to surveys, including geophysical surveys, considered appropriate?
- Are any receptors/ assets/ resources not identified that consultees would like to see included in the EIA?

References

Dyfed Archaeological Trust (n.a). Towy Valley Historic Landscape Characterisation. Available at: <https://dyfedarchaeology.org.uk/HLC/HLCTowy/Towyvalleymap.htm>.

Dyfed Archaeological Trust (n.a). Tywi Valley, Myddfai and Black Mountain- Historic Landscape Characterisation. Available at: <https://dyfedarchaeology.org.uk/HLC/Myddfai/Myddfaisummary.htm>.

9 AIR

Consultation

- 9.1 Consultation has not been undertaken at this stage of EIA Scoping. Consultation will be undertaken with the relevant local authorities of Ceredigion County Council and Carmarthenshire County Council, and Natural Resources Wales, as appropriate and with prior agreement with the client, in case there are any concerns on our scoping input.

Study area

- 9.2 The study area is proposed to include the preferred route, as well as construction compounds, laydown and accesses once known. The extent of the study area for the construction phase is up to 350 m from the construction areas. For the operational phase, the extent of the study area is dependent on the transport assessment outcomes and on the use of the local road network by the operational vehicles for servicing and maintenance. However, the operational phase is not expected to have a significant requirement for traffic movements and it is proposed to scope operational impacts on air quality out of the EIA. The extent of study area will be clearly defined in the Environmental Statement. Relevant legislation, policy and guidance as follows:

- Air Quality (Wales) Regulations, Air Quality (Wales) Amendment Regulations, and Air Quality Standards Regulations;
- The Environment Act (1995) and Environmental Protection Act (1990);
- Planning Policy Wales, 12th edition (2024);
- Carmarthenshire County Council Local Development Plan 2006-2021 and Ceredigion County Council Local Development Plan 2007-2022. The revised versions will be reviewed if available at the time of writing the chapter;
- Guidance on the Assessment of Dust from Demolition and Construction (Institute of Air Quality Management, 2024) ('the IAQM 2024 guidance');
- Land-Use Planning & Development Control: Planning for Air Quality (Environmental Protection UK and Institute of Air Quality Management, 2017) ('the EPUK-IAQM guidance');
- Local Air Quality Management Review and Assessment Technical Guidance (TG22) published by the Department for Environment, Food and Rural Affairs (DEFRA); and
- Local air quality management in Wales , policy guidance published by the Welsh government (2017).

Data sources to inform the EIA baseline characterisation

- 9.3 A desktop baseline air quality review would be carried out to establish existing air quality conditions in the study areas. Information on air quality would be gathered using publicly available data.
- 9.4 Current air quality within the area of the proposed scheme and air quality under the 'do-nothing' scenario in appropriate future years will be characterised using publicly available data. This may comprise some or all the following data sources:
- Data from local (council run) air quality monitoring programmes;

- Data from national (DEFRA) air monitoring networks; and
- Data from background air quality maps on a 1 × 1 km grid, sponsored by DEFRA.

9.5 All such data will be summarised and interpreted to some extent in the council's local air quality review and assessment reports, which will be reviewed.

Surveys to inform the EIA baseline characterisation

9.6 The detailed alignment of the proposed scheme is not finalised at this stage, however, it is considered that data sources referred to in the previous section should be sufficient to inform the baseline characterisation. Baseline monitoring will be undertaken, only in the event that sufficient air quality data is not publicly available. However, at this stage, it is not envisioned that site-based surveys will be required.

Baseline conditions

Existing baseline

9.7 Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air. These substances are emitted by various sources, including road traffic, industrial, domestic, agricultural and natural sources.

9.8 The local air quality monitoring data from both Ceredigion County Council and Carmarthenshire County Council will be assessed for baseline characterisation. The location of Air Quality Management Areas (AQMAs) within these councils will also be considered in the assessment.

9.9 Air Quality Management Areas (AQMAs) are declared when air quality is close to or above an acceptable level of pollution (known as the air quality objective) and the monitoring data is reported to DEFRA. There are two AQMAs within Carmarthenshire (Carmarthen and Llanelli), neither of which overlap the proposed scheme, and no AQMAs in Ceredigion.

Local air quality management background data

9.10 The estimated background air quality data are available from the Local Air Quality Management (LAQM) website operated by DEFRA. The DEFRA LAQM website provides estimated annual average background concentrations of NO₂, PM₁₀ and PM_{2.5} on a 1 km² grid basis with the latest maps based on 2018 base year with data projected up to the year 2030.

9.11 A desktop baseline air quality review would be carried out to establish existing air quality conditions in the study areas.

9.12 Information on air quality would be gathered using publicly available data.

Additional (secondary and tertiary) mitigation

9.13 Good practice measures stipulated in the relevant guidance held within the IAQM Guidance on the Assessment of Dust from Demolition and Construction V2.2 (2024), will seek to ensure that no significant dust effects will occur.

- 9.14 Appropriate mitigation measures as per the Best Practice Guidance will be identified for all phases of the proposed scheme and residual effects will be reported.

Description of likely significant effects

Construction phase activities

- 9.15 Fugitive dust emissions arising from construction activities are likely to be variable in nature and will depend upon the type and extent of the activity, soil type and moisture, road surface conditions and weather conditions. Periods of dry weather combined with higher than average wind speeds have the potential to generate more dust.
- 9.16 Construction traffic will comprise construction vehicles and vehicles used for workers' trips to and from the construction site.

Operational phase activities

- 9.17 The main potential impact of the proposed scheme during the commissioning and operational phase is considered to be emissions from increased road traffic associated with the proposed scheme due to service and maintenance of the overhead cables. The increase in road traffic due to commissioning and operation of the proposed scheme is not expected to be significant.

Cumulative effects

- 9.18 The potential for significant cumulative effects is most likely to arise during the construction phase of the proposed scheme, where the timing of construction coincides with the timing of construction or commissioning/operation phase of other nearby committed and consented developments. This will be considered to identify and assess cumulative impacts of the construction of the proposed scheme.

Matters to be 'scoped in' to further assessment

- 9.19 The detailed alignment of the proposed scheme, once known, will be investigated to identify any sensitive receptors that may be affected by its construction and to determine whether or not it passes through or close to any areas such as designated ecological sites, which may be impacted by the proposed scheme.

Table 9-1 Air quality matters proposed to be 'scoped in' to the EIA

Receptor/ element	Phase	Justification
Construction dust	Construction	Construction dust impacts would be assessed qualitatively in accordance with the methodology contained within the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction V2.2 (2024). Following assessment of construction dust impacts, appropriate dust mitigation measures would be proposed to manage adverse air quality

Receptor/ element	Phase	Justification
		impacts and reduce potential impacts to an acceptable level. The construction areas are not yet confirmed or their proximity to sensitive receptors (including human and ecological receptors).
Construction traffic	Construction	There is the potential for deterioration in the local air quality for human and ecological receptors. The exact number of towers and their location is yet to be determined, however the length of construction duration is unlikely to be longer than four months 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, but construction vehicles could generate emissions from delivering materials along key access roads and these emissions could affect sensitive receptors. A screening level qualitative assessment of emissions during construction phase from increased road traffic due to the proposed scheme will be undertaken to establish the level of significance of impact.

Matters to be 'scoped out' of further assessment

Table 9-2 Air quality matters proposed to be 'scoped out' of the EIA

Receptor/ element	Phase	Justification
Construction Plant	Construction	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. Significant effects of NRMM emissions are considered unlikely with incorporation of best practice measures (Code of Construction Practice) and compliance with NRMM standards, which will be covered in the mitigation measures for the proposed scheme.
Operational traffic	Operation	It is envisioned that there will be no significant impacts on air quality during operation due to the proposed scheme being a static structure which does not have any associated emissions. There will be travel to the site for maintenance purposes, but these will be very limited in nature, unlikely to require heavy equipment, and will therefore have insignificant effects upon air quality.

Receptor/ element	Phase	Justification
It is proposed to scope decommissioning out of the assessment of air for the reasons provided in Chapter 5.		

Proposed assessment methodology

- 9.20 The air quality impact assessment is proposed to be undertaken following the methodology identified below.

Review of legislation, policy and guidance

- 9.21 A comprehensive review of the applicable legislation, policy and guidance will be undertaken.

Consultation

- 9.22 An assessment method statement will be prepared and the Environmental Protection team at the local authorities will be consulted. Any specific concerns raised by the authorities will be addressed in the assessment.

Identification of sensitive receptors

- 9.23 Sensitive receptors, including human and ecologically sensitive sites relevant to the proposed scheme, will be identified and included in the assessment.

Baseline characterisation of existing air quality

- 9.24 Current air quality in the area of the proposed scheme and air quality in appropriate future years will be characterised using publicly available data (for example, local authority air quality monitoring data, and the estimated background air pollutant concentrations published by DEFRA).

Assessment of construction phase impacts

- 9.25 A qualitative assessment of construction phase effects will be undertaken using the methodology published by the IAQM. The risk of impact will be estimated by combining the dust emission magnitudes of the work and the sensitivity of the area.
- 9.26 A screening level qualitative assessment of emissions from increased road traffic due to the proposed scheme will be undertaken with reference to the Environmental Protection (UK) and IAQM guidance entitled 'Land-Use Planning & Development Control: Planning for Air Quality' (2017). At this stage, it is assumed that construction phase traffic generation will be below the IAQM-EPUK screening criteria for a detailed dispersion modelling assessment. However, a detailed road traffic emissions modelling assessment for the construction phase impacts will be undertaken if the above screening criteria are triggered.

Assessment of operational phase impacts

- 9.27 Due to the nature of the development, it is considered unlikely that the proposed scheme itself will have significant air pollutant emissions and impact on the local air quality, during the operational phases. A screening level qualitative assessment of emissions from increased road traffic due to the proposed scheme will be undertaken with reference to the Environmental Protection (UK) and IAQM guidance entitled 'Land-Use Planning & Development Control: Planning for Air Quality' (2017) to confirm this.

Cumulative impact assessment

- 9.28 An assessment of potential cumulative air quality impact of the proposed scheme will be carried out for the construction phase of the development and reported in the Environmental Statement as part of the Cumulative Effects chapter. The qualitative cumulative assessment would include consideration of both intra-project and inter-project impacts with other committed and consented developments taken into account. Should any large-scale projects be identified during consultation, these would be included in the cumulative qualitative impact assessment.

Identification of mitigation measures and residual effects

- 9.29 Appropriate best practice mitigation measures will be identified after accounting for primary/embedded mitigation for all phases of the proposed scheme as per the widely used guidance, including that published by the IAQM, and residual effects will be reported.

Preparation of the air quality chapter and non-technical summary

- 9.30 The air quality chapter in the Environmental Statement will be prepared detailing the methods and outcomes of the assessment. Air quality assessment outcomes will also be presented in the non-technical summary.

Difficulties and uncertainties

- 9.31 Following are the difficulties and uncertainties:
- The detailed alignment of the proposed scheme is not known at this stage to identify any sensitive receptors that may be affected by its construction and to determine whether or not it passes through or close to any areas such as designated ecological sites, which may be impacted by the proposed scheme;
 - The construction areas are not yet confirmed or their proximity to sensitive receptors. We need to assess the sensitivity of the area in our assessment; and
 - The exact number of towers and their location is yet to be determined.
- 9.32 The qualitative cumulative assessment would include consideration of other committed and consented developments. We have not been provided with a list of other committed and consented developments.

Air quality scoping questions

- 9.33 Questions relating to the proposed scope and methodology of the air quality assessment are listed in the box below for statutory consultees to review and respond to.

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?
- Are any receptors/ assets/ resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/ matters that are proposed to be scoped in and out of the EIA?
- Do you agree with the proposed factor-specific assessment approach?

References

Carmarthenshire County Council (2014). Local Development Plan 2006-2021. Adopted 2014. Available at: <https://www.carmarthenshire.gov.wales/home/council-services/planning/planning-policy/local-development-plan-2006-2021/>.

Ceredigion County Council (2013). Local Development Plan (LDP) 2007-2022. Adopted 2013. Available at: <https://www.ceredigion.gov.uk/resident/planning-building-control-and-sustainable-drainage-body-sab/planning-building-control/ceredigion-local-development-plan/adopted-ceredigion-local-development-plan-ldp/>.

Department of Environment, Food and Rural Affairs (DEFRA). Local Air Quality Management Review and Assessment Technical Guidance.

Department of Environment, Food and Rural Affairs, 2018. Background Mapping Data for Local Authorities-2018. [online] Available at: <https://uk-air.defra.gov.uk/data/iaqm-background-home>.

Environment Act (1995). Available at: <https://www.legislation.gov.uk/ukpga/1995/25/contents>.

Environmental Protection Act (1990). Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents>.

Environmental Protection UK and Institute of Air Quality Management (2017). Land-Use Planning & Development Control: Planning for Air Quality. Available at: <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>.

Institute of Air Quality Management (2024). Guidance on the Assessment of Dust from Demolition and Construction ('the IAQM 2024 guidance'). Available at: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf>.

Welsh Government (2024). Planning Policy Wales. 12th Edition. Available at: https://www.gov.wales/sites/default/files/publications/2024-02/planning-policy-wales-edition-12_1.pdf

Welsh Government (2017). Local air quality management in Wales. Policy guidance. Available at: <https://www.gov.wales/sites/default/files/publications/2019-04/local-air-quality-management-in-wales.pdf>

The Air Quality (Amendment) (Wales) Regulations (2002). Available at: <https://www.legislation.gov.uk/wsi/2002/3182/contents/made>.

The Air Quality (Wales) Regulations (2000). Available at:
<https://www.legislation.gov.uk/wsi/2000/1940/contents/made>.

The Air Quality Standards (Wales) Regulations (2010). Available at:
<https://www.legislation.gov.uk/wsi/2010/1433/contents/made>.

10 NOISE AND VIBRATION

Consultation

- 10.1 Consultation has not been undertaken with the local authority to date. Correspondence will be carried out with the Environmental Health Departments at both Ceredigion County Council and Carmarthenshire County Council regarding the assessment methodology prior to undertaking any surveys. Consultation would be sought in order to seek agreement on the following:
- Receptors for inclusion in the assessment(s);
 - Baseline noise survey locations and programme of monitoring;
 - Guidance and standards pertinent to the assessment(s); and
 - Agreement on relevant criteria.

Study area

- 10.2 A study area is not defined within the applicable noise and vibration standards and guidance relevant to this assessment. The proposed study area will therefore be defined based on the applicant's proposed construction extents. Receptors adjacent to the boundary of the proposed scheme (including construction boundaries) and within 300 m of these boundaries shall be included. These will include isolated receptors/ properties or those indicative of a group of dwellings. No significant effects are expected beyond 300 m of the proposed scheme boundary, based on the guidance of British Standard 5228-1, the type of activities likely to be involved and the experience of the acoustics specialist on similar projects.

Data sources to inform the EIA baseline characterisation

- 10.3 A desk-based assessment will be carried out to inform the baseline assessment using the following information sources:
- OS mapping;
 - OS residential data to inform the location of sensitive receptors including residential dwellings, schools, and healthcare facilities;
 - 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)98; and
 - Welsh Government Noise and Soundscape Action Plan. 2018-2023 (Welsh Government, 2018).

Surveys to inform the EIA baseline characterisation

- 10.4 A baseline noise survey, using locations agreed with the local authorities through consultation, will be carried out to quantify existing noise levels in the vicinity of noise sensitive receptors.
- 10.5 Baseline noise monitoring shall be conducted during a 1-week period. Monitoring will be undertaken along the route of the proposed scheme, focusing on locations where noise

sensitive receptors are in close proximity to the OHL, towers or construction compounds, in order to quantify the baseline environment. The monitoring will be carried in free-field conditions in locations agreed with the local authorities, primarily at residential dwellings likely to be impacted by the proposals. Positions shall include isolated receptors/properties or those indicative of a group of dwellings. Baseline monitoring would be used to inform the criteria for both the construction and operational phase assessments.

- 10.6 The remaining receptors within the study area will be assumed to experience ambient noise levels below the lowest threshold for noise limits in accordance with the relevant guidance.
- 10.7 Noise measurements will be undertaken in accordance with British Standard BS 7445-1:2003 'Description and measurement of environmental noise. Guide to quantities and procedures', with instrumentation meeting the standards set out in BS EN 61672:2013 'Electroacoustics. Sound level meters Specifications'. Measurements will comprise of broadband indices L_{Aeq} , L_{A10} , L_{Amax} and L_{A90} . The equipment chosen will be Class 1 within a year of traceable calibration. Field calibration will also be undertaken and documented prior to and after measurements.

Baseline conditions

- 10.8 Baseline noise levels are expected to be of low order, considering the largely rural setting of the preferred route.
- 10.9 Traffic movements on the local road networks (B4343, A485, A482, A484, A40 and A48) are likely to be the primary source of noise affecting the local acoustic environment.
- 10.10 Measured data will take account of weather conditions during the survey to obtain a dataset from which representative baseline sound levels for the assessment can be derived. The positioning of noise monitoring equipment would be agreed with the relevant local authorities.
- 10.11 The receptors likely to be incorporated into the assessment are predominantly residential in nature and therefore have the highest level of sensitivity. Additional receptors may include nearby businesses such as farms, holiday accommodation and users of public footpaths or cycleways. Impacts of noise on ecological receptors will be considered in the biodiversity environmental factor (see Chapter

Additional (secondary and tertiary) mitigation

- 10.12 Potential measures to mitigate levels of noise and vibration during the construction phase are outlined below.
- 10.13 In developing the control measures during the construction phase, best practicable means (BPM), as defined in Section 72 of the Control of Pollution Act 1974 and Section 79 of the Environmental Protection Act 1990, would be applied during all construction works to minimise noise and vibration at neighbouring residential properties and other sensitive receptors. In doing so, due consideration would be given to the recommendations contained within BS5228:2009+A1:2014.
- 10.14 Measures to minimise levels of noise and vibration during the construction phase may include:

- The use of lower emitting noise level plant items;
- Management of operations to more appropriate periods; and
- Use of noise barriers / temporary enclosures.

Description of likely significant effects

Construction

- 10.15 The construction phase would likely lead to a temporary increase in existing noise levels at receptors as a result of the use of heavy vehicles, large earthmoving/ lifting equipment and piling equipment. Temporary significant effects may occur during this phase.

Operation

- 10.16 Significant effects during the operational phase of the proposed scheme are not expected to occur on the basis that the tower locations will be designed to avoid coming into proximity to noise sensitive receptors. In the event that an exception to this is made in the final design of the proposed scheme, a standalone BS-4142 noise report will be prepared in consultation with the relevant local authority.
- 10.17 Under dry weather conditions, 132 kV 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.
- 10.18 Based on the experience of the acoustics specialist of similar 132 kV OHL projects, levels of noise from this type of OHL, even during worst-case conditions (wet weather), are very low (less than 20 dB(A)) and not significant.
- 10.19 Operational impacts due to noise associated with the new 132 kV substation, to be located adjacent to the proposed National Grid substation, may occur dependent on the final siting of this element of the proposed scheme.

Matters to be 'scoped in' to further assessment

Table 10-1 Noise matters proposed to be 'scoped in' to the EIA

Receptor/ element	Phase	Justification
Noise (OHL and towers)	Construction	Activities likely to involve large earthmoving/ lifting plant items with the potential for significant effects to occur.
Noise (132 kV substation)	Construction Operation	Activities likely to involve large earthmoving/ lifting plant items with the potential for significant effects to occur. Operational noise may arise due to the presence of outdoor noise-generating plant such as transformers.

Receptor/ element	Phase	Justification
Vibration	Construction	Activities likely to involve large earthmoving/ lifting plant items with the potential for significant effects to occur.

Matters to be ‘scoped out’ of further assessment

Table 10-2 Noise matters proposed to be ‘scoped out’ of the EIA

Receptor/ Element	Phase	Justification
Road traffic	Construction	Potential increase in HGV/ vehicle movements unlikely to be sustained in one area for significant period to cause significant effects in the short term.
Noise (towers and OHL)	Operation	Operational plant items are not likely to have an impact on the existing noise environment and / or affect local amenity on the basis that the placement of towers will be designed to avoid coming into proximity to residential and other noise-sensitive receptors, wherever possible; OHLs are not expected to give rise to significant effects during wet weather, as described above.
Vibration	Operation	Operational elements including fixed plant items / structures will not emit discernible levels of vibration.
Road traffic	Operation	The increase in road traffic during operation is likely to be negligible, with vehicles only likely to be required for routine maintenance.
Potential effects during the decommissioning phase of the proposed scheme are proposed to be scoped out of the EIA for the reasons set out in Chapter 5.		

Opportunities for enhancing the environment

- 10.20 No opportunities for enhancement in relation to noise and vibration have been identified at this stage.

Proposed assessment methodology

- 10.21 Noise and vibration will be quantified using computational noise modelling. Calculations will be based on algorithms set out in ISO 9613-2:1996 ‘Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation’, BS 5228-1:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and

open sites. Noise', BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Vibration'.

10.22 Those phases of assessment comprise:

- Construction - infrastructure including fixed and mobile plant.

Computational noise modelling

10.23 Noise modelling will be undertaken using nationally recognised modelling software (SoundPLAN v9) and widely accepted modelling algorithms ISO 9613 for industrial and BS 5228 for construction). Data gathered during the baseline noise monitoring survey would be used in conjunction with local terrain data and construction work plans to generate a model of the proposed works. The computer noise model will take into account existing and future terrain data, any existing or proposed mitigation schemes and any existing or proposed structures.

10.24 The noise model would utilise the plant noise source data to predict likely noise levels at those closest receptors. Information such as construction areas and durations, would all feed into the model. Where information is not provided, datasheets from the plant manufacturer or in-house RSK data, measured from similar plant items would be used for prediction purposes.

10.25 The computer noise model output will provide site wide noise contour plots and visually depict how the noise will likely attenuate across the site. The model would allow for predictions at nearby receptors to determine compliance with the appropriate assessment criteria and assist, where applicable, with proposed scheme specific mitigation measures.

Construction Assessment

10.26 The construction assessment would account for the following (primary) activities:

- Construction – earthworks, access tracks, site establishment;
- Lifting structures; and
- Piling structures (if required).

10.27 The contribution of the different construction activities would be assessed in line with the guidance in BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Noise', plus any specific requirements of Ceredigion County Council and Carmarthenshire County Council. Where construction noise levels are considered to be excessive or intrusive, recommendations for noise control measures would be made.

10.28 In terms of vibration impacts, sensitive receptors and possible vibration generating construction activities would be identified. Activities which may have the potential to generate perceptible levels of vibration at sensitive receptors, or levels which may cause early signs of cosmetic or structural damage include, but are not limited to, piling, rolling and compaction. Where these activities are identified as occurring within the construction programme and within a short separation distance from a sensitive receptor, predictions of possible vibration levels would be made using guidance contained within BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Vibration', and through empirical formulae. Predicted vibration levels would be assessed against appropriate criteria within BS 5228-2. Where the impact is predicted

to be high or significant as a result of construction induced vibration, control measures would be recommended, including the specification of minimum distances from construction.

Cumulative impact assessment

- 10.29 An assessment of potential cumulative noise impacts of the proposed scheme will be carried out for the construction and operational phases of the development and reported in the Environmental Statement as part of the Cumulative Effects chapter. The cumulative assessment would include consideration of both intra-project and inter-project impacts with other committed and consented developments taken into account. Should any large-scale projects be identified during consultation, these would be included in the cumulative qualitative impact assessment.

Difficulties and uncertainties

- 10.30 The ability to undertake the assessment is dependent upon the following relevant information:
- Details of development phasing plans (where applicable);
 - Construction methodologies;
 - Plant lists;
 - On-times;
 - Work hours;
 - Haul routes;
 - Detailed work areas; and
 - Confirmation of manufacturer's data (technical specification) document (in 1:3 octave bands) for all operational plant items.

Noise scoping questions

- 10.31 Questions relating to the proposed scope and methodology of the noise assessment are listed in the box below for statutory consultees to review and respond to.

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas of 300m from work extents?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?
- Are any receptors/assets/resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/matters that are proposed to be scoped in and out of the EIA?
- Do you agree with the proposed factor-specific assessment approach?

References

British Standards Institution (2003), British Standard 7445-1:2003, Description and measurement of environmental noise – Part 1: Guide to quantities and procedures.

British Standards Institution (2014), 'British Standard 5228-1: 2009+A1: 2014, Code of practice for noise and vibration control on construction and open sites – Noise'.

British Standards Institution (2014), British Standard 5228-2: 2009+A1: 2014, Code of practice for noise and vibration control on construction and open sites – Vibration.

Control of Pollution Act (1974). Available at: <https://www.legislation.gov.uk/ukpga/1974/40>.

Environmental Protection Act (1990). Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents>.

Welsh Government (2018). Noise and soundscape action plan 2018- 2023. Available at: <https://www.gov.wales/sites/default/files/publications/2019-04/noise-and-soundscape-action-plan.pdf>.

11 TRAFFIC AND MOVEMENT

Consultation

- 11.1 No Traffic and Movement consultation activities have been undertaken to support this scoping exercise.
- 11.2 Key consultees for the Traffic and Movement assessments of the proposed scheme are Local and National Highways Authorities. Key stakeholders are listed below.
- 11.3 During subsequent stages of the proposed scheme, there will be consultation and discussions held with the following organisations:
- Transport Directorate of the Welsh Government;
 - North and Mid Wales Trunk Road Agent;
 - South Wales Trunk Road Agent; and
 - Local Highway Authorities (Carmarthenshire County Council & Ceredigion County Council).
- 11.4 Consultation will seek to:
- Secure agreement of a study area for construction traffic, along with traffic distribution;
 - Specify aspects of the environment and issues relating to those that should be considered and addressed in the Environmental Statement chapter (with emphasis on any issues local to the proposed scheme);
 - Comment on or recommend, where appropriate, assessment methodologies for the Environmental Statement chapter, particularly in relation to sensitive receptors; and
 - Highlight other relevant bodies or organisations that may have a vested interest in the scheme or be able to provide relevant information.
- 11.5 The working assumption is that the Traffic and Movement assessment will focus upon the construction phase only. The increase in road traffic during operation is likely to be negligible, with vehicles only likely to be required for routine maintenance. Similarly, any traffic and movement impacts during the decommissioning phase are assumed to be smaller in magnitude than those occurring during construction.

Study area

- 11.6 The study area for the Traffic and Movement assessment comprises the area directly affected by the proposed scheme and will be finalised and presented in the Environmental Statement once the proposals have been progressed and tower locations have been identified. The study area will include those transport links where the proposed scheme is predicted to generate an increase in traffic flows.
- 11.7 For the purpose of this chapter, the study area is assumed to be the preferred route, plus those transport links that provide access to the Strategic Road Network. As the iterative design process continues, the study area will be refined to comprise the detailed alignment of all infrastructure required for the operation of the proposed scheme, as well as the temporary use of infrastructure required for construction of the proposed scheme.

Data sources to inform the EIA baseline characterisation

- 11.8 The following sources of information have been reviewed during desk-based research to inform this Scoping Report:
- Department for Transport (DfT) traffic count data, which covers the strategic network in Wales;
 - OS Mapping including OS Open Roads to inform the type of roads within the study area;
 - Railway line information; and
 - Carmarthenshire and Ceredigion Adopted Highways data.
- 11.9 A review of relevant DfT traffic count indicates reasonably good coverage for most of the preferred route sections. In most cases, the counts were undertaken in 2018 or more recently within the last few years. Data for the current year is estimated based on the most recent manual count survey. Where data is considered too outdated to be of use, supplementary sources of information such as surveys may be required (see below).
- 11.10 A summary of the available count data is provided in the table below.

Table 11-1 Available traffic count data summary

Preferred Route Section	Count Point ID	Road Name	Road Type	Year of Most Recent Manual Count
Section 1	73242	A482	Major	2016
	40592	A482	Major	2020
	10595	A485	Major	2015
	806026	U	Minor	2022
	996132	B4337	Minor	2009
Section 2	40597	A485	Major	2016
	805130	U	Minor	2018
Section 3	931717	C	Minor	2009
	805041	C	Minor	2018
	50593	A485	Major	2019
Section 4	805927	U	Minor	2021
Section 5 (North)	70089	A485	Major	2016
	70090	A4243	Major	2015
	514	A40	Major	2018

Preferred Route Section	Count Point ID	Road Name	Road Type	Year of Most Recent Manual Count
	805128	U	Minor	2018
Section 5 (South)	No count points apparent			

Surveys to inform the EIA baseline characterisation

- 11.11 The major roads in the vicinity of the proposed scheme benefit from a high level of existing DfT traffic count data, as discussed in the preceding section. LHA traffic count data may also be available. The potential availability of such data will be established through the ongoing stakeholder consultation.
- 11.12 As discussed above, there may be a need for supplementary traffic surveys to facilitate more detailed assessment as the proposed scheme progresses. In such a situation location-specific surveys can be commissioned. The locations of these surveys would be agreed with the local highway authority.

Baseline conditions

- 11.13 There are a number of A Roads which interact with the study area and which are expected to be relevant to the proposed scheme. Moving from north to south these are:
- **A485:** The A485 is a single carriageway running roughly north-south from Lampeter to Carmarthen (except for a short dual carriageway section at its southern end). The proposed scheme alignment runs parallel to this road for much of its length and, as such, it is expected to be a key access route. The speed limit varies between 30 mph and national speed limit along its length;
 - **A487:** The A487 is a single carriageway running along much of the west coast of Wales from Barmouth to Fishguard. This road comprises part of the strategic road network (SRN). The section between Aberystwyth and Cardigan may be utilised as an access to the proposed scheme site. The speed limit varies between 30 mph and national speed limit along its length;
 - **A482:** The A482 is a single carriageway running roughly north-south from Aberaeron to Llanwrda via Lampeter. This road may provide an important access route to the site from areas to the east. The speed limit varies between 30mph and national speed limit along its length;
 - **A40:** The A40 runs from London in England to Goodwick in Wales. Much of the length within Wales is a single carriageway, with the majority of the length within England being superseded by motorways such as the M40. The speed limit varies between 30 mph, 40 mph, 50 mph and national speed limit across its length;
 - **A48:** The A48 is classified as a dual carriageway and runs between the A40 at Highnam, England to the A40 in Carmarthen, Wales. There is a section of the A48 which is classified as a motorway, between St Mellons (Cardiff) and the M4 junction towards Newport. The speed limit varies between 30 mph, 40 mph, 50 mph and national speed limit; and
 - **A484:** The A484 is a single carriageway running from Carmarthen to Swansea. This road may provide an important access route to the southernmost portion of

the site. The speed limit varies between 30 mph and national speed limit along its length.

- 11.14 There are numerous B and unclassified roads across the study area.
- 11.15 Part of the Carmarthen to Llanelli rail route passes near to the southernmost part of the proposed scheme alignment, The currently envisaged preferred corridor does not intersect with the rail alignment.
- 11.16 There are two National Cycle Routes within the proposed scheme, routes 82 and 47, which primarily run on minor roads that are considered suitable for cycling. Work is also underway on the Towy Valley Path which will cross the study area towards the southern end.
- 11.17 The IEMA EIA Guidelines for Traffic and Movement highlight that derived forecasts of traffic growth need to be utilised to derive the future year baseline traffic conditions. Future baseline traffic flows will be derived using TEMPRO traffic growth factors.
- 11.18 As the assessment proceeds it will be necessary to obtain and collate land ownership/highways boundary data.

Additional (secondary and tertiary) mitigation

Construction

- 11.19 Specific mitigation requirements are subject to understanding the preferred construction traffic routes and upon definitive agreement of the proposed study area with the LHAs. Mitigation measures to be considered would include:
 - A CEMP will be developed and included alongside the Environmental Statement. This will support the planning application and will be implemented so that likely significant effects on the environment during the construction phase of the proposed scheme are avoided, minimised or mitigated; and
 - An Outline Construction Traffic Management Plan will also form part of the mitigation for the proposed scheme. This will outline construction vehicle routeing for access and egress to the site to minimise traffic congestion. This could include a site worker transport and travel arrangement plan, if required.

Operation

- 11.20 As set out below, it is proposed that all effects of the operational phase of the proposed scheme are scoped out. Hence no mitigation measures are envisaged.

Description of likely significant effects

Construction

- 11.21 The primary traffic and transport likely significant impacts associated with the proposed scheme 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 forecast flows generated by the proposed scheme are predicted to increase 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).

- 11.22 There is the potential for construction traffic to cause severance in places on the local road network through increased difficulty for pedestrians crossing, giving rise to likely adverse significant effects.
- 11.23 The general approach would be to avoid taking direct access from the trunk road network. If this were to be necessary, such access would need to conform to the requirements of the Wesh Government Transport Directorate.
- 11.24 It is not expected, at this stage that, the proposed scheme will interact with any railway tracks. If this were to be the case, Network Rail's requirements in relation to level crossing would be taken into account.
- 11.25 Construction activities and related traffic has the potential to increase driver and bus delays due to:
- Increased road usage from the construction vehicles potentially causing congestion; and
 - Possible closure of routes to facilitate the construction of the proposed scheme thereby increasing journey distances and times for other road users including pedestrians and cyclists.
- 11.26 Inevitably, construction traffic will comprise a quantity of HGVs which could have an adverse impact on other road users in the area, increasing fear and intimidation as defined in the IEMA guidance.

Operation

- 11.27 Significant effects during operation are not expected and, as set out below, it is proposed that all effects of the operational phase of the proposed scheme are scoped out.

Matters to be 'scoped in' to further assessment

- 11.28 The key traffic and movement-affected parties/ sensitive receptors are likely to include non-motorised users (including PRoW users), motorists and freight vehicles, public transport users and emergency services. These groups include:
- Residents;
 - Workplaces;
 - Vulnerable groups of people such as elderly, children, or disabled;
 - Sensitive locations such as churches, hospitals, schools and historical buildings;
 - Pedestrians;
 - Cyclists;
 - Open spaces and recreational sites; and
 - Tourist and visitor attractions.
- 11.29 The routes listed in the table below have been scoped into the proposed assessments of Traffic and Movement impacts.

Table 11-2 Traffic and movement matters proposed to be 'scoped in' to the EIA

Receptor/ element	Phase	Justification
A-Road A40	Construction	During the construction phase, traffic will be generated by a range of activities including: Construction workers arriving and leaving site areas/compounds; Supply of construction materials and plant associated with the establishment of compounds and main construction works; Movement of plant; Removal of soil resources, spoil or waste; and Service vehicles and visitors. Construction traffic estimates are as yet unknown, as such this phase of works has been scoped in to enable consideration of impacts on receptors within the study area against the Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Assessment, 1993).
A-Road A48	Construction	
A-Road A482	Construction	
A-Road A484	Construction	
A-Road A485	Construction	
B-Road B4300	Construction	
B-Road B4301	Construction	
B-Road B4306	Construction	
B-Road B4337	Construction	
B-Road B4343	Construction	
Local (minor) Roads	Construction	

Matters to be 'scoped out' of further assessment

- 11.30 It is proposed that all effects of the operational phase of the proposed scheme are scoped out of the EIA. This is because this phase is 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.
- 11.31 Assessment of Traffic and Movement impacts during the decommissioning phase are proposed to be scoped out of the EIA for the reasons set out in Chapter 5.

Opportunities for enhancing the environment

- 11.32 With the exception of encouraging sustainable travel to and from the site and use of sustainable vehicles where possible during construction, it is not considered that there are opportunities for enhancement in relation to transport and movement that can be identified at this stage.

Proposed assessment methodology

11.33 The scale and extent of the assessment will be based on following rules from the 2023 IEMA guidance:

- Rule 1 - Include highway links where traffic flows will increase by more than 30 % (or the number of heavy goods vehicles will increase by more than 30 %); and
- Rule 2 - Include highway links of high sensitivity where traffic flows have increased by 10% or more.
- Where the predicted increase in traffic flow is lower than the thresholds, the guidelines suggest the significance of the effects can be stated to be low or insignificant and further detailed assessments are not warranted.
- A staged approach will be followed for the assessment as follows:
 - Identify up to date guidance, standards and methodologies for traffic flow forecasting and potential mitigation;
 - Assess the impact of the proposed scheme on the existing road and junction network in terms of temporary road closures and the corresponding re-routeing that may be required for other road users;
 - Estimate the impact of the proposed scheme in terms of additional road traffic volumes during the construction period; both specifically in terms of construction site access points and more generally, in terms of construction traffic access routes;
 - Assess the impact of the above in terms of road user delay;
 - Assess the effect of the proposed scheme on the local public transport network including existing PRoW;
 - Assess the effect of the proposed scheme on active travel e.g. pedestrian and cyclist delay;
 - Assess likely impacts in terms of road accidents and safety;
 - Assess the impacts of the proposals on sensitive receptors;
 - Identification of mitigation measures as appropriate; and
 - Identification of any effects remaining after mitigation measures have been applied. The magnitude and significance of any of these 'residual effects' will be clearly presented.

11.34 The potential impacts will be assessed against the following categories defined in the 2023 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; and
- Hazardous/large loads.

11.35 Given that the day-to-day variation of traffic on a road is frequently at least plus or minus 10 %, the guidelines consider that projected changes in traffic flows of less than 10 % create no discernible environmental impact, hence the second threshold as set out in Rule 2. The following criteria will be used to evaluate the magnitude of identified adverse effects that may result from the proposed scheme:

- Major – where total traffic flows and/or HGVs are predicted to increase by more than 30 % or 10 % in specifically sensitive areas;
- Moderate – where total traffic flows and/or HGV traffic is predicted to increase between 10 % and 30 %;
- Minor – where up to 10 % increase in total traffic flows and/or HGV traffic is predicted; and
- Negligible – where there are no sensitive groups, locations or areas that would be affected by an increase in total traffic flows and HGV traffic.

- 11.36 The definitions of 'major', 'moderate', 'minor', and 'negligible' have been derived from the guidelines. Effects of 'major' and 'moderate' are considered to be significant.
- 11.37 Professional judgement will be used in the case of minor roads with low levels of baseline flows. In such cases a small construction traffic flow (in absolute terms) may exceed the thresholds due to the low baseline flow, but this would not comprise a significant impact.
- 11.38 In addition to the Traffic and Movement assessment for the EIA, a separate Transport Assessment will also be carried out.

Difficulties and uncertainties

- 11.39 To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:
- The overview of baseline conditions is based on desk-based studies only at scoping stage and is based on data available at the time of writing;
 - The construction assessment will assume the use of standard construction techniques commensurate with the type of works being undertaken. The final techniques, plant selection and programme are expected to be determined by the appointed contractor, in consultation with relevant authorities prior to commencement of construction; and
 - Traffic estimates for any stage of the proposed scheme are not confirmed at this time and may be subject to change but will be confirmed prior to assessment.
- 11.40 The assessment of Traffic and Movement impacts during the construction phase is highly dependent on the timely availability of detailed information regarding construction methods, traffic volumes and access points. In the absence of such inputs, assumptions will be developed based on the best available information and experience on similar projects.

Traffic and movement scoping questions

- 11.41 Questions relating to the proposed scope and methodology of the Traffic and Movement assessment are listed in the box below for statutory consultees to review and respond to.

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?
- Are any receptors/ assets/ resources not identified that you would like to see

included in the EIA?

- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/ matters that are proposed to be scoped in and out of the EIA?
- Do you agree with the proposed factor-specific assessment approach?

References

Institute of Environmental Management and Assessment (IEMA). (2023). Environmental Assessment of Traffic and Movement. Available from: <https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement>.

12 GEOLOGY AND HYDROGEOLOGY

Consultation

- 12.1 No factor specific consultations are considered necessary or have been undertaken in support of this scoping report at this stage.
- 12.2 Post-scoping, in order to inform the EIA, consultation discussions are to be carried out with the following organisations:
- Natural Resources Wales (NRW);
 - Welsh Assembly Government;
 - Carmarthenshire County Council; and
 - Ceredigion County Council.

Study area

- 12.3 The study area will comprise the area directly affected by the proposed scheme, the boundaries of which will comprise the detailed alignment of the OHL and tower locations, as well as the temporary infrastructure required for construction of the proposed scheme. In addition, the study area will include a 250 m buffer around the proposed scheme in order to capture relevant land uses such as mining or landfill that may be impacted by, or have an impact on, the proposed scheme. There is no guidance specifying a requirement for a buffer to be included, however, this distance is considered reasonable based on previous experience of similar schemes.

Data sources to inform the EIA baseline characterisation

- 12.4 The baseline conditions of the study area have been determined using a number of different information sources, including:
- Geological Conservation Review Sites (Datamap Wales, 2021);
 - Regionally Important Geodiversity Sites (Datamap Wales, 2022);
 - Geoparks (British Geological Survey, n.a);
 - Peat:
 - Unified Peat Map of Wales (DataMapWales, 2015);
 - Peatlands of Wales Carbon Stock (DataMapWales, 2022); and
 - Geology Viewer (British Geological Survey, 2024);
 - Local Authority Mineral Consultation Areas and Mineral Protection Areas (Ceredigion County Council, 2014 and Carmarthenshire County Council, 2013 local development plan maps);
 - Operational/ Restored Mineral Extraction Sites (OS mapping, aerial photography and British Geological Survey);
 - Mining and quarrying (British Geological Survey);
 - Historical landfill sites (Datamap Wales, 2017);
 - Permitted landfill sites (Natural Resources Wales, 2024);
 - Coal mining reporting areas and abandoned mines catalogue (The Coal Authority, 2023);

- Geological mapping (artificial ground, superficial geology and bedrock geology) (British Geological Survey); and
 - Hydrogeological maps (British Geological Survey).
- 12.5 Other information has been obtained from readily available on-line sources including British Geological Survey (BGS) Onshore GeoIndex, DataMap Wales and NRW.
- 12.6 Following EIA Scoping, a Preliminary Risk Assessment (PRA) report will be prepared in support of the DNS application. This will include the purchase of a commercially available environmental database for the proposed route including a 250 m buffer.

Surveys to inform the EIA baseline characterisation

- 12.7 No factor specific surveys are considered necessary or have been undertaken in support of this EIA Scoping Report at this stage.
- 12.8 Following EIA Scoping, a walkover survey of the site of the proposed scheme and surrounding area will be undertaken as part of the baseline assessment relating to geology and hydrogeology. The results of the walkover survey will be presented within the PRA.

Baseline conditions

Designated geological sites

- 12.9 There are no recorded regionally important geological and geomorphological sites (RIGS); or geoparks within or close to the study area. A single geologically related site of special scientific interest (SSSI) (Allt Penyrcoed Stream Section) is noted at National Grid Reference (NGR) 244357, 218143 that partially intersects the study area. This SSSI is also characterised as a geological conservation review (GCR) site.

Mineral extraction sites and mineral safeguarding areas

- 12.10 There are no active (operational), dormant or inactive mineral extraction sites within the study area. The BGS Geoindex indicates evidence of historical quarrying or mineral extraction within the study area with the closest to the preferred route being: Merlin's Hill, NGR 245911, 221736; Hendre-hedog, NGR 245239, 223553; Llwyn-Martin-isaf, NGR 244636, 225473; Allt-Wallis Farm, NGR 245153, 232290; Horse & Jockey, NGR 248135, 239875; Pen-y-cnwc, NGR 248289, 239810; Blaen-cwm-du, NGR 248214, 239756; Maes-y-pwll, NGR 249936, 241163; Bryn-llo-fawr, NGR 253636, 243177; and Fountain Cottage, NGR 262201, 249872.
- 12.11 The study area crosses several mineral safeguarding areas including both Category 1 and Category 2 Aggregates Safeguarding Areas. These generally relate to deposits of sand and gravel of fluvial or glacial origin and sandstone (Llyn Teifi Member), as identified on BGS geological mapping.

Peat

- 12.12 Records indicate that significant deposits of peat are absent from the study area with the majority of the study area passing through land used for agriculture. However, some small areas of peat have been identified within the study area. One small area of peat intersects

the study area at NGR 244346, 217628 in the south of the proposed scheme; with further small areas of peat located within the study area at NGR 244375, 217202; NGR 244764, 217805; and NGR 244953, 218052.

- 12.13 A number of small areas of peat are noted within the north of the study area at NGR 252964, 242477; NGR 253027, 242388; and NGR 252625, 242214 and are highlighted in information contained within the Peatlands of Wales Carbon Stock and Unified Peat Map however, these areas are not shown on recent geological mapping.

Geology

Artificial ground

- 12.14 Artificial ground/ made ground is not shown within the study area on BGS geological mapping. However, it could be present in localised areas associated with former mineral extraction sites, farm buildings or tracks and field entrances, but there is no indication that extensive areas of artificial ground/ made ground would be present.

Superficial deposits

- 12.15 Superficial deposits are present over a significant proportion of the study area. Superficial deposits comprise Devensian Till (diamicton); Alluvial Fan Deposits (sand and gravel); Alluvium (clay, silt, sand and gravel); Devensian Glaciofluvial Ice Contact Deposit (sand and gravel); Glaciofluvial Deposits (sand and gravel); and Head (gravel, sand and silt).

Bedrock geology

- 12.16 The study area is underlain by bedrock of Ordovician, Silurian and Devonian age. Rock types are dominated by mudstone, siltstone and sandstone with subordinate conglomerate, felsic tuff and limestone. These bedrock strata are folded and faulted.

Coal mining

Coal mining

- 12.17 The study area does not lie within a Coal Authority designated Coal Mining Reporting Area.

Abandoned mines catalogue

- 12.18 The Coal Authority Abandoned Mines Catalogue indicates that records may be held by the Coal Authority for three discrete areas intersecting or close to the study area (Coal Authority, 2023). Two areas (catalogue numbers OMR53A and OM0) located near Llangunnor (NGR 243700, 219896) to the west of the study area; and one area (catalogue number OM0) shown to the east of Merlin's Hill (NGR 245784, 221673) which intersects the proposed study area. These records are unlikely to be coal related but could be associated with historical metalliferous mining, principally lead, barium and zinc potentially occurring in veins.

Hydrogeology

- 12.19 The bedrock strata underlying the study area are characterised as either secondary A or secondary B aquifers. Superficial deposits are characterised as unproductive; secondary undifferentiated; secondary B; or secondary A aquifers.
- 12.20 A secondary A aquifer is defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
- 12.21 Secondary B aquifers are defined as predominantly lower permeability layers that may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.
- 12.22 Secondary undifferentiated aquifers are those to which it has not been possible to attribute either a category A or B to a rock type. In most cases this means that it was previously designated as both a minor and non-aquifer in different locations owing to the variable characteristics.
- 12.23 Unproductive strata are of low permeability with negligible significance for water supply or river base flow.
- 12.24 Depth to groundwater is unconfirmed. It is anticipated that the regional direction of groundwater flow will follow the local topography towards surface watercourses.
- 12.25 There are no groundwater Source Protection Zones (SPZ) within or adjacent to the study area.

Historical and permitted landfill sites

- 12.26 A single permitted landfill site is located within the study area at NGR244521, 218000, Penycoed Farm, SA32 8HD, operated by Carmarthenshire County Council, permit number BP3398FA accepting inert waste.
- 12.27 There are no recorded historical landfill sites within, or adjacent to, the study area.

Land contamination

- 12.28 The current land uses point generally to a history of agricultural use within the study area. Contamination may be present associated with agricultural use. Made Ground may be present in limited locations within mineral extraction sites, along tracks, at field entrances and close to farm buildings located within the study area. There is the potential for asbestos-containing materials to be present if Made Ground deposits are identified. There is no publicly available information suggesting the presence of significant contaminative uses within the study area.

Additional (secondary and tertiary) mitigation

Construction

- 12.29 The scope of the assessment assumes that relevant tertiary mitigation measures will include a Construction Environment Management Plan (CEMP).
- 12.30 The construction of the proposed scheme will be managed by use of the CEMP. This document sets out the requirements of all contractors working on the proposed scheme

in adhering to environmental statutory requirements, guidance and best practice. The requirements of the CEMP have been assumed as embedded standard good practice mitigation within the assessment of effects during construction. The CEMP will include the following measures relevant to Geology and Hydrogeology to ensure that damage to land and groundwater can be minimised:

- Management of soils including, if required, a soil management/resource plan under Chapter 13 and/ or materials management plan;
- Proper storage and use of oils, fuels and construction chemicals;
- Proper storage and use of construction materials such as concrete;
- Provision of appropriate site-worker accommodation and sanitation facilities; and
- Management and removal of waste materials.

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

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

Operation

12.33 No additional mitigation measures would be expected to be required during the operational phase beyond the embedded mitigation incorporated into the design of the proposed scheme.

Matters to be scoped into further assessment

Table 12-1 Geology and hydrogeology matters proposed to be 'scoped in' to the EIA

Receptor/ element	Phase	Justification
Land (potential contamination) including potential impact on groundwater	Construction	A permitted landfill site has been identified within the study area. There is the potential for additional small-scale sources of contamination within the study area. Disturbance of contamination, if present, during construction could lead to significant effects. Bedrock strata underlying the study area are characterised as either secondary A or secondary B aquifers. Superficial deposits are characterised as unproductive; secondary undifferentiated; secondary B; or secondary A aquifers. None of the study area lies above a principal aquifer or groundwater SPZ. There is the potential for groundwater to be impacted by existing in-ground contamination if present and

Receptor/ element	Phase	Justification
		disturbed during construction. Further assessment of this aspect will be completed as part of the PRA report. Aspect to be scoped in.
Land (geological hazards)	Construction and operation	The initial baseline review has not identified any significant geological hazards that would require specific consideration during construction and operation of the proposed scheme. However, there is currently not enough information to rule out the potential for significant effects. Further assessment of this aspect will be completed as part of the PRA report. Aspect to be scoped in at this stage.
Mineral safeguarding	Construction and operation	The safeguarding of a mineral resource by the Mineral Planning Authority, does not necessarily indicate an acceptance of working of that area however, it does indicate the location of a potential resource. The potential for significant effects, such as sterilisation of potential mineral resources, cannot be ruled out however, there is currently not enough information, and consultation with the appropriate Mineral Planning Authority is proposed. Aspect to be scoped in at this stage.

12.34 Assessment of impacts during decommissioning of the proposed scheme have been scoped out for the reasons set out in Chapter 5.

12.35 In addition to the above, Water Framework Directive (WFD) Stage 1 screening will be undertaken as a standalone exercise to support the DNS application. Further details are provided in the assessment methodology section below.

Matters to be ‘scoped out’ of further assessment

12.36 Consideration has been given to the following matters that can be scoped out of further assessment at construction and/ or operation stage:

- Allt Penycod Stream Section SSSI and GCR;
- Peat;
- Metalliferous mining near Llangunnor and Merlin’s Hill;
- Land (potential contamination); and
- Groundwater.

Table 12-2 Geology and hydrogeology matters proposed to be 'scoped out' of the EIA

Receptor/ element	Phase	Justification
Geology, SSSI/ GCR sites	Construction and operation	There is a single site of geological importance (Allt Penyrcoed Stream Section SSSI and GCR) within the study area. Due to the limited spatial extent of the SSSI and its location within a wooded valley, potential adverse effects are considered unlikely, particularly as the SSSI can be avoided during the detailed alignment of the OHL and tower Therefore, sites of geological importance are proposed to be scoped out of the EIA.
Peat	Construction and operation	Limited and isolated deposits of peat have been identified impinging on the study area. Peat, where noted to be present within the study area, is likely to have been modified through farming practices and is considered less sensitive. Due to the limited spatial extent of the peat deposits within the study area, potential adverse effects are considered unlikely. However, where required, the standard mitigation measures will be taken into account in the proposed design and siting of towers. Therefore, effects on peat at the constructional and operational stage can be scoped out of the EIA.
Mining (metalliferous)	Construction and operation	Three areas of (likely historical) metalliferous mining have been identified in the south of the study area. These are likely to be of limited extent being associated with mineral veins and potential adverse effects are considered unlikely. However, where required, the standard mitigation measures will take into account the proposed design and, if required, recommend proportionate mitigation measures. Therefore, mining (metalliferous) is proposed to be scoped out of the EIA.
Mining (coal)	Construction and operation	The proposed scheme lies outside of a Coal Authority Reporting Area. Therefore, mining (coal) is proposed to be scoped out of the EIA.
Land (potential contamination)	Operation	Potential contamination will be addressed during the construction phase as part of intrusive site investigation and if required remedial work. There would not be anticipated to be any further impacts on the proposed scheme during operation. Therefore, potential contamination at the operational stage can be scoped out of the EIA.
Groundwater (considering	Construction	Bedrock strata underlying the study area are characterised as either secondary A or secondary B

Receptor/ element	Phase	Justification
potential impacts from piling; accidental spillages and leaks; storage and refueling activities; and appropriate storage and use of chemicals and materials.)		aquifers. Superficial deposits are characterised as unproductive; secondary undifferentiated; secondary B; or secondary A aquifers. None of the study area lies above a principal aquifer or groundwater SPZ. Piles may be adopted as a foundation solution for all or part of the proposed scheme. If necessary, an appropriate piling risk assessment will be undertaken prior to construction commencing. This will ensure potential risks to groundwater from piling operations are managed appropriately. The piling risk assessment will be informed by hydrogeological information, including depth to groundwater, collected during intrusive site investigations. As regards the potential impact on groundwater from construction activities, the quality of groundwater will be appropriately protected by mitigation measures implemented in the CEMP. The purpose of the CEMP is to provide guidelines to avoid, minimise or mitigate effects on the environment (including issues relating to groundwater) during construction. This would include procedures to managing accidental spillages and leaks; storage and refueling activities; and appropriate storage and use of chemicals and materials. It is possible that changes to the surface water regime could have a negative impact on the groundwater. However, adhering to industry best practice with respect to the protection of surface water will ensure that any adverse effects to surface water are minimised, reducing the potential for corresponding changes within the groundwater. Therefore, groundwater is proposed to be scoped out of the EIA for the aspects noted above.

Opportunities for enhancing the environment

- 12.37 No opportunities for environmental enhancement have been identified in respect of ground conditions (geology and hydrogeology) at this stage.

Proposed assessment methodology

- 12.38 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, guided by criteria which will be set out in the Environmental Statement. Likely significant effects, in the context of the EIA Regulations would be effects of moderate or major significance.
- 12.39 The following documents are relevant to the preparation of the geology and hydrogeology assessment:

- Part IIA, Environmental Protection Act 1990 (relevant in terms of assessment of contaminated land);
- The Environmental Permitting Regulations (England & Wales) 2016 (relevant with respect to environmental permits);
- Welsh Assembly Government (2009). Planning Policy Wales Technical Advice Note 5: Nature Conservation and Planning. September 2009;
- Land Contamination Risk Management, July 2023 (Environment Agency, 2023);
- Construction Industry Research and Information Association (CIRIA) report Contaminated Land Risk Assessment (A guide to good practice) C552, (CIRIA, 2001);
- Ceredigion Replacement Local Development Plan 2018-2033, and accompanying Minerals and Waste topic papers; and
- Carmarthenshire County Council Revised 2018-2033 Local Development Plan - Minerals October 2019.

- 12.40 A desk-based PRA report will be prepared in support of the application, which assesses the potential risks on the existing land and groundwater baseline. The PRA report will consider the geological and hydrogeological aspects considered in this Chapter including geology, hydrogeology, peat, mineral reserves, mining, contaminated land (including landfills) and geological hazards. A review of LPA records of statutory contaminated land held on public registers will be undertaken. Where appropriate, the impact of climate change on the geological and hydrogeological aspects will be considered. The PRA report conclusions will determine necessary mitigation measures or scope appropriate ground investigations to ensure that the construction, operation and decommissioning of the proposed scheme do not result in significant effects on the receiving land and groundwater environment.
- 12.41 The assessment of baseline data will include a review of the information obtained for the study area for the matters that are to be scoped in, and each will be considered using professional judgement to determine whether the level of available information is acceptable.

Difficulties and uncertainties

- 12.42 To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:
- No desk-based data on mineral safeguarding, land stability (geological hazards) has been made available for this EIA Scoping Report – the PRA will aim to obtain and assess such data; and
 - No intrusive site survey data were available to inform this EIA Scoping Report, but these will be undertaken and made available as the works associated with the proposed scheme progress.

Geology and hydrogeology scoping questions

- 12.43 Questions relating to the proposed scope and methodology of the geology and hydrogeology assessment are listed in the box below for statutory consultees to review and respond to.

- Do you agree with the proposed list of consultees?

- Do you agree with the proposed study area?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/ matters that are proposed to be scoped in and out of the EIA?

References

- Environmental Protection Act (1990). Part IIA. Available at: <https://www.legislation.gov.uk/ukpga/1990/43/part/IIA>.
- Land Contamination Risk Management (2023). Available at: <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>.
- British Geological Survey (2024). Geology Viewer. Available at: <https://geologyviewer.bgs.ac.uk/>.
- British Geological Survey (n.a). GeoIndex Onshore. Available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html>.
- British Geological Survey (n.a). Geoparks. BGS Research. Available at: <https://www.bgs.ac.uk/geology-projects/geoparks/>.
- British Standards Institution (BSI) (2017). BS 10175:2011 + A2:2017. Investigation of potentially contaminated sites: Code of practice.
- British Standards Institution (BSI) (2020). BS 5930:2015+A1:2020. Code of practice for ground investigations.
- Carmarthenshire County Council (2014). Carmarthenshire Local Development Plan Map. Available at: <https://www.cartogold.co.uk/CarmarthenshireLDP/Carmarthenshire.htm>.
- Carmarthenshire County Council (2023). Revised 2018-2033 Local Development Plan. Topic Paper- Minerals. Available at: <https://www.carmarthenshire.gov.wales/media/d0zbxaej/minerals-topic-paper-revision-nov-2023-eng-final.pdf>.
- Ceredigion County Council. (2013). Local Development Plan 2007-2022. Volume 2B. Proposals Map (including Inset Maps). Available at: <https://www.ceredigion.gov.uk/media/6225/ceredigion-local-development-plan-ldp-volume-2b-proposals-maps-including-inset-maps-bilingual.pdf>.
- CIRIA. (2001). Contaminated land risk assessment. A guide to good practice (C552).
- DataMapWales (2017). Historic Landfill Sites. Natural Resources Wales. Available at: <https://datamap.gov.wales/>.
- DataMapWales (2022). Regionally Important Geodiversity Sites (RIGS). Natural Resources Wales. Available at: https://datamap.gov.wales/layers/inspire-nrw:NRW_RIG_SITES.
- DataMapWales, (2015). Unified Peat Map of Wales. Welsh Government. Available at: https://datamap.gov.wales/layers/inspire-wg:wg_unified_peat_2019.
- DataMapWales, (2021). Geological Conservation Review (GCR) Site Boundaries. Natural Resources Wales. Available at: https://datamap.gov.wales/layers/inspire-nrw:NRW_GCR_SITES.

DataMapWales, (2022). Peatlands of Wales Carbon Stock. Welsh Government. Available at: https://datamap.gov.wales/layers/geonode:peatlands_of_wales_carbon_stock.

Environment Agency (2023). Land contamination risk management (LCRM). Guidance. Gov.UK Available at: <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>.

Environmental Protection Act (1990). Changes over time for: Part IIA. Available at : <https://www.legislation.gov.uk/ukpga/1990/43/part/IIA>.

Eurocode 7: Geotechnical Design EN1997-1 and EN1997-2 (2006).

National Planning Policy Framework (2023). , Department for Levelling Up, Housing and Communities, December 2023. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Natural Resources Wales (2024). Find details of permitted waste sites. Map. Available at: <https://naturalresources.wales/evidence-and-data/maps/find-details-of-permitted-waste-sites/?lang=en>.

Overarching National Policy Statement for Energy (EN-1) 2024. Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1>.

The Coal Authority (2023). Interactive Map. Available at: <https://mapapps2.bgs.ac.uk/coalauthority/home.html>.

The Environmental Permitting (England and Wales) Regulations 2016 (last revised March 2020). Available online: <https://www.legislation.gov.uk/uksi/2016/1154/made>.

Welsh Assembly Government (2009). Planning Policy Wales Technical Advice Note 5: Nature Conservation and Planning. September 2009. Available at: <https://www.gov.wales/technical-advice-note-tan-5-nature-conservation-and-planning>.

13 LAND AND SOIL

Consultation

- 13.1 No consultation regarding soils and agriculture has been undertaken to date. A significant amount of information has been obtained about soil types, soil quality, climate and land use from published sources.
- 13.2 Post-scoping, in order to inform the EIA, consultation discussions are to be carried out with the following organisations:
- Natural Resources Wales (NRW);
 - Welsh Assembly Government;
 - Carmarthenshire County Council; and
 - Ceredigion County Council.

Study area

- 13.3 The study area for the EIA will comprise the area directly affected by the proposed scheme, the boundaries of which will comprise the detailed alignment of the OHL and tower locations, as well as the temporary infrastructure required for construction of the proposed scheme.
- 13.4 For the purpose of scoping, the study area is extended to include the 200 m wide preferred route, as shown in Appendix 1, given that the detailed alignment of the OHL and tower locations are not yet known.

Data sources to inform the EIA baseline characterisation

- 13.5 The following sources of information will be reviewed during desk-based research to inform the EIA baseline:
- Climate data sets from the National Soils Resources Institute at Cranfield University (NSRI) to inform the requirement for ALC grade surveys;
 - Soil Site Reports from NSRI;
 - Soil Survey of England and Wales Sheet 2 Wales (part of National 1:250,000 scale soil map) and accompanying legend;
 - British Geological Survey (BGS) (2024) online mapping for bedrock and superficial geology;
 - The Predictive Agricultural Land Classification Map 2 with respect to the potential location of Best and Most Versatile (BMV) Agricultural Land (DataMapWales, 2019) ;
 - Peatlands of Wales (DataMapWales, 2022) ;
 - Meteorological Office, (1989). Climatological Data for Agricultural Land Classification; and
 - OS mapping and aerial photography with respect to current land use (Google Earth Pro, 2024).

Surveys to inform the EIA baseline characterisation

- 13.6 Soil surveying would be carried out at an appropriate level of detail to assess the significance of any land loss against Institute of Environment Management and Assessment (IEMA, 2022), A New Perspective on Land and Soil in Environmental Impact Assessment.
- 13.7 A detailed review of the Welsh Government Predictive Agricultural Land Classification (ALC) map will be undertaken to inform the design of the proposed scheme. Soil surveys will be undertaken where the proposed scheme will interact with land predicted to be BMV land (Grades 1 – 3a) according to ALC2 or with peat deposits.
- 13.8 The Welsh Government's Land Quality and Advice Service (LQAS) will be consulted prior to surveys commencing with respect to the proposed survey methodology. A factual survey report will be produced which will form an appendix to the Environmental Statement chapter.

Baseline conditions

Land use and climate

- 13.9 The ALC climatic data for the study area indicates the area as wet and warm. The ALC climatic grade varies from 2 to 4, with grade 2 being at the south of the study area. The climatic limitation to soil and land use is high rainfall. Generally, across the study area, the soil will be above field capacity for more than 250 days so the number of days the land will be suitable for cultivation in the spring and autumn will be limited. This limits the potential of the land for growing arable and horticultural crops even if the soil was suitable. Aerial photography and OS mapping indicate the agricultural land use within the preferred corridor to be predominantly grass for grazing and conservation. There are several small areas of woodland distributed throughout the preferred corridor.

Soil types

- 13.10 There are a number of soil associations within the study area. These are described below. The soils range from well drained soils over rock e.g. Parc, Manod and Denbigh associations to slowly permeable soils with seasonally waterlogging e.g. Wilcocks 1, Cegin and Brickfield 1 associations. Overall, there is a larger area of seasonally waterlogged slowly permeable soils than well drained soils over rock. The well drained soils over rock are predominately in the study area for a distance running about 10 km north of Carmarthen. There are small areas of soil associations formed in river alluvium (Conway and Teme) and on river terraces (Rheidol).
- 13.11 There are no peat deposits mapped within the study area except possibly a small area near Rhydargaeau. It is noted that some of the soil associations (Wilcocks 1, Parc and Brickfield 1) are described as having a peaty surface horizon.
- 13.12 Descriptions of the soil associations likely to be encountered in the study area are given in the table below. The information is taken from the legend for the 1:250,000 scale National Soil Map. British Geological Survey (BGS) online mapping would indicate the geology as mostly Palaeozoic mudstones.

Table 13-1 Descriptions of the soil associations encountered in the study area

Soil Association	Geology	Soil Characteristics
WILCOCKS 1 (721c)	Drift from Palaeozoic sandstone, mudstone and shale	Slowly permeable seasonally waterlogged fine loamy and fine loamy over clayey upland soils with a peaty surface horizon. Coarse loamy soils affected by ground water in places. Very acid when not limed.
CEGIN (713b)	Drift from Palaeozoic mudstone and siltstone	Slowly permeable seasonally waterlogged fine silty and fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging on slopes. Well drained fine loamy soils over rock in places.
CONWAY (811b)	River alluvium	Deep stoneless fine silty and clayey soils variably affected by groundwater. Flat land. Risk of flooding.
PARC (612a)	Palaeozoic slaty mudstone and shale	Well drained loamy soils over rock with a humose or peaty surface horizon. Some peaty topped slowly permeable seasonally waterlogged loamy soils.
MANOD (611c)	Palaeozoic slate, mudstone and siltstone	Well drained fine loamy or fine silty soils over rock. Shallow soils in places. Bare rock locally. Steep slopes common.
RHEIDOL (541v)	Glaciofluvial or river terrace gravel	Well drained fine loamy soils over gravel, shallow in places. Some related soils affected by groundwater in hollows.
TEME (561b)	River alluvium	Deep stoneless permeable silty soils. Some similar soils variably affected by groundwater. Gravelly subsoil in places. Flat land. Risk of flooding.
DENBIGH 1 (541j)	Palaeozoic slaty mudstone and siltstone	Well drained fine loamy and fine silty soils over rock. Some similar soils with slowly permeable subsoils and slight seasonal waterlogging. Shallow soils and some bare rock locally.
BRICKFIELD 1 (713e)	Drift from Palaeozoic sandstone, mudstone and shale	Slowly permeable seasonally waterlogged fine loamy and fine silty soils, some with wet peaty surface horizons.

Agricultural land quality

- 13.13 Land quality is determined using the ALC of England and Wales revised guidelines (MAFF, 1988).
- 13.14 Welsh Government's Predictive ALC Map 2 depicts the majority of land within the preferred route to be subgrade 3b or poorer quality (i.e. not BMV land). A small amount of BMV land (subgrade 3a) is predicted along rivers in the north (Afon Teifi) and south

(Afon Towy) of the study area. The predominant grade of land in the study area is predicted to be subgrade 3b. The predicted grade 4 land appears to be on land mapped as Manod and Parc associations at the northern end of the corridor and as Manod association in the southern half of the study area. Based on the predictive ALC map, the percentage of BMV land in the study area is not likely to exceed 5%. The predicted ALC within the study area are shown in the figures in Appendix 13.1.

Additional (secondary and tertiary) mitigation

- 13.15 Mitigation measures would primarily focus on following guidance set out in a soil resource and management plan (SRMP) produced for soil handling across the corridor particularly during the construction phase. The SRMP will be produced using guidance set out in DEFRA's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. Other sources of information such as contained Good Practice Guide for Handling Soils In Mineral Works produced by the Institute of Quarrying may also be helpful. The SRMP would cover handling of soil during stripping and reinstatement.
- 13.16 Mitigation will also include production of a Construction Environmental Management Plan (CEMP).

Description of likely significant effects

Construction effects on land use

- 13.17 During construction there would be potential temporary effects on agricultural operations due to disturbance (in particular where livestock are present), fragmentation and access restrictions. The measures set out within the CEMP would reduce the effects to agricultural land use.
- 13.18 By the end of the construction phase, all land required temporarily would be reinstated. As the footprint of the permanent infrastructure is limited it is considered that, following reinstatement of land used temporarily, there would be no significant effects on agricultural landholdings. However, as there is the potential for disruption to land use during construction and some permanent loss of land to agricultural use the effects are scoped into the Environmental Statement.

Operational effects on land use

- 13.19 The footprint of the towers and the new 132 kV substation adjacent to the proposed National grid substation will result in some permanent land loss. The location of the substation will not, however, be located on land classed as BMV. Also, depending on the location of the towers in fields, towers have the potential to slow field machinery operations by having to manoeuvre around them. If the proposed scheme includes other permanent infrastructure such as access tracks to towers this would also result in some permanent loss of land.

Matters to be 'scoped in' to further assessment

Table 13-2 Land and soil matters proposed to be 'scoped in' to the EIA

Receptor/element	Phase	Justification
Permanent loss of agricultural land	Construction	The footprint of the towers and, for example, other permanent infrastructure such as access tracks to towers could result in permanent agricultural land loss during this phase.
Permanent loss of agricultural land	Operation	The footprint of the towers and, for example, other permanent infrastructure such as access tracks to towers could result in permanent agricultural land loss during this phase
Temporary loss of agricultural land	Construction	Whilst land required temporarily during this phase will be fully reinstated to its pre-construction condition, there is the potential for disruption to agricultural during construction.

Matters to be 'scoped out' of further assessment

Table 13-3 Land and soil matters proposed to be 'scoped out' of the EIA

Receptor/element	Phase	Justification
Soils	Construction	During construction there would be disturbance to soils due to the excavation and soil stripping from associated working areas for the OHL installation and associated infrastructure so there is the potential for effects on the ecosystem services the soils provide. The good practice measures that will be set out within the CEMP and the good practice soil management measures which will be set out within the SRMP for soil handling, storage and reinstatement, would reduce the effects on soils. By the end of construction, all land required temporarily would be reinstated and no significant long term effects on soil are expected. It is therefore proposed to scope this aspect out of the Environmental Statement.
Soils	Operation	Maintenance and repair works that may result in the disturbance of soils during operation are likely to be extremely limited. Where soil handling may be required, this would be undertaken in accordance with standard good practice soil handling methods. Therefore, no likely significant effects are expected during the operational phase and it is proposed to scope this matter out of the Environmental Statement.
Land use	Operation	All temporary construction infrastructure will have been removed and the land restored prior to the operation

Receptor/ element	Phase	Justification
		phase, with only small areas of land around OHL towers lost to agriculture during this phase. Therefore, no likely significant effects are expected and operational effects on land use are scoped out of the Environmental Statement.

Proposed assessment methodology

- 13.20 A desk study of published information covering geology, climate, flooding risk, soils, agricultural land classification and current agricultural use will be carried out.
- 13.21 Relevant guidance specific to the assessment of soils and agriculture that will inform the assessment comprises:
- A New Perspective on Land and Soil in Environmental Impact Assessment (IEMA, 2022);
 - Agricultural Land Classification of England and Wales: Revised criteria for grading the quality of agricultural land (MAFF, 1988);
 - Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2018);
 - Agricultural Land Classification Guidance and Services (Welsh Government, 2021).
 - 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).
- 13.22 Following the desk study, a soil survey of the study area will be carried according to criteria set out in Agricultural Land Classification of England and Wales: Revised criteria for grading the quality of agricultural land (MAFF 1988) and the Welsh Government guidance (2021). It is proposed that surveys will be targeted towards land that is expected to be BMV.
- 13.23 The results of the soil survey together with the climatic and flood risk information from the desk study will allow the land to be accurately ALC graded to confirm (or otherwise) the Wales ALC2 predictive grades. The ALC grading can then be used to assess the significance of any permanent or temporary land loss against criteria set out in A New Perspective on Land and Soil in Environmental Impact Assessment (IEMA, 2022). The effect of different routes for the tower corridor could also be assessed.
- 13.24 Importantly, the soil survey work will provide the baseline information for producing the SRMP.

Difficulties and uncertainties

- 13.25 There are no identified limitations associated with completing this assessment.

Scoping questions

- 13.26 Questions relating to the proposed scope and methodology of the Land and Soil assessment are listed in the box below for statutory consultees to review and respond to.

- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?
- Are any receptors / assets / resources not identified that you would like to see included in the EIA?
- Do you agree with the receptors/ matters that are proposed to be scoped in and out of the EIA?

References

British Geological Survey (2024). Geology Viewer. Available at: https://geologyviewer.bgs.ac.uk/?_ga=2.240745411.1571633032.1709815986-833444654.1709815986.

DataMapWales (2019). Predictive Agricultural Land Classification (ALC) Map 2. Welsh Government. Available at: https://datamap.gov.wales/layers/inspire-wg:wg_predictive_alc2.

DataMapWales (2022). Peatlands of Wales Maps. Welsh Government. Available at: <https://datamap.gov.wales/maps/peatlands-of-wales-maps/>.

DEFRA. (2018). Code of practice for the sustainable use of soils on construction sites. Guidance. Available at: <https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites>.

Google Earth Pro. (2024).

IEMA. (2022). A new Perspective on Land and Soil in Environmental Impact Assessment. Available at: <https://www.iema.net/resources/blog/2022/02/17/launch-of-new-eia-guidance-on-land-and-soils>.

Natural Resources Wales. (2020). SoNaRR2020: Land use and soil. Available at: <https://naturalresources.wales/evidence-and-data/research-and-reports/state-of-natural-resources-report-sonarr-for-wales-2020/sonarr2020-our-assessment/cross-cutting-themes/land-use-and-soil/?lang=en>.

Welsh Government. (2021). Agricultural land classification. Collection. Available at: <https://www.gov.wales/agricultural-land-classification>.

14 WATER

Consultation

- 14.1 This scoping assessment has been based on readily available mapping and documentation published by statutory bodies including Natural Resources Wales (NRW) (including Water Watch Wales mapping), the Ordnance Survey (OS) and the British Geological Survey (BGS). This information has informed the baseline assessment and identification of potentially significant effects.
- 14.2 It is anticipated that, dependent on the scoping opinion, further consultation will be undertaken during preparation of the Environmental Statement and supporting Flood Consequences Assessment (FCA). This will include consultation with NRW for further details of the modelled flood levels and floodplain extents along the proposed route and for data regarding flood risk from non-fluvial sources (e.g. surface water, reservoir flooding). The Lead Local Flood Authorities (LLFAs) (Ceredigion County Council and Carmarthenshire County Council) will be consulted for details of any Ordinary Watercourses along the proposed route, details of flood risk from surface water and groundwater, details of any historical flood events and records of any surface water abstractions.

Study area

- 14.3 The study area comprises the area directly affected by the proposed scheme, the boundaries of which will comprise the detailed alignment of the OHL, tower locations, the new 132 kV substation adjacent to the proposed National Grid substation infrastructure required for the operation of the proposed scheme and the temporary infrastructure required for construction of the proposed scheme.
- 14.4 For the purpose of scoping only, given that the detailed design is not yet known, the study area has been extended to encompass the 200 m wide preferred route.
- 14.5 In addition, the study area will include a buffer of 250 m either side of the above. Although there is no specific guidance on the spatial extent of the assessment for this discipline, a buffer of 250 m has been chosen based on professional experience of the maximum likely distance of potential significant impacts from activities typical of a project of this nature. This assumption takes account of the typical distance beyond which deposition of silts and dilution of any concentrated pollutants would mean that significant impacts on water quality are unlikely to be encountered.

Data sources to inform the EIA baseline characterisation

- 14.6 Mapping and data from the following sources have been used to inform the baseline assessment at the scoping stage:
- NRW Flood Risk Assessment Wales Map;
 - OS mapping;
 - Water Watch Wales mapping (Water Framework Directive Cycle 3 data);
 - BGS mapping; and
 - Defra MAGIC maps.

14.7 It is anticipated that the following data sources will additionally be reviewed to inform the baseline description within the Environmental Statement:

- Modelled flood data from NRW (fluvial / tidal sources);
- Mapping and data relating to surface water flood risk, reservoir flood risk, groundwater flood risk and other sources of flooding from the NRW and LLFAs;
- Details of any historical flood events obtained from the NRW and LLFAs;
- Details of nearby surface water abstractions (public and private) obtained from the LLFAs and / or a third party data provider (e.g. Envirocheck); and
- Local Authority Surface Water Management Plans and Strategic Flood Risk Assessments.

14.8 A FCA will be prepared as a standalone document to support the DNS application. This will be based on data sourced from the NRW and LLFAs as described above.

Surveys to inform the EIA baseline characterisation

14.9 The assessment of effects on water resources is a primarily desk-based assessment and no surveys have been undertaken to inform the scoping assessment. However, a targeted visual inspection of any key features in the proposed location of ground based infrastructure, for example Main Rivers with ecological designations or private water supplies, will be undertaken to inform the EIA where considered appropriate. Field surveys will be guided by initial desk-based research. The targeted surveys currently proposed are shown in Appendix 14.4.

Baseline conditions

14.10 The proposed scheme will cross a variety of landscapes, predominantly agricultural land and open land at the foothills of the hills and mountains to the south and east. It generally follows relatively low-lying land below 150 m AOD but includes limited sections at a higher elevation of up to 300 m AOD.

14.11 The proposed scheme involves crossing a number of watercourses, comprising both Main Rivers and Ordinary Watercourses. Many of the Ordinary Watercourses (smaller streams and tributaries) carry runoff from the hills and mountains towards the Main Rivers (notably the Afon Teifi and Afon Tywi) and their main tributaries. The Main Rivers and Ordinary Watercourses within the study area, as identified on OS mapping, are shown in Appendix 14.1.

14.12 Initial review indicates that the proposed scheme will span approximately 28 Ordinary Watercourses and 5 Main Rivers. A further 3 Ordinary Watercourses have been identified within the wider study area.

14.13 The majority of the Ordinary Watercourses have either no associated mapped fluvial flood zones or narrow mapped corridors of fluvial Flood Zones 2 and 3. The majority the proposed scheme falls within Flood Zone 1 as indicated on the NRW Flood Risk Assessment Wales map (2023) and therefore is at a very low risk of fluvial or tidal flooding. A small number of the Ordinary Watercourses together with the Main Rivers have wider associated extents of fluvial Flood Zones 2 and 3. These include the Afon Tywi, which has a wide associated floodplain (both fluvial and tidal Flood Zones 2 and 3). The NRW fluvial and tidal flood zone mapping is shown on Appendix 14.2 .

- 14.14 Five of the watercourses crossed by the proposed route are classified under Cycle 3 (2021) of the Water Environment (Water Framework Directive) (WFD) (England and Wales) Regulations 2017. The 2021 classifications obtained from the Water Watch Wales mapping are provided in the table below and shown in the figures in Appendix 14.3.

Table 14-1 Cycle 3 (2021) watercourse classification

se	Cycle 3 (2021) overall classification	Cycle 3 (2021) ecological classification	Cycle 3 (2021) chemical classification
Afon Duar	Good	Good	High
Afon Talog	Good	Good	High
Afon Gwili	Moderate	Moderate	High
Afon Tywi	Good	Good	High
Nant Pibwr	Poor	Poor	High

- 14.15 Additionally, the proposed scheme will span a number of smaller tributaries to a sixth WFD classified watercourse.
- 14.16 The above WFD Cycle 3 classifications, as shown on the Water Watch Wales mapping, are included in Appendix 14.3. The watercourses identified have 'good' or 'moderate' overall and ecological classifications with the exception of Nant Pibwr which has 'poor' overall and ecological classifications. All the watercourses spanned by the proposed scheme have a 'high' chemical classification.
- 14.17 The northern end of the route is underlain by the Teifi and Coastal Ceredigion groundwater body and the southern end by the Tywi, Taf and Gwendraeths groundwater body. The overall status of both groundwater bodies under WFD Cycle 3 (2021) is 'poor', the quantitative status of both is 'good'.
- 14.18 In the baseline situation, it is likely that the watercourses in the study area would be subject to limited inputs of pollutants, particularly nutrients and metals, associated with farming activities, urban runoff and sewer company discharges. However, the majority of classified watercourses along the proposed cable route are of 'moderate' or 'good' overall quality, suggesting that these baseline sources of pollution have not significantly impacted water quality within the catchments under consideration.
- 14.19 Afon Talog and Afon Tywi are both classified as a Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC), as shown on Defra's MAGIC maps.
- 14.20 Given the rural setting of the works, it is unlikely that significant formal drainage infrastructure exists, with runoff likely being either conveyed across undeveloped areas via overland flow at greenfield rates towards surface watercourses, or infiltrating directly into the ground.
- 14.21 Potential receptors to any increases in flood risk include residential properties located close to the watercourses within the study area, low lying agricultural land and other sensitive land uses downstream of the proposed works.

- 14.22 Potential receptors to water quality impacts include habitats and species associated with the identified watercourses and any sensitive abstractions from the watercourses. Watercourses classified under the WFD, and most notably those recorded as of 'good' quality during the latest WFD Cycle, are particularly sensitive to any water quality impacts. Watercourses with ecological designations and any used for potable abstractions are also of increased sensitivity to water quality impacts.

Additional (secondary and tertiary) mitigation

- 14.23 Mitigation in relation to water is anticipated to include, as a minimum:
- Re-use of existing watercourse crossings where possible, for access purposes;
 - Applicable consents/ permits to be obtained prior to works commencing;
 - Access roads to be surfaced with permeable material to minimise runoff;
 - Preparation of a Flood Management Plan for all stages of development, where construction or maintenance activities take place within Flood Zone 2 or 3;
 - Temporary drainage strategy/ Surface Water Management Plan during construction to control runoff rates and sediment mobilisation;
 - Drainage strategy for operational phase, including use of infiltration trenches or similar drainage features around tower bases and the proposed 132 kV substation to control runoff and attenuation of runoff via Sustainable Drainage Systems (SuDS) in areas of hardstanding if required; and
 - Implementation of relevant management plans/ strategies to control runoff, flood risk and pollution during the construction stage.
- 14.24 A CEMP will form part of the tertiary mitigation, which will ensure appropriate measures are included (following industry best practice) to minimise the risk of any releases of harmful substances. Mitigation will include the use of appropriate measures as outlined in the Pollution Prevention Guidelines. The Pollution Prevention Guidelines were withdrawn in 2015, however they still contain detailed information on good working practices and principles.
- 14.25 A Water Framework Directive (WFD) Stage 1 Screening (see paragraphs 14.32 to 14.44 below and Appendix 14.3) was undertaken to inform the proposed EIA scope. This Stage 1 Screening will be reviewed and updated once the detailed design of the proposed scheme has been finalised.
- 14.26 A standalone Flood Consequences Assessment (FCA) will be required to support the planning application, and a fundamental requirement of the FCA will be to demonstrate that there is no increase in flood risk, for example due to increased surface water runoff or displacement of floodwater. The proposals will incorporate any mitigation requirements identified within the FCA as embedded mitigation, including requirements for a drainage strategy and the use of sustainable drainage systems (SuDS) or requirements for compensatory floodplain storage. These measures will be enforced via a planning condition which requires the development to be built in accordance with the proposed drawings and submitted drainage strategy.
- 14.27 It is intended to use existing bridge crossings for access purposes during construction, however, consents will be obtained in relation to the construction of any new or upgraded watercourse crossings (i.e. bridges), should these be required. These consents will ensure the proposed bridge designs do not increase flood risk. This will be enforced by the consenting authority (NRW/ Lead Local Flood Authority).

- 14.28 It is not currently anticipated that any additional (secondary and tertiary) mitigation measures will be required for the construction, operational or decommissioning phases of the development.

Description of likely significant effects

- 14.29 With the embedded (primary) mitigation placing towers and the new 132 kV substation outside fluvial floodplains and spanning cable over flood zones and watercourses, where possible, no likely significant effects on water resources have been identified.
- 14.30 There will be no water abstraction activities and no effects on the downstream continuity of flow in watercourses.
- 14.31 However, given that the location of towers has not been defined at this stage, a worst case scenario has been assumed whereby some of the identified Main Rivers designated as a SAC could be more sensitive to water quality impacts and physical disturbance during the construction of towers, where a location within the riparian zone of these designations is required.

Matters to be scoped into further assessment

Table 14-2 'Water' matters proposed to be 'scoped in' to the EIA

Receptor/element	Phase	Justification
Potential transfer of sediment and pollutants to Main River SACs and their Main River tributaries	Construction	Embedded and additional mitigation will prevent significant effects to water quality, however, given the higher sensitivity of Main River SACs that will be crossed by the proposed scheme, this aspect has been scoped in on a precautionary basis in the event that ground based infrastructure is constructed close to these watercourses.
Hydrology of Main River SACs	Construction	Embedded and additional mitigation will prevent direct disturbance to the hydrology of watercourses, however, given the higher sensitivity of Main River SACs that will be crossed by the proposed scheme, this aspect has been scoped in on a precautionary basis in the event that ground based infrastructure is constructed close to these watercourses. Groundwater pathways will be assessed under the Geology and Hydrogeology environmental factor.

Matters to be scoped out of further assessment

Table 14-3 'Water' matters proposed to be 'scoped out' of the EIA

Receptor/ element	Phase	Justification
Increase in flood risk due to uncontrolled runoff impermeably surfaced areas (where applicable).	Construction Operation	This has been scoped out as increased runoff due to compaction of soils and use of impermeable materials for tracks / laydown areas will be avoided through measures stipulated within the CEMP. A drainage strategy / Surface Water Management Plan will be included as tertiary mitigation to ensure runoff is controlled so as not to increase flood risk, should any areas of hardstanding be proposed. The FCA will identify any mitigation requirements to ensure there are no off-site impacts. This is a fundamental requirement of Planning Policy Wales and the accompanying Technical Advice Note 15³. The inclusion of the identified mitigation will be enforced through a planning condition and through any required permits / consents (e.g. for new crossings). The majority of the permanent infrastructure will be located outside the fluvial / tidal flood zones and therefore would have no impact on floodplain storage or overland flow routes.
Potential increase in flood risk due to construction or upgrade of bridges for access over watercourses.	Construction	This has been scoped out as the design of the bridges will ensure flows are maintained. The appropriate consents will be obtained for these works (from either the NRW / LLFA) and consent will only be granted where there is no increase in flood risk.
Potential flood risk to construction and maintenance workers	Construction Operation	This has been scoped out as a Flood Management Plan would be included as tertiary mitigation to ensure workers have advance warning of any flooding and can plan the timing of works around times of elevated flood risk or high flows in the watercourses. The majority of the proposed scheme is not located in Flood Zones 2 or 3.
Depletion of surface water resources due to water use during construction.	Construction	This has been scoped out as no surface water abstraction is proposed.
Potential transfer of	Construction	This has been scoped out as there is considered negligible potential for generation of pollutant or

³ It is assumed that the 2021 version of TAN 15 will be in force by the time the application for planning permission is expected to be submitted, and that a substantial change to the principles underpinning the adopted version following completion of consultation is not anticipated.

Receptor/ element	Phase	Justification
sediment and pollutants to Ordinary Watercourses	Operation	sediment laden runoff during the both phases of development. The drainage strategy will be designed to include water quality benefits where appropriate.
Hydrology of Ordinary Watercourses	Construction Operation	With embedded mitigation siting permanent ground-based infrastructure away from watercourses, there is negligible potential for direct disturbance of watercourses giving rise to a significant effect. The design of the bridges will ensure flows are maintained. The appropriate consents will be obtained for these works (from either the NRW / LLFA)
WFD additional assessment	Construction Operation	It is not considered that any of the aspects of the proposed scheme will prevent the WFD objectives from being achieved or cause any deterioration in current WFD status. Therefore, additional stages of WFD assessment have been scoped out (refer to paragraphs 14.32 to 14.44 below).
Potential effects during the decommissioning phase of the proposed scheme are proposed to be scoped out of the EIA for the reasons set out in Chapter 5.		

Water Framework Directive – Stage 1 screening assessment

- 14.32 The Water Framework Directive (WFD) Regulations came into effect in April 2017 and originate from the European Union (EU) Water Framework Directive (2000). The WFD continues to form part of UK law post Britain leaving the EU. All new activities in or potentially affecting the water environment need to consider the WFD. The relevant environmental objectives set out in the WFD are listed below:
- Prevent deterioration and enhance status of aquatic ecosystems, including groundwater;
 - Promote sustainable water use;
 - Reduce pollution; and
 - Contribute to the mitigation of floods and droughts.
- 14.33 The Directive aims for 'good status' of all ground and surface water (rivers, lakes, transitional water, and coastal waters).
- 14.34 At the WFD screening stage, the key consideration is whether the proposed activities could:
- Cause or contribute to deterioration of status; and
 - Jeopardise the water body achieving good status.
- 14.35 The focus is on the nature of activities rather than the sensitivity of the receptors, although the WFD receptors are identified in this report and briefly discussed here. All stages of the development (construction, operation and decommissioning) should be considered. Decommissioning is considered here because the WFD screening is completed under a

separate regulatory regime to EIA and it remains that the decommissioning phase of the proposed scheme is scoped out of the EIA for the reasons explained in Chapter 5.

WFD considerations during construction

- 14.36 During the construction phase, the creation of the tower bases is anticipated to take place some distance from the watercourses, as the intention is to locate these features away from watercourses and outside of the fluvial floodplains. Construction activities would be in accordance with best practice measures for control of pollution and sediment as specified in the CEMP. Construction compounds would also be located away from the watercourses, this would also be specified within the CEMP. Surface water runoff during construction would be managed via temporary drainage arrangements which would include silt traps and water quality treatment where necessary. These activities therefore are not considered to represent a significant risk of causing deterioration in status of the WFD watercourses.
- 14.37 The creation of the access tracks may require new watercourse crossings, and this work to create culverts will require some disturbance of the ground and use of machinery in close proximity to watercourses. At this stage it is not clear whether the WFD watercourses will require a crossing for access, but it is currently assumed that the need to cross WFD watercourses will be avoided or will utilise existing crossings. Works to create new crossings could result in localised clearance of vegetation and therefore loss of habitat. However, works would be subject to the required ecological surveys and supervision in order to avoid any protected or sensitive habitats, as well as secondary consents and permits (for example, under the Land Drainage Act 1991 and associated byelaws).
- 14.38 The impacts on habitat are expected to be short-term as the riverbanks naturally revegetate. The impacts are not considered significant in terms of WFD status at a catchment scale. There is the potential for minor localised temporary impacts on water quality from the mobilisation of contaminated sediment or pollutants into surface water. However, these can be adequately controlled through measures to be specified in the CEMP. Measures would include storing chemicals (if required) in oversized containers away from watercourses, temporary measures such as sediment traps, and temporary bunding or similar to minimise migration of spillages. Any residual impacts would be short-term and localised and are not expected to result in significant deterioration or change in surface water body status.
- 14.39 The construction works will not require abstraction of surface water from local watercourses and will therefore not affect the watercourse hydrology or aquatic habitats through over-abstraction.
- 14.40 The construction works are not anticipated to involve dewatering or abstraction of groundwater for construction use, which limits the potential construction impacts of the proposed scheme on the underlying groundwater bodies. The CEMP will mitigate potential adverse impacts on the groundwater bodies from spillages during construction. Overall, the proposed scheme is not expected to result in significant deterioration or change in groundwater body status.

WFD considerations during operation

- 14.41 During the operational phase, impacts on the WFD watercourses are considered to be no different to the baseline scenario, with land uses within the area of development remaining substantially the same as prior to the works.
- 14.42 The proposed drainage strategy would provide sufficient cleansing of runoff from hardstanding areas, which themselves are considered to have a low potential of generating contaminated or silt laden runoff. This will be assessed and confirmed within the proposed FCA.
- 14.43 Activities during the operational phase are considered unlikely to result in significant deterioration or change in surface water or groundwater body status.
- 14.44 Based on the above information it is not considered that any of the aspects of the proposed scheme will prevent the WFD objectives from being achieved or cause any deterioration in current WFD status. Therefore, additional stages of WFD assessment have been scoped out.

Opportunities for enhancement

- 14.45 No specific opportunities have been identified at this stage for the enhancement of the environment from a flood risk and hydrology perspective, however, it is anticipated that riparian habitats, should these be impacted by ground-based infrastructure, will be restored to their original condition and where appropriate, enhanced. This will be considered as part of the assessment of biodiversity, if required.

Proposed assessment methodology

- 14.46 Based on this scoping assessment, no likely significant effects have been identified and therefore no further assessment is considered necessary as part of the EIA. However, given the precautionary approach to Main River SACs and their tributaries, should ground-based infrastructure be located close to these watercourse the following methodology would be followed.
- 14.47 The WFD requires that there are no impacts to watercourse quality that could affect the potential for the watercourse to reach the WFD targets. The assessment will take account of these policy requirements in the assessment of potentially significant effects.
- 14.48 The assessment will be based on experience of similar projects and professional judgement. The assessment of effects will assume that the relevant embedded and additional mitigation, and any applicable consent / permits are in place before assessing the effects. The assessment will be based on a source-pathway-receptor methodology, where the sensitivity of the receptors and the magnitude of change upon those receptors is identified within the study area. The significance of the likely effects of the development will be classified by taking into account the sensitivity of receptors and the magnitude of the effect on them. Likely significant effects would be those effects identified as of moderate or major significance.
- 14.49 The assessment and recommendations for design changes during the process of defining the detailed alignment of the OHLs and tower locations will aim to ensure no derogation of water quality or increase in flood risk, and we will seek to agree design and mitigation

measures with NRW and the LLFA. The design of the proposed scheme will aim to ensure towers are positioned away from a watercourse.

- 14.50 As stated above, flood risk will be considered separately within a FCA to be submitted in support of the DNS application, which will focus on the following:
- Obtaining and reviewing relevant data and background information from NRW and other relevant authorities, including modelled flood level and flow data for any nearby watercourses, details of historical flood events and any other pertinent information;
 - Contacting the relevant Local Authority to obtain the findings of any Strategic Flood Risk Assessment, Preliminary Flood Risk Assessment and Surface Water Management Plan commissioned by them;
 - Contacting the local sewerage company for details of any existing drainage apparatus in the preferred route;
 - Providing general advice on the feasibility of SuDS that could potentially be incorporated into the development and the drainage design;
 - Providing an assessment of the flood risk to the proposed scheme and any flood risk impacts arising from the proposed scheme, and identify any mitigation requirements to reduce these risks to an acceptable level; and
 - Preparation of a FCA report and outline surface water drainage strategy principles (where relevant) to address the management of surface water run-off from the proposed scheme, such that flood risk to the surrounding area is not increased and with due consideration of flows to the local drainage system.
- 14.51 The FCA will be produced regardless of the scoping outcome, and is currently proposed as a standalone document as no significant effects on flood risk have been identified.

Difficulties and uncertainties

- 14.52 To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:
- The specific locations of features such as pylons and the new 132 kV substation have not been confirmed, therefore it has not been possible to confirm their location outside areas at risk of flooding or close to watercourses;
 - The specific route and extent of access tracks has not yet been determined;
 - The number and location of any required new or upgraded watercourse crossings has not been confirmed; and
 - The specific mitigation measures to be proposed following completion of the FCA are not currently confirmed.
- 14.53 At this scoping stage, it has been assumed as a worse-case that some ground-based infrastructure could be located close to Main River SACs or their tributaries, and that some new or upgraded watercourse crossings will be required. By making these assumptions, the scoping assessment has taken account the scenarios with the greatest possible significance of effects.
- 14.54 Although the specific mitigation measures to result from the FCA assessment are not known, in order to be in compliance with Planning Policy Wales, these measures will as a minimum ensure there is no off-site increase in flood risk as a result of the development.

Scoping questions

14.55 Questions relating to the proposed scope and methodology of the Water assessment are listed in the box below for statutory consultees to review and respond to.

- Do you agree that a full WFD assessment is not required?
- Do you agree that runoff from the access track and tower bases can be dealt with via infiltration trenches or similar to direct runoff to the ground without attenuation?
- Do you require attenuation of runoff from the new 132 kV substation if it is laid to hardstanding?
- Do you agree that a targeted site inspection of Main Rivers that will be crossed by the proposed scheme will be sufficient to establish the baseline and that no further inspection or monitoring is required?
- Do you agree that the proposed infrastructure would be classed as 'essential infrastructure'?
- Do you agree with the proposed study area and method of assessment?
- Do you agree that matters to be scoped in and out of the EIA are appropriate, taking a precautionary approach?

References

Natural Resources Wales online 'Flood Risk Assessment Wales' map available at: <https://flood-risk-maps.naturalresources.wales/?locale=en>

Ordnance Survey mapping, 2024

Water Watch Wales mapping, available at: <https://waterwatchwales.naturalresourceswales.gov.uk/en/>

Defra Magic Map online mapping, available at: <https://magic.defra.gov.uk/magicmap.aspx>

Welsh Assembly Government (2021) Planning Policy Wales Edition 11

Welsh Assembly Government (2021), Planning Policy Wales Technical Advice Note 15: Development, flooding and coastal erosion

15 CUMULATIVE EFFECTS

Proposed assessment methodology

- 15.1 Paragraph (5)(e) of Schedule 4 to the EIA Regulations states that the Environmental Statement should include “*a description of the likely significant effects of the development on the environment resulting from... the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*”.
- 15.2 Regulation 4(2) states that the EIA must “*identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed scheme on the following— population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape*”. Regulation 4(2)(e) refers to the need to assess the interaction between those factors.
- 15.3 There is no widely accepted methodology or best practice for assessing cumulative effects, although various guidance documents exist. However, relevant guidance has been considered, including from the Institute of Environmental Management and Assessment (IEMA, 2011). The proposed assessment methodology also reflects that set out in the Planning Inspectorate’s Advice Note Seventeen: Cumulative Effects Assessment (2019) as, although the proposed scheme is not a Nationally Significant Infrastructure Project, this advice note is considered to reflect good industry practice.
- 15.4 The following approach will be adopted for the assessment of cumulative effects, based on previous experience, the types of receptors being assessed, the nature of the proposed scheme, the other developments under consideration and the information available to inform the assessment.
- 15.5 The following types of cumulative effects will be considered in accordance with the EIA Regulations and best practice guidance:
- Intra-project combined effects – the interaction and combination of different environmental residual (post-additional mitigation) effects from within the proposed scheme affecting a receptor; and
 - Inter-project cumulative effects – the combined residual (post-additional mitigation) effects of the proposed scheme and other projects on a single receptor/resource, considering the deviation from the baseline conditions at common sensitive receptors/resources as a result of changes brought about as a result of the proposed scheme in combination with one or more other approved (committed) developments.

Intra-project combined effects

- 15.6 The approach to the assessment of interactions of environmental effects will consider the changes in baseline conditions at common sensitive receptors (i.e. those receptors that have been identified as experiencing likely significant effects by more than one environmental factor) due to the proposed scheme. The assessment will be based upon residual (post-additional mitigation) effects of ‘**slight/ minor**’ or greater significance only. Negligible effects are considered to be of such minimal significance, they effectively make no contribution to an impact caused by the combination of different environmental factors.

The study area for the assessment will be informed by the study areas for the individual factor assessments.

- 15.7 The assessment of the intra-project combined effects will be undertaken using a two-stage approach:

Stage 1 - Screening

- 15.8 Screening will be undertaken to determine whether a sensitive receptor is exposed to more than one type of residual (post-additional mitigation) effect during the construction and/or operational phases of the proposed scheme. Those common sensitive receptors exposed to two or more types of residual (post-additional mitigation) effects, with significance of '**slight/ minor**' or greater, will be taken forward to Stage 2 of the assessment.
- 15.9 If there is only one type of effect on a sensitive receptor (i.e. only one technical chapter has identified effects on that sensitive receptor), then it will be considered that there are no potential intra-project combined effects and the sensitive receptor will not be taken forward to Stage 2 of the assessment.

Stage 2 – Assessment of intra-project combined effects

- 15.10 A quantitative assessment of the overall significance of the cumulative effects on common sensitive receptors identified following Stage 1 will be undertaken based on technical information provided in the technical chapters and supporting appendices as well as professional judgement. Given that the types of effects may be very different in some cases, a quantitative assessment may not be possible, and it may be necessary to apply professional judgement in determining the significance of each individual effect.
- 15.11 The evaluation at the receptor level will consider: the magnitude of change at the common receptor; previously identified sensitivity; duration and reversibility of interaction. The focus will be on determining a change in the level of effect likely to be experienced and whether this is significant or not.

Inter-project cumulative effects

- 15.12 The approach to the assessment of inter-project effects will consider the deviation from the baseline conditions at common sensitive receptors as a result of changes brought about as a result of the proposed scheme in combination with one or more other approved (committed) developments. The assessment of the inter-project effects will be based upon the residual (post-additional mitigation) effects that have been identified in the various factor assessments for the proposed scheme, as well as available environmental information for the approved (committed) developments.
- 15.13 The approach will be based on Advice Note Seventeen (Planning Inspectorate, 2019), whereby two clear stages will be taken in identifying the list of approved (committed) developments which will be included within the inter-project cumulative effects assessment:
- Stage 1: establish a long list of approved (committed) developments based on appropriate spatial and temporal limits; and
 - Stage 2: apply a clear rationale to establish a short list of approved (committed) developments which, in combination with the proposed scheme, have the

potential to result in a significant cumulative effect for inclusion within the assessment.

Stage 1: Long list methodology

- 15.14 The following criteria will be used to establish the 'long list' of approved (committed) developments, as at the time of submitting the planning application for the proposed scheme:
- Schemes that are under construction but that will not be completed prior to the proposed scheme commencing (N.B. consideration will be afforded on a case by case basis to whether schemes that are under construction form part of the existing baseline or not, to avoid double counting);
 - Schemes with planning permission within the last five years⁴, but not yet implemented;
 - Submitted applications but not yet determined;
 - Refusals subject to appeal procedures not yet determined; and
 - EIA development not yet submitted but subject of an EIA scoping request.
- 15.15 Development projects that are at EIA screening stage at the time of submitting the planning application for the proposed scheme will not be considered, as they are not considered 'approved'. Similarly, local plan allocations will not be considered on the basis that these are prospective land uses for a development type, but not a specific development proposal with accompanying environmental information.
- 15.16 Where an approved (committed) development meets one of the above criteria, it will be taken forward for further consideration against the following spatial limits (based on professional judgement) to form the long list of approved (committed) developments, as at the time of submitting the planning application for the proposed scheme:
- Employment developments: must lie within the Zone of Influence (Zol) of the proposed scheme;
 - Residential developments: must comprise 10+ dwellings and lie within the Zol of the proposed scheme;
 - Minerals and waste applications: must lie within the Zol of the proposed scheme;
 - DNS developments as defined by the Planning Act 2008, the Planning (Wales) Act and the Developments of National Significance (Wales) Regulations 2016: must lie within the Zol of the proposed scheme;
 - Transport infrastructure developments⁵: must lie within the Zol of the proposed scheme; and
 - Approved energy infrastructure developments must lie within the Zol of the proposed scheme.
- 15.17 The Zol is defined here as the study area for each environmental factor considered in the EIA for the proposed scheme. The environmental factor-specific study areas, and appropriate justifications for these study areas, will be provided in the Environmental

⁴ A five-year period is considered a reasonable time period to capture all approved developments that still have the potential to be built. Developments with planning permission older than five years will likely have been built or will not likely be built at all.

⁵ Trunk roads or motorways only, as smaller transport infrastructure proposals would not likely have a significant cumulative effect.

Statement. The search area for forming the long list of approved (committed) developments will be based on the greatest ZOI in terms of distance.

- 15.18 A planning application search will be conducted to identify approved (committed) developments using relevant planning portals. However, it is recognised that Ceredigion and Carmarthenshire County Council as relevant the local planning authorities may be aware of additional proposals not yet fully in the public domain and hence comment is sought on any further developments that should, in the authorities' opinion, be included in the cumulative effects assessment process.
- 15.19 Only if the approved (committed) developments meet the Stage 1 criteria will they then been taken forward to Stage 2.

Stage 2: Short list methodology

- 15.20 Following the formation of the long list, the eligible approved (committed) developments identified require further assessment (Stage 2) to establish a short list of approved (committed) developments which, in combination with the proposed scheme, have the potential to result in significant cumulative effects.
- 15.21 The criteria used to determine whether to include or exclude an approved (committed) development on the short list will reflect the process established by the Planning Inspectorate's Advice Note Seventeen (2019) and have regard to relevant policy and guidance documents and consultation with the appropriate statutory consultation bodies (particularly the LPA). Advice Note Seventeen (Planning Inspectorate, 2019) states that the criteria should address the following:
- **“Temporal scope:** *The applicant may wish to consider the relative construction, operation and decommissioning programmes of the ‘other existing development and/or approved development’ identified in the ZOI together with the [project] programme, to establish whether there is overlap and any potential for interaction.*
 - **Scale and nature of development:** *The applicant may wish to consider whether the scale and nature of the ‘other existing development and/or approved development’ identified in the ZOI are likely to interact with the proposed [project]. Statutory definitions of major development and EIA screening thresholds may be of assistance when considering issues of scale.*
 - **Other factors:** *The applicant should consider whether there are any other factors, such as the nature and/or capacity of the receiving environment that would make a significant cumulative effect with ‘other existing development and/or approved development’ more or less likely and may consider utilising a source-pathway-receptor approach to inform the assessment.*
 - **Documentation:** *The CEA shortlisting process may be documented using Matrix 1 (Appendix 1). The reasons for excluding any development from further consideration should be clearly recorded. This will provide decision makers, consultation bodies and members of the public with a clear record of ‘other existing development and/or approved development’ considered and the applicant’s decision making process with respect to the need for further assessment.”*
- 15.22 Advice Note Seventeen suggests that professional judgement may also be used to supplement the threshold criteria and in order to avoid excluding ‘other existing development and/ or approved development’ that is:
- *“Below the threshold criteria limits but has characteristics likely to give rise to a significant effect; or*

- *Below the threshold criteria limits but could give rise to a cumulative effect by virtue of its proximity to the proposed [project].”*

15.23 Taking the above into consideration, the approved (committed) developments on the long list will be reviewed against the following criteria to form the short list of approved (committed) developments, as at the time of submitting the planning application for the proposed scheme:

- **Criteria 1:** The approved (committed) development has a construction, operational and/or demolition phase that is concurrent with the proposed scheme;
- **Criteria 2:** The approved (committed) development and the proposed scheme share common sensitive receptors/resources which are assessed and described in the supporting environmental documentation, and have the potential to be significantly affected by the combination of the approved (committed) development and the proposed scheme; and
- **Criteria 3:** The approved (committed) development has sufficient environmental assessment information freely and publicly available to inform the inter-project cumulative effects assessment. The assessment of each approved (committed) development on the short list will be proportionate to the environmental assessment information available (N.B: An attempt will not be made to assess the potential environmental effects of any other development to inform the inter-project cumulative effects assessment. If there is an approved (committed) development that it is known will be progressed but has insufficient environmental assessment information, it still may be prudent to consider it in the inter-project cumulative effects assessment. This might take the form of listing the project and why it hasn't been considered in detail, or the potential cumulative effect could be discussed at a high level (qualitatively) using professional judgement).

15.24 Where an approved development meets all of the above criteria, it will be taken forward for further consideration in the assessment.

Determining significant cumulative effects

15.25 There is no formal guidance on the criteria for determining significance of cumulative effects. The following principles will be considered when assessing the significance of cumulative effects in relation to both intra-project and inter-project cumulative effects:

- Is there an intra-project and/ or inter-project effect on any receptors/resources;
- The nature of the receptors/resources affected;
- How the impacts identified combine to affect the condition of the receptor/resource;
- The probabilities of the impacts occurring in relation to each other in such a way so as to produce a cumulative effect, considering the extent and duration of the impact change;
- The ability of the receptor/resource to absorb further impacts; and
- Is the level of effect different to that considered at the proposed scheme level and is the in-combination effect significant or not.

Difficulties and uncertainties

15.26 The assessment of inter-project cumulative effects will be limited to publicly available information obtained from the relevant planning applications on the Ceredigion County Council and Carmarthenshire County Council planning portal. For some of the identified

approved developments, relevant information for this assessment may not be available. Where this is the case, the inter-project cumulative effects assessment will be based upon assumptions and professional judgement, and some statements made would rely on the review of mitigation measures proposed as part of the approved (committed) developments rather than the proposed scheme.

References

IEMA (2011). Special Report- The State of Environmental Impact Assessment Practice in the UK. Available at: <https://s3.eu-west-2.amazonaws.com/iema.net/documents/knowledge/policy/impact-assessment/2011-State-of-EIA-IEMA.pdf>.

Planning (Wales) Act (2015). Available at : <https://www.legislation.gov.uk/anaw/2015/4/contents/enacted>.

Planning Act (2008). (2008/29). Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents>.

Planning Inspectorate (2019). Advice note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects. Version 2. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/>.

The Developments of National Significance (Wales) Regulations (2016). Available at: <https://www.legislation.gov.uk/wsi/2016/56/contents>.