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Appendix 3.33 – Updated Construction Environmental Management Plan



SP MANWEB

The North Wales Wind Farms Connection Project

Environmental Statement Chapter 2 -
Description of Proposed Development
Technical Appendices

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**The Planning Act 2008
The Infrastructure Planning (Applications: Prescribed Forms and Procedure)
Regulations 2009
Regulation 5(2)(a)**

**The North Wales Wind Farms Connection Project
Outline Construction Environmental Management Plan**

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1	Introduction	1
1.1	Introduction	1
1.2	The Proposed Development.....	1
1.3	The Development Consent Order	2
1.4	Construction Environmental Management Plan	2
1.5	Structure of CEMP	3
1.6	Environmental Management System and Environmental Policy	4
1.7	Training	5
1.8	Consultation	6
1.9	Project Governance	7
1.10	Roles and Responsibilities	7
1.11	Risk Assessment.....	8
1.12	Environmental Emergency Response and Incident Management Procedures.....	9
2	General principles.....	11
2.1	Introduction	11
2.2	Health and Safety.....	12
2.3	Construction.....	12
2.4	Fencing	13
2.5	Water Supplies.....	13
2.6	Noise	14
2.7	Noise and Other Environmental Complaints Procedure	15
2.8	Air Quality.....	16
2.9	Vegetation Management	16
2.10	Housekeeping	17
2.11	Waste Management	18
2.12	Management of Public Rights of Way during Construction	19
2.13	Protection of Existing Infrastructure	20
2.14	Reinstatement	20
2.15	Biosecurity.....	20
2.16	Watercourses	23
2.17	Other Consents and Licences	24
3	Mitigation Measures.....	25
3.1	Introduction	25
3.2	Ecology and Biodiversity	25
3.3	Landscape and Visual.....	26
3.4	Historic Environment	27

3.5	Flood Risk and Water Quality.....	28
3.6	Land Use and Agriculture.....	29
3.7	Socio-Economic and Tourism	31
3.8	Traffic and Transport.....	31
3.9	Emissions.....	32

Appendix 1 – Example Toolbox Talks

Appendix 2 – Environmental Emergency Response Process

Appendix 3 – Hedgerow Management Plan

Appendix 4 – Ecological Management Plan

Appendix 5 – Traffic Management Plan

1 INTRODUCTION

1.1 Introduction

1.1.1 This outline Construction and Environmental Management Plan (CEMP) supports the application by SP Manweb plc (SP Manweb) under the Planning Act 2008 for the North Wales Wind Farms Connection project. An application has been submitted for development consent for a 132kV Overhead Line.

1.2 The Proposed Development

1.2.1 The Proposed Development includes the following principal elements, all of which are either the NSIP or form part of the NSIP:

- Construction of an approximate 17km 132kV overhead electricity distribution connection between Clocaenog Forest and a terminal pole located south of Glascoed Road, B5381, near to St Asaph, both in Denbighshire;
- A temporary construction compound at Broadleys Farm, A453, Denbighshire and temporary storage or 'laydown areas' along the alignment, without which the 132kV Overhead Line could not be constructed;
- Access points for pedestrians and vehicles along the length of the 132kV Overhead Line for the duration of construction, without which the 132 kV Overhead Line could not be constructed;
- Mitigation planting, and;
- Other integral works such as site preparation and clearance, earthworks, alteration of existing services, vegetation removal/planting and minor street works.

1.2.2 The main component of the Proposed Development is a new 17 kilometre 132,000 volt (132kV) Overhead Line from the proposed North Wales wind farm Collector Substation near Clocaenog Forest and which terminates in a field to the south of Trebanog, Groesffordd Marli (which is south of Glascoed Road, B5381), which is located approximately 1.8 kilometres from St Asaph substation.

1.2.3 The Order Limits also includes the land from an un-named highway to the south of Trebanog, Groesffordd Marli to the terminal point of the 132kV Overhead Line. The DCO includes the land rights to install (and keep installed), retain, use, inspect, maintain, renew, remove and relocate an underground cable in this land. The DCO application does not include the development consent for the underground cable.

1.2.4 The 132kV Overhead Line would comprise conductors supported by double wood poles. The wood poles are generally no larger than 470mm in diameter, and will range between 11m and 16.6m in length. Taking into account that the nominal depth of the poles is 2.5m and the steel bracings and insulators add typically 2.3m to the length, the net result is that the actual conductor height above ground (at pole positions) is about 0.2m less than the pole length referred to. The average span between poles is 79m.

- 1.2.5 The Order Limits for the Proposed Development contain a Limit of Deviation (LoD) within which the 132kV Overhead Line will be located. The LoD provides a degree of flexibility to ensure that any environmental constraints, technical constraints or landowner requests can be accommodated. The LoD varies between 20m in areas with good ground conditions and 40m in areas with poor ground conditions.
- 1.2.6 The EIA assesses the Proposed Development.

The Wider Scheme

- 1.2.7 The Proposed Development does not include all elements of the North Wales Wind Farms Connection and those elements not included within the Proposed Development are known as the Wider Scheme. This is because the following elements are considered to be "Associated Development", which, in Wales, cannot be included in an application for a development consent order. The Wider Scheme comprises:
- proposed works to St Asaph substation, including the development of an underground cable taking the connection point at St Asaph to the terminal point of the Proposed Development located in a field to the south of Trebanog, Groesffordd Marli (which is south of Glascoed Road, B5381)
 - a new 132 kV electrical substation at Clocaenog Forest to act as the collector substation for four consented wind farms;
 - temporary storage areas within the existing St Asaph substation and the Collector Substation at Clocaenog Forest; and
 - diversions of existing of lower voltage overhead line crossings.

1.3 The Development Consent Order

- 1.3.1 This document has been prepared as an Application document in connection with the Proposed Development in order to comply with the requirements of Regulation 5(2)(q) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 and in accordance with the Department for Communities and Local Government guidance 'Planning Act 2008: Application Form Guidance' and the Planning Inspectorate Advice Note 6 on Preparation of Application documents under section 37 of the Planning Act 2008. It is required in order to set out the standards for construction to be adopted when constructing the Proposed Development.

1.4 Construction Environmental Management Plan

- 1.4.1 This CEMP, prepared in outline, supports the application for a Development Consent Order (DCO) for the North Wales Wind Farms Connection Project (the "Proposed Development"). It sets out the management measures which SP Manweb PLC ("SP Manweb") will require its contractors to adopt and implement for any construction works for the Proposed Development, including site preparation works, infrastructure construction and commissioning of the Proposed Development.

- 1.4.2 The CEMP also covers all site preparation, material delivery, excavated materials, waste removal and all related engineering and construction activities associated with the Proposed Development.
- 1.4.3 The CEMP is designed to maintain a good level of environmental protection and limit disturbance (to both people and the environment) from construction activities as far as reasonably practicable.
- 1.4.4 The CEMP is secured through a requirement in the DCO.
- 1.4.5 The CEMP has been prepared with the objective of securing environmental management controls in one cohesive document for the construction works associated with the Proposed Development and securing mitigation identified in the Environmental Statement (ES) to mitigate the impact of the Proposed Development.
- 1.4.6 The Design and Construction Report (Document reference 7.1) describes the construction aspects of the Proposed Development in detail and will form part of a Code of Construction Practice that will detail site operations and any statutory duties and requirements.
- 1.4.7 The Proposed Development shall be carried out in accordance with the CEMP.

1.5 Structure of CEMP

- 1.5.1 This first section of the CEMP sets out the background to the Proposed Development, SP Manweb policy and processes and the roles and responsibilities for the Proposed Development.
- 1.5.2 The CEMP then goes on to set out the general principles and mitigation measure for construction activities across the Proposed Development and provides the framework for the preparation of detailed construction method statements for the Project. Whilst embedded mitigation measures are outlined within the specific topic sections, air quality and noise are included within Section 2 (General Principles) given the nature of these elements and the way in which construction activities are controlled. The ES describes these measures as embedded mitigation and they are generally measures that are adopted by SP Manweb for all major electrical infrastructure projects and so are described differently to other embedded mitigation in this document.
- 1.5.3 The CEMP describes the general principles and site operations required for all construction works. The general principles cover the following elements:
- Health and safety
 - Construction
 - Fencing
 - Noise
 - Noise and Other Environmental Complaints Procedure
 - Air Quality
 - Tree trimming
 - Housekeeping

- Waste management
- Management of public rights of way during construction
- Protection of existing infrastructure
- Reinstatement
- Biosecurity
- Other consents and licences

1.5.4 The CEMP also describes the mitigation measures identified in the ES. These mitigation measures will be adopted during the construction of the Proposed Development and implemented to reduce risk in relation to the following environmental aspects:

- Biodiversity
- Landscape and Visual
- Historic Environment
- Flood Risk and Water Quality
- Land Use and Agriculture
- Socio-Economic and Tourism
- Traffic and Transport
- Emissions

1.5.5 The CEMP is also supported by a number of outline management plans that set out detailed requirements for specific, sensitive activities associated with the Proposed Development. Accompanying the CEMP is:

- an outline Ecological Management Plan;
- an outline Hedgerow Management Plan; and
- an outline Traffic Management Plan

1.6 Environmental Management System and Environmental Policy

1.6.1 SP Manweb maintains an Environmental Management System (EMS) which provides a framework to manage and reduce the company's effects on the environment. The EMS is accredited to ISO14001:2004 and is now part of SP Manweb's Integrated Management System (IMS).

1.6.2 In accordance with the ScottishPower group-wide environmental commitments SP Manweb is committed to reducing and controlling environmental risks and impacts, and where practicable, enhancing the environment. The following environmental policy communicates these commitments to staff, customers, contractors and other third party stakeholders.

Policy Commitments

1.6.3 SP Manweb's environmental policy commitments are as follows:

- Incorporate environmental issues into our business decision making process ensuring compliance with or improvement on legislative and industry regulatory requirements and taking sustainability issues into account;
- Ensure commitment to continual improvement and develop our environmental governance and management systems, considering changing business aspects and impacts, new technologies, risk minimisation, impact mitigation and resources use.

- Monitor performance against quantifiable environmental objectives relating to reduction of environmental impact, resource use and environmental risk, and risk management and compliance issues.
- Monitor and review current and developing environmental issues applicable to the business and participating via consultation and initiatives with Government agencies, trade bodies, public stakeholders and regulatory bodies.
- Promote and practice efficient storage, distribution, control and use of material resources including energy, water and fuel taking into account lifecycle issues.
- Promote and practice waste minimisation, encouraging beneficial re use or recycling of materials where feasible. Throughout our operations ensure legally compliant waste management and disposal operations preferred recycling and recovery as final options over landfill.
- Recognise and understand the value to society of biological diversity and natural and cultural heritage, striving within the scope of our operations to conserve, preserve, mitigate or enhance adverse effects.
- Complete regular audit programmes and action findings on a timely basis identifying compliance with legislation or statutory guidance and with Scottish Power and SP Energy Networks policies and procedures.
- Establish, maintain and test procedures and provisions to prevent, respond to and control pollution, ensuring timely response reporting and investigation of incidents meeting regulatory expectations and EMS and other operational procedures.
- Ensure the competence of staff, involving them in environmental issues and providing them with appropriate training and development allowing them to carry out their duties in a responsible manner.

1.7 Training

- 1.7.1 Construction Contractors will be required to secure procedures for environmental training, in accordance with this CEMP, of all permanent site staff in the construction documentation. Temporary staff will be provided with the necessary environmental training through 'Toolbox Talks'.
- 1.7.2 Toolbox talks will focus on simple guidelines to best working practice, complying with the law, minimising impact on the environment and using resources wisely. Examples of topics to be covered by Toolbox Talks include:
- Material Storage and Handling – outlines practices for handling and storage of key materials such as oil, oil-filled equipment and pesticides;
 - Natural and Built Environment – outlines detail on working in close proximity to protected wildlife species, special sites and archaeological features;
 - Pollution Prevention and Response – provides guidance regarding preventing pollution incidents and what to do if one occurs;
 - Nuisance and Statutory Nuisance – provides guidance on preventing nuisance complaints from customers and other regulatory stakeholders; and,

- Resources, Waste and Transport – provides guidance on effective use of resources such as energy and water, management of wastes and road transport.

1.7.3 Example Toolbox Talks can be found in Appendix 1. A full suite will be included in the Construction Contractors environmental documentation.

1.8 Consultation

1.8.1 SP Manweb has carried out multi-staged consultation for the Proposed Development engaging with local authorities, statutory and non-statutory bodies throughout the development of the Proposed Development.

1.8.2 Statutory consultation pursuant to S.42 of the Planning Act 2008 sought comments on the Preliminary Environmental Information Report (PEIR) of the Proposed Development. These comments have been taken into account in the design of the Proposed Development, the ES and this draft CEMP.

1.8.3 Consultation will continue throughout the construction phases of the Proposed Development. As explain in Chapter 2 of the ES (DCO Document Reference 6.2) there are elements of the North Wales Wind Farms Connection Project that are not included within the DCO but which are necessary for the North Wales Wind Farms Connection Project. It is anticipated that a number of these elements, including the wind farms which will connect into the 132kV Overhead Line, will be constructed at the same time as the Proposed Development. SP Manweb has been liaising closely with the wind farm developers to understand their construction programmes and potential overlaps between works.

1.8.4 SP Manweb considers the construction works at Clocaenog Forest to be the works with the most potential for overlaps and for activities to be in close proximity of each other, although for a short period of time for the 132kV Overhead Line construction.

1.8.5 SP Manweb will continue to liaise directly and closely with RWE Innogy Ltd (the developer of Clocaenog Forest) and the relevant planning and highways authorities to ensure each party is aware of the other's construction activities. SP Manweb will work with RWE Innogy Ltd to plan, monitor and manage works so that disruption to local communities, construction activites and potential cumulative environmental effects are kept to a minimum.

1.8.6 SP Manweb will also liaise with the relevant planning and highways authorities to identify if other developments are proposed to be constructed in similar locations and timescales to the Proposed Development. SP Manweb is aware that DONG Energy has recently started construction of their substation and underground cable connection for the Burbo Bank Extension. It is considered that this construction work may be complete by the time construction work starts on the Proposed Development but SP Manweb will continue to liaise with the developer in order to understand any potential overlaps.

1.8.7 The CEMP is a 'live' document, meaning that it will be continuously updated and will be refined and/or enhanced where this is required throughout the Examination process and prior to submission in accordance with DCO.

1.9 Project Governance

- 1.9.1 Project governance and organisation is the management framework that controls the Proposed Development and ensures clear accountability, timely decision-making as well as representation of key stakeholders.
- 1.9.2 For this Proposed Development clear accountability and responsibilities will be defined for all major participants with nominated individuals to represent SP Manweb, key suppliers and contractors to the Proposed Development. The Proposed Development structure will also define responsibilities for Health and Safety, Financial/budget control and stakeholder management.
- 1.9.3 There will be a nominated individual appointed by SP Manweb, to be known as the “Project Manager”, who will be in overall control of the day to day Proposed Development construction activities. Each major supplier and contractor will also include a nominated individual holding responsibility for this Proposed Development within their organisation. The Project Manager will be responsible for holding regular progress meetings, conducting effective project risk management, budgetary control and issue management. The Project Manager will also report on Proposed Development progress within the SP Manweb organisation.
- 1.9.4 Health, Safety and Environment (HSE) is of paramount importance and a nominated HSE officer will report directly to the Project Manager on all HSE matters, deviations and concerns.
- 1.9.5 The key stakeholders, in this case, will include environmental organisations such as Natural Resources Wales (NRW), the local authorities, landowners and other interested parties. An individual will be nominated as responsible for liaison with these organisations, seeking opinion on key issues and keeping these parties informed of Proposed Development progress.

1.10 Roles and Responsibilities

- 1.10.1 Establishing roles and responsibilities on site is important to ensure the successful construction of the Proposed Development, including the implementation of the CEMP. This CEMP will form part of the contractual documentation used when appointing a lead company to construct the Proposed Development (“Construction Contractor”). Both SP Manweb and the Construction Contractor will have roles in ensuring compliance with the CEMP.

SP Manweb

- 1.10.2 SP Manweb will be responsible for ensuring that all relevant DCO requirements under the control of SP Manweb are satisfactorily met, thereby ensuring the environmental impacts of the Proposed Development are kept to a practicable minimum.
- 1.10.3 SP Manweb will be responsible for reviewing risk assessments and method statements provided by the Construction Contractor and will carry out site audits and monitoring to ensure compliance with the CEMP.

- 1.10.4 Day to day responsibility for ensuring responsibilities of the CEMP and its supporting management plans are met will fall to the SP Manweb Environmental Clerk of Works ("ECoW").

Construction Contractor

- 1.10.5 Appropriate contractors will be appointed for the Proposed Development by SP Manweb. The successful Construction Contractor will appoint a Project Manager to be responsible for ensuring all works are undertaken strictly in accordance with the contract terms and conditions.
- 1.10.6 The Construction Contractor's Project Manager will be responsible for ensuring the general principles and mitigation measures identified in this CEMP are incorporated into the risk assessments and construction method statements to be produced for the Proposed Development.
- 1.10.7 The Construction Contractor's Project Manager will be responsible for ensuring the construction works are supervised on a day to day basis and for carrying out regular site inspections to ensure all works personnel are aware of the general principles and mitigation measures detailed in this document.
- 1.10.8 The Construction Contractor's Project Manager will take all reasonable precautions and undertake all reasonable measures under their control to ensure that all legal requirements are complied with and that no unnecessary damage, disturbance or pollution results from undertaking the works.

Environmental Clerk of Works

- 1.10.9 The SP Manweb ECoW will have day to day responsibility for ensuring the requirements of the CEMP are met. The ECoW will also appoint and manage any requirements for ecologists and archaeologists.
- 1.10.10 Ecologists and archaeologists will be appointed by the ECoW to carry out and oversee the site specific mitigation measures. The archaeologists will develop, consult and implement the Written Scheme of Investigation.

1.11 Risk Assessment

- 1.11.1 Risk assessments are a legal requirement and in particular, where significant risks exist, the assessment should be recorded. The Construction Contractor's Project Manager will be required to produce site specific risk assessments which;
- carefully examine the risk;
 - identify control measures;
 - implement control measures.
- 1.11.2 The risk assessments will provide SP Manweb and the construction staff with general information relating to the work being undertaken and should:
- be conducted prior to work commencing;
 - be amended where hazards and risk factors change during the work period;
 - be discussed with those affected by the work activity;

- communicate effectively those significant risks that remain to those affected by the work activity; and
- be reviewed to ensure control measures are appropriate and remain appropriate.

1.12 Environmental Emergency Response and Incident Management Procedures

1.12.1 The Construction Contractor's Project Manager will be responsible for developing and implementing a plan that will set out the procedures to follow in the event of an incident on site.

1.12.2 The plan will be designed to manage any incidents and limit adverse effects on the environment. The following measures and information will be included and detailed further in a plan:

- describe the procedure to follow in the event of an incident;
- describe the procedure for the notification of the emergency services and personnel on the construction site;
- describe the procedure for the notification of statutory bodies, environmental regulators, local authorities etc.;
- provide contact details for the relevant emergency services, statutory bodies, environmental regulators, local authorities etc.;
- provide contact details for the site personnel responsible for incident and pollution control; and
- provide contact details of appointed spill response.

1.12.3 SP Manweb has developed a process to be followed when responding to emergencies ("Environmental Emergency Response Process"), (see Appendix 2) which will form the basis of the plan outlined at paragraph 1.12.2. The Environmental Emergency Response Process sets out a number of factors that should be considered and included in the incident plan:

- the nature, volume and location of any substances or wastes stored (including fuels);
- the type and layout of any drainage systems on site and any interceptor protection;
- arrangements for de watering trenches and excavations;
- likely pollution incidents;
- the proximity and sensitivity of watercourses and protected wildlife areas;
- the requirements for training of personnel;
- the possibility of effect of an incident on any third party undertaking;
- communication between contractors, SP Manweb and statutory authorities;
- the requirements for location, type and quantity of spillage control equipment;
- the responsibility of persons for actions to prevent of contain pollution;
- the working methods being undertaken; and
- arrangements in case of fire.

1.12.4 Timely and accurate reporting of incidents is essential in order to:

- allow initial response and follow up support activities to commence;
- provide a baseline body of information for subsequent investigation;

- form a record of the event allowing performance measurement, reporting and the identification of trends following analysis and review; and
- meet corporate office reporting requirements.

Construction Contractor Project Manager

- 1.12.5 The Construction Contractor's Project Manager must report all incidents by the quickest practical means:
- limited incidents must be reported by the end of the working day and no later than the next calendar day; and
 - major incidents must be reported immediately.
- 1.12.6 The Construction Contractor must co-operate in any investigation following an incident and must not interfere with any plant, equipment or material involved in the incident until informed otherwise (other than to ensure no further incidents occur).

2 GENERAL PRINCIPLES

2.1 Introduction

- 2.1.1 Overhead lines must conform to the specifications contained in HM Government's Electricity Supply Regulations 1988 and the Electrical Safety, Quality and Continuity Regulations 2002 and 2006. Overhead lines are also constructed to conform to the Electricity Supply Industry's own engineering standards (TS2.04 and TS2.24), which govern the minimum clearances to be provided between the conductors, roads, trees and other features.
- 2.1.2 The Proposed Development will be constructed in an environmentally sensitive manner and in particular will meet the requirements of all relevant legislation, codes of practice and standards as identified in Chapter 4 of the ES (document reference 6.4).
- 2.1.3 More specifically SP Manweb is committed to ensuring that the 132kV Overhead Line is built in accordance with current best practice for minimising the adverse effects of construction on the environment and the local community.
- 2.1.4 General hours of work are 07.00 to 19.00 in the months of March to October and 07.30 to 17.30 or as daylight allows in the months November to February. Some works may be required outside of the core hours. This will be limited to: the following:
- a. the installation and removal of protective netting across highways or watercourses. This is because it is necessary to have a short duration when roads are closed in order to install and recover the safety netting, and this is often carried out, particularly on A roads, at the request of highway authorities out of hours and at a time which will cause minimum disruption. This is further explained and documented within the Design and Construction Report (DCO Document Reference 7.1) at section 5 of the document;
 - b. the completion of operations commenced during the core working hours which cannot be safely stopped. This is to ensure safe working practices are maintained and to protect things such as conductors during winch operations which once started should not be stopped as this may risk damage to the conductor; and
 - c. start up and close down activities 1 hour either side of the core working hours to enable efficient mobilisation of construction activities. This would include the arrival at the construction compound of staff members and the preparation of material required for the day's activities. This would also include the return of staff and materials to the construction compound at the end of the day following construction activities not local to the compound.
- 2.1.5 Piling, if required, will only take place between 09.00 and 17.00 Mondays to Friday, excluding public holidays.
- 2.1.6 The number of construction staff working on the Overhead Line at any one time including, for example, delivery and excavator drivers, will be between 20 and 25.

2.1.7 Additionally there will be 3 or 4 support staff employed at the main construction compound.

2.2 Health and Safety

2.2.1 SP Manweb recognises that its decisions and activities have a direct impact on the health, safety and welfare of those working for the company and on its behalf. SP Manweb will set specific health and safety goals and monitor performance in relation to the construction, operation or maintenance of the Proposed Development. SP Manweb's commitments are:

- Demonstrate our commitment to health and safety by our actions and behaviours.
- Ensure that health and safety issues are fully considered as an integral part of project management throughout the Proposed Development life; from design, through construction, operation and maintenance and future decommissioning.
- Require all designers to consider and include the control measures necessary to minimise the risks to the health and safety of all those engaged in construction, operation and maintenance of the Proposed Development or to others who may be affected.
- Ensure that suitably competent SP Manweb employees and other designers, engineers, supervisors and contractors from other organisations are engaged to undertake the responsibilities associated with the Proposed Development.
- Ensure that all products, materials and processes used in construction, operation and maintenance present no significant risk to the health and safety of persons carrying out those duties or to others who may be affected by that activity.
- Ensure that suitable and sufficient resources, (including labour, materials, time and finances), are made available to effectively manage the health and safety requirements.
- Require that all those parties involved in the construction, operation and maintenance of the Proposed Development fulfil their roles and responsibilities both legal and organisational to health, safety and welfare.
- Require that parties involved in the construction of the Proposed Development have, where appropriate, a readily available, valid, suitable and sufficient pre construction information and health and safety plan as defined in the CDM Regulations.
- Ensure that upon completion of construction activity a suitable and sufficient health and safety file is completed and transferred, where appropriate, to SP Manweb by the Construction Contractor.

2.3 Construction

2.3.1 Prior to the start of construction, the Construction Contractor will communicate with the relevant local stakeholder regarding the phasing and start of the construction works. Ongoing dialogue will have been occurring with the relevant local authorities and NRW regarding traffic management measures/ highways condition survey and for the discharge of any relevant DCO requirements.

2.3.2 Generally the construction sequence will be as follows:

- i) Pre-Construction Enabling Works
 - Ground investigation survey at excavations to identify foundation requirements
 - Tree trimming and coppicing
 - Undergrounding or diversion of lower voltage overhead line crossings

- ii) Site Set Up
 - Establishment of secure storage area, welfare cabins, and temporary offices;
 - Construction of temporary site access points where required
 - Erection of temporary works access signing and access route signing
 - Construction of temporary stone haul roads
 - Scaffolding of road crossings
 - Construction of hard stands for winches

- iii) Delivery of materials to site

- iv) Pole Erection and Conductor Stringing
 - Excavations for foundations
 - Dressing and erection of poles
 - Installation of temporary stays
 - Running out of conductor pulling bonds
 - Installation of insulators and conductors
 - Commissioning

- v) Demobilisation
 - Removal of welfare cabins, temporary offices, work compounds and storage areas
 - Removal of temporary access tracks, working areas and demarcation zones, and reinstatement of fields
 - Removal of temporary access points and signing
 - Reinstatement of verges & hedgerows

2.4 Fencing

- 2.4.1 Fencing may be required in proximity to the Proposed Development at the request of landowners or in the vicinity of public rights of way. Fencing may be provided along temporary access tracks, surrounding excavations for pole positions or around winching and pulling positions. Fencing will be temporary for the duration of the construction works. It may also be left in situ at the request of a landowner.

- 2.4.2 If fencing is to be provided during construction and there is a risk of local flood water, the construction will be post and wire to ensure the free passage of local flood water.

2.5 Water Supplies

- 2.5.1 Discussion will be undertaken with affected landowners to identify water supplies used for livestock. During construction, if livestock are unable to be relocated away from the actual work areas and grazed elsewhere, SP Manweb will provide replacement water sources through the provision of additional water piping or water troughs.
- 2.5.2 If there is a temporary or permanent loss of private water supply, SP Manweb will provide replacement water supply to affected individuals.

2.6 Noise

- 2.6.1 SP Manweb recognises that construction noise can be a nuisance in a quiet rural area and proposed to include a number of embedded mitigation measures to minimise to potential for disturbance. These are described below.
- 2.6.2 Where necessary, suitable plant and working methods that have the potential to cause a noise nuisance will be discussed and agreed in consultation with the relevant local authority.
- 2.6.3 The ES Chapter 13 Emissions (DCO Document Reference 6.13) identifies that appropriate embedded mitigation measures to minimise noise and vibration would be imposed upon the Construction Contractor, who would also be required to liaise with the Local Authorities' Environmental Health Department (EHD) to minimise impacts at all times. Control measures routinely applied in this way would include the following:
- limiting site work where possible to daytime hours
- 2.6.4 To ensure noise does not become a nuisance during construction activities the following principles will be applied wherever possible:
- Where practicable, inherently quiet plant will be selected to provide reduction of noise at source (reducing the number of plant can reduce the intensity of the activity, although this will serve to prolong the period of activity and consequently noise generation);
 - Controlling noise at source by using effective silencers on machines;
 - The use, where necessary and practicable, of enclosures and screens around noisy fixed plant;
 - Location and orientation of plant shall be away from nearest sensitive receptors wherever possible;
 - Avoiding unnecessary running of machinery, and;
 - Construction contractors will be required to adhere to the Code of Construction Practice given in BS 5228 and the Control of Pollution Act 1974 to minimise noise emissions.
- 2.6.5 Construction traffic will result in a slight increase in overall traffic numbers in the vicinity of the site. To further reduce the potential effects the following general principles are recommended:
- Deliveries and waste removal from the construction compound is scheduled to specific times where possible; and
 - The capacity of any potential haulage vehicles are maximised to reduce the number of trips made.

- 2.6.6 For some areas where the ground condition is found to be very poor it may be necessary to design additional measures such as a concrete or screw anchor pile foundations. Where pile foundations are required, the appointed Construction Contractor shall adhere to requirements in addition to those outlined in paragraphs 2.6.3 and 2.6.4 of this CEMP. Part 4 of BS 5228 (Code of practice for noise and vibration control applicable to piling operations) will also form a requirement of the Construction Contractor.
- 2.6.7 Although dependant on the final designed solution, which will be developed giving consideration to construction techniques and constraints relating to noise, such additional requirements could include the following:
- Consider applying alternative techniques;
 - daytime working hours for piling activities;
 - noise monitoring;
 - fitting of silencers to plant and equipment;
 - reduction of impact noise for driven piles by using non-metallic driving components;
 - screening;
 - use of acoustic shrouds/enclosures on pile driving system;
 - good community relations; and
 - complaints contact line.

2.7 Noise and Other Environmental Complaints Procedure

- 2.7.1 It is not anticipated that complaints of noise will arise as a result of the operation of the 132kV Overhead Line. However, parties in the close vicinity of the construction works are most likely to be affected by noise. The following steps will be taken to make the public aware of the activities on site and the available lines of communication with SP Manweb:
- Local residents will be notified of the start of works and the likely duration of the overall construction phase;
 - A telephone number for complaints will be published locally to the site. The Construction Contractor Project Manager will be responsible for dealing with any complaints and will have the appropriate authority to resolve any issues that may occur;
 - All complaints will be recorded and reviewed by the Construction Contractor Project Manager and SP Manweb ECoW on a weekly basis. As part of the incident management procedures, measures shall be put in place to ensure that any complaints do not re-occur. The SP Manweb ECoW and Construction Contractor Project Manager shall review the complaint received and agree a course of action to minimise the current issue and to ensure that the issue does not occur again. Courses of action may include;
 - alternative methods of construction;
 - reduced working hours; and
 - additional notification and/or discussion with affected party.

2.8 Air Quality

2.8.1 The ES Chapter 13 Emissions (DCO Document Reference 6.13) identifies that appropriate embedded mitigation measures to minimise the impact on air quality are required. These and other potential measures are described below.

2.8.2 The emissions of pollutants and creation of dust from on-site vehicles, plant and construction activities will be minimised as far as is practicable. These measures will include:

- Ensuring all vehicle movements are kept to the absolute minimum;
- Rigorously enforcing appropriate speed limits for all construction vehicles;
- Using low emission vehicles and plant fitted with catalysis, diesel particulate filters or similar devices;
- Requiring that plant is well maintained, with routine servicing of plant and vehicles to be carried out in accordance with manufacturer's recommendations;
- Requiring that all construction vehicles hold current MOT certificates and that they comply with the exhaust emission regulations for their class;
- Requiring all vehicles to switch off engines when not in use;
- Minimising the use of diesel or petrol powered generators and using mains electricity or battery powered equipment where practicable;
- No burning of waste materials to be permitted on site;
- Vehicle loads to be sheeted during the transportation of loose or potentially dusty material or spoil; and
- Regular cleaning of site work areas and wheel washing facilities if necessary.

2.9 Vegetation Management

2.9.1 Where the 132kV Overhead Line passes over, or is in close proximity, to vegetation that could infringe the safety clearance from live conductors then these will be either felled or trimmed prior to construction of the line. SP Manweb carries out vegetation clearance to the Engineering Networks Association (ENA) Technical Specification (TS) 43-8, which represents best current practice in the UK for clearances for overhead lines and includes the statutory ground clearance requirements of the Electricity Safety, Quality and Continuity Regulations (ESQCR). In summary, SP Manweb has a duty under the ESQCR regulations to keep sufficient distance between vegetation and overhead lines both to safeguard public safety and to ensure continuity of supply.

2.9.2 Guidance on how SP Manweb should ensure that sufficient clearance distances between vegetation and the overhead lines can be achieved is contained in ENA Engineering Technical Report 132 - Improving Network Performance under Abnormal Weather Conditions by Use Of A Risk Based Approach To Vegetation Management Near Electric Overhead Lines. This is a risk based assessment which makes an allowance for the tree species and expected growth rates, and the frequency of return visits by the tree cutting contractors.

- 2.9.3 Generally it will be necessary to ensure that the clearance from trees and vegetation under the 132kV Overhead Line and trees adjacent remain in accordance with ENA-TS 43-8. For the wooded areas through which the 132kV Overhead Line passes it is expected that it will be necessary to cut and trim trees immediately under the line and additionally it may be deemed necessary to trim, or remove, some trees which are within falling distance of the line. In areas where such cutting and trimming takes place, SP Manweb would normally not expect to have to take such action again for at least 5 years from the last visit.
- 2.9.4 Tree protection in and around construction working areas will be in accordance with BS5837: 2012.
- 2.9.5 Forestry clearance will occur at a rate of 0.5 hectares per day. Four hectares are required to be felled for the Proposed Development, with an estimated timescale of 8 days for felling. Brash mats will be used to protect soil structure in forestry areas. The brash material will be sourced from the clearance works undertaken on site and there will be no requirement to import this material.
- 2.9.6 New accesses into fields may be required to facilitate the construction of the Proposed Development. Wherever possible, accesses have been located at existing field gates. These may be required to be extended to from a standard gate to create a 5m wide gated access. Where no access exists, a new temporary 5m wide gated access will be required. All new accesses will be reinstated following construction of the Proposed Development.
- 2.9.7 An outline Hedgerow Management Plan is appended to this CEMP (Appendix 4). The document described the hedgerow management measures required to be adopted and implemented for construction works associated with the Proposed Development.

2.10 Housekeeping

- 2.10.1 Good housekeeping practice will be applied at all times. The following principles will be applied by the Construction Contractor:
- Signage and boundary fences, where required, will be regularly inspected, repaired and replaced as necessary;
 - Where necessary, all working areas will be appropriately fenced off from members of the public and to prevent animals from straying onto a working area;
 - All working areas will be kept in a clean and tidy condition;
 - Poles will arrive at the site already pre-treated;
 - Fuel, oil and chemical storage will only occur at the construction compound and must be sited on an impervious base within a bund and secured. Any other materials that could spill are not to be stored along the route alignment but confined to the construction compound. The base and bund must be impermeable to the material stored and of adequate capacity. Leaking or empty drums must be removed from the site immediately and disposed of by registered waste disposal contractor;
 - Refuelling of all vehicles will take place at the construction compound only;
 - Drip trays will be placed under vehicles whilst stationary;

- Servicing of vehicles will only take place at the construction compound;
- All practicable measures will be taken to minimise the risk of fire and the Contractor will comply with the requirements of the local fire authority; and
- Adequate toilet facilities will be provided for all site staff.

2.11 Waste Management

2.11.1 SP Manweb promotes and practices waste minimisation, encouraging beneficial re use or recycling of materials where feasible. The Construction Contractor will be required to ensure construction is legally compliant with waste management standards and legislation. SP Manweb prefers recycling and recovery and only uses landfill as a final option over landfill. It will encourage this approach with the Construction Contractor.

2.11.2 As far as reasonably practicable the following embedded mitigation measures will be applied by the Construction Contractor:

- Waste will be removed at frequent intervals;
- All waste will be identified, quantified and where practicable appropriately segregated and recycled;
- Site waste susceptible to spreading by wind or liable to cause litter will be stored in secure containers;
- Only registered carriers will be used to take waste off-site;
- No burning of material will be permitted on site;
- In the event of a spillage, all contaminated material will be removed from the sites to a licensed waste facility;
- Only soil that is to be re-used will be stored on site; and
- Any soil moved, handled or stored on site will be treated in accordance with Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

2.11.3 The main contractor will be required to develop a Site Waste Management Plan (SWMP). The SWMP will set the framework for the management of wastes generated during the construction process. It will document the decisions taken during the planning and design stages to minimise waste and set objectives and targets for the main waste types. It will also identify the following:

- responsibilities within the construction team for waste management;
- the types of waste and the quantities likely to be generated;
- measures to be adopted during construction to minimise waste generated;
- opportunities for recycling and/or reuse;
- proposed treatment and disposal sites together with details of their Environmental Permit; and
- provisions for staff training and use of the SWMP.

2.12 Management of Public Rights of Way during Construction

- 2.12.1 The Access and Rights of Way Plans (ARoW plans, DCO Document Reference 2.4.1 to 2.4.13 inclusive) show any new or altered means of access, affected rights of way and temporary closures of rights of way. The Design and Construction Report (DCO Document Reference 7.1), detail the Public Rights of Way (PRoW) crossed by the Proposed Development, identifies what management is required for that PRoW for the duration of the construction works and sets out whether a temporary diversion is required.

General Management of PRoWs

- 2.12.2 The DCO grants powers to temporarily prohibit PRoW affected by the Proposed Development; however the majority of the PRoW will be prohibited for short durations only and it is SP Manweb's intention to keep the majority of PRoW open via management.
- 2.12.3 All points where PRoWs cross the Proposed Development, there will be appropriate signage advising of dates and hours of work. Management will involve the use of construction staff at those crossing points where and when construction works affect a PRoW. In these instances PRoW users may have to wait for a short period of time whilst the PRoW is in use by the construction team. Users will be advised when works are completed and it is safe to cross the PRoW by staff at the crossing point.

Temporary PRoW Closure and Temporary Diversions

- 2.12.4 Where the Proposed Development is likely to affect existing PRoW, they may be temporarily closed or diverted.
- 2.12.5 A PRoW may be identified for a temporary closure or diversion for a period of up to two weeks due to excavation works or potential safety risks to the general public. SP Manweb will endeavour to ensure closure/diversions durations are minimised as far as possible and PRoW will be reopened at the earliest opportunity if no longer affected by the construction activities.
- 2.12.6 Where temporary closures are required these have been discussed with the relevant local PRoW officer. Following the grant of the DCO the landowners will be consulted prior to its implementation. SP Manweb will agree the procedure for closures with the relevant local authority PRoW officer.
- 2.12.7 No diversions are proposed for the PRoWs that will be closed, due to the short duration of the closure and the feasibility of a diversion.
- 2.12.8 Closure notices will be discussed with the relevant PRoW officer and will be advertised in advance of the planned closure. Signage will be used to advise of the proposed closure with dates and hours of closure.

Safety Measures in relation to PRoWs

2.12.9 Management, temporary closures or diversions of PRowS are all proposed to protect the general public from construction activities. If required, fencing will be erected where appropriate to form a safe corridor for users of the PRow. The type and size of the fencing will be agreed with the local landowner and local PRow officer, if required, prior to the start of construction. Regular inspections will take place to ensure signage and fencing are in place and the PRow is suitable for use.

2.13 Protection of Existing Infrastructure

2.13.1 All underground services in the vicinity of the works will be determined via information from the utilities or other companies that may have an interest, such as (for example) owners of underground fuel pipes for example. The location of existing infrastructure, including any underground services, will also be verified on site prior to the commencement of any construction works.

2.13.2 Planned excavations will avoid all known underground services. Additionally the necessary remedial actions will be carried out to safeguard services discovered during the course of the works, which may include the attendance of the utility representative at site.

2.13.3 All existing buildings, structures and services will be safeguarded as necessary to ensure they are protected from harm, disturbance or deterioration during the construction period.

2.14 Reinstatement

2.14.1 Any land temporarily used for the construction of the Proposed Development will be reinstated by the Construction Contractor. Restoration of land is controlled under a requirement of the DCO. Any land used temporarily for construction of the Proposed Development and not to be used for landscaping is to be reinstated to its former condition or such condition as the relevant planning authority may approve. The reinstatement works will be completed within twelve months of completion of the Proposed Development.

2.15 Biosecurity

2.15.1 Good biosecurity practice helps to minimise the risk of disease occurring or spreading, safeguarding the health and welfare of animals and protecting the viability of businesses. Good biosecurity reduces the spread of disease, improves farm efficiency and keeps new diseases out.

Biosecurity - Animal Disease

2.15.2 SP Manweb is committed to observing precautions recommended by Government agencies. DEFRA hold primary regulatory responsibility for management of biosecurity and implementation of controls to prevent, restrict, control and eradicate outbreaks of animal disease. During outbreaks it may refer to other government agencies to bring these controls to bear by issue of restriction, prohibitions and compulsory actions on those directly affected including any indirect third parties. Breach of the requirements and license restrictions may be an offence.

2.15.3 DEFRA has produced guidance relevant to livestock owners, landowners and third parties entitled 'Biosecurity Guidance to Prevent the Spread of Animal Diseases'. A number of the biosecurity measures are relevant for SP Manweb and the Proposed Development, which will be adopted where the potential for spread of animal disease has been identified through discussions with landowners and the relevant authorities:

- Where appropriate the visit should be made with the agreement of the owner or premises manager and any reasonable requests for additional biosecurity measures should be observed, especially if contractors have visited other premises with farm animals in the previous 3 days.
- Livestock vehicles or trailers must be cleansed and disinfected in accordance with current legislation.
- If other vehicles are taken on to the premises they should, wherever possible, be parked on hard standing away from farm animals and must be visibly free of, for example, animal excreta and slurry. Vehicles or trailers should not normally be taken into areas where farm animals have access – these arrangements should be confirmed, where appropriate, with the owner or premises manager in advance of the visit. Before leaving the premises all visible contamination with manure, slurry or similar material must be removed (including where appropriate, cleaning of the inside of vehicles, especially foot wells and pedals). If this is not possible, vehicles and trailers must be cleaned before they are taken onto other premises with farm animals, either at the end of the day or before the next visit.
- Owners or farm managers are recommended to have facilities available for disinfecting vehicles, footwear and clothing. If facilities are NOT available on farm, cleansing and disinfection should be arranged as soon as possible and before the next visit to premises with farm animals.
- Suitable protective clothing and footwear must be worn on all premises where visits include entering areas where farm animals are present or to which they normally have access. The type of protective clothing and footwear required depends on the nature of the visit (e.g. the protection required for a visit to a dairy herd would differ from that required for a visit to extensive premises on moorland). Contractors should ensure clothing is changed and washed between visits to different premises.
- The purpose of the protective clothing and footwear is to prevent any contamination being carried from premises to premises. Protective clothing and footwear may be disposable or re-usable. The following are examples of types of protective clothing:
 - Disposable boiler type suits. These can be used once and should be discarded at the end of the visit to the premises. They can be left on the premises with the owner's agreement or bagged and suitably disposed of later, as can disposable overshoes for footwear.

- Non-disposable protective clothing (for example cotton boiler suits or cotton coats). These may be used once and should be laundered before being re-used on any other livestock premises.
- Waterproof protective clothing and waterproof boots. These should be cleansed and disinfected before entering the premises and again at the end of the visit just before leaving the premises.
- All equipment used must be clean on arrival and on departure. Great care must be taken when cleaning electrical apparatus or tools. Where possible equipment should be protected from contamination, for example by using plastic bags. Health and Safety rules must be observed. Where equipment can be cleansed and disinfected this must be done before entry to the premises and again on departure.

2.15.4 Landowners may adopt preventative controls and expect staff and visitors to land to comply with best practice guidance for the prevention of disease spreading. During the planning phase of works consideration will be made for discussion with landowners regarding particular requirements during the works.

2.15.5 If a disease outbreak occurred during the construction of the Proposed Development SP Manweb and the Construction Contractor would discuss the requirements for work with the affected landowners and the relevant regulatory authority. Primary risk controls are based upon avoidance of the need to undertake work, minimising staff numbers on site and restricting staff and equipment for the duration of the works. A licence may be required if the works are to continue during such an outbreak.

Biosecurity - Other Pests and Diseases

2.15.6 Chytrid fungus is a disease that affects amphibians including great crested newts and biosecurity measures should be put in place if works are undertaken that require working close to or entering of ponds. If working in, or near to ponds, boots and equipment should be sprayed following standard protocols with an approved chemical such as VirkonTM.

2.15.7 As well as threats to animals pests and diseases are a threat to plants. In forestry context invertebrates, bacteria and fungi can be harmful to trees. Biosecurity measures here can also help to minimise the risk of introducing or spreading pests of diseases. Specifically, *Phytophthora ramorum* is a known risk within Clocaenog Forest. It is a fungus-like pathogen which causes extensive damage and motility to a wide range of trees and other plants.

2.15.8 The Forestry Commission (now part of Natural Resources Wales) has produced guidance for good working practice for those involved in forestry. The construction works associated with the Proposed Development are deemed low risk activities by the Forestry Commission which include activities that are classed as routine and that would not involve contact with infected or infested material.

- 2.15.9 A number of the biosecurity measures are relevant for SP Manweb and the Proposed Development, which will be adopted by SPM Manweb in relation to the Proposed Development in forestry areas:
- Wear footwear and outerwear that can easily be kept clean;
 - Clean footwear and outerwear regularly; ensure they are visually free from soil and organic debris;
 - Clean vehicles regularly; do not let mud and organic debris accumulate on tyres, wheels or under wheel arches;
 - Restrict equipment taken onto a site – take only what you need for the task;
 - Ensure all tools and equipment are clean, serviceable and free from organic debris; and
 - Where *Phytophthora* is known to occur, tools and equipment, including boots and vehicle tyres, should be sprayed following standard protocols with an approved disinfectant such as PropellerTM which targets plant pathogens.

2.16 Watercourses

- 2.16.1 There are a number of watercourses within the Order Limits. The Proposed Development oversails the Afon Ystrad, Afon Asa and the Afon Elwy. No temporary or permanent accesses are required across these watercourses.
- 2.16.2 In addition, the Proposed Development oversails a number of smaller watercourses, ditches and streams. A number of the watercourses also have associated floodplains which extend wider than the watercourse as marked.
- 2.16.3 SP Manweb has developed a number of good practice guidelines for construction work in proximity to watercourses and floodplains.
- 2.16.4 Wherever possible, machinery and equipment will be kept a minimum of 10m from the edge of the watercourse. If the watercourse has an associated floodplain, machinery and equipment shall be located 10m from the edge of the floodplain. Soil shall only be stockpiled in locations sited at least 10m away from any watercourse. If the watercourse has an associated floodplain, stockpiled soil shall be located 10m from the edge of the floodplain. Silt fences shall be used around stockpiled soil where considered appropriate.
- 2.16.5 Water containing silt will not be pumped or allowed to flow into watercourses.
- 2.16.6 Where possible, water will be prevented from entering excavations.
- 2.16.7 The amount of exposed ground will be minimised in the working area to reduce the risk of silty surface water runoff.
- 2.16.8 Fuel, oil and chemical storage will only be permitted at the construction compound and not on site.
- 2.16.9 Suitable spill kits or absorbent materials will be held in the vicinity of the watercourses during works. In the event of a spill, the spilt material shall be contained and the incident management procedures (see section 1.12) followed.
- 2.16.10 Herbicides will not be used on or near any watercourses or ponds within the working area without written approval from NRW.

2.17 Other Consents and Licences

- 2.17.1 Other consents and licences will be required for the Proposed Development and are referenced in the following topics section. The DCO application is supported by a document entitled Other Consents and Licences (DCO Document Reference 5.9) which sets out the requirements in full. The Construction Contractor will be responsible for identifying and applying for the relevant consent and licences.

3 MITIGATION MEASURES

3.1 Introduction

3.1.1 This section of the CEMP describes the mitigation measures that will be implemented during the construction of the Proposed Development to reduce adverse environmental effects as identified in the ES (Document references 6.1-6.28). Embedded mitigation, also described in the ES topic chapters (documents references 6.6 to 6.14) has been included in the previous section of this document within Section 2.

3.1.2 Three additional detailed management plans; Traffic, Ecological and Hedgerow, are included as appendices to this CEMP to provide further detail on those areas that require it.

3.2 Ecology and Biodiversity

3.2.1 Chapter 6 of the ES (DCO Document Reference 6.6) assesses the effects of the Proposed Development on the habitats and species in the area.

3.2.2 The Chapter identifies embedded mitigation that has shaped the design and development of the Proposed Development:

- i. The routing of the Proposed Development has deliberately avoided statutory designated sites and any ponds and where possible, woodlands and mature trees;
- ii. The project has benefitted from early ecological input where emerging survey findings have fed into ongoing design work;
- iii. Extensive consultation has taken place; consultee comments and feedback have been properly considered during the design process; and
- iv. The location of the construction compound, temporary storage areas and access routes has been considered in liaison with ecologists to ensure minimal impact on key habitats and species.

3.2.3 The ES assessment identified a number of key mitigation measures that are required during the construction, operation and/or decommissioning of the Proposed Development that are required to prevent, reduce or offset the effects:

- i. If trees are lost, SP Manweb would replant the same or an appropriate species, based on two trees planted for each tree lost.
- ii. Wherever possible, tree felling or lopping work shall be undertaken during the winter months, subject to other protected species constraints.
- iii. Following construction, full reinstatement of all land within the working footprint (the Order Limits) will occur.
- iv. No storage of materials will occur in wooded areas.
- v. Any access routes into/through woodland will be clearly marked and any access into/through woodland will be kept to a minimum.

- 3.2.4 The Ecological Management Plan in Appendix 3 details requirements for method statements for the following sensitive areas, habitats and species:
- Non-statutory designated wildlife sites
 - Trees and Woodlands
 - Watercourses
 - Great crested newts
 - Dormice
 - Bats
 - Common Lizard
 - Badgers
 - Otters
 - Birds
- 3.2.5 The method statements include requirements for pre-construction surveys for all sensitive habitats types.
- 3.2.6 The Hedgerow Management Plan in Appendix 4 details a method statement specifically for the management of hedgerows during construction. It sets out method of working during the removal of hedgerows for access and pole installation and suggests ways in which the hedgerows shall be reinstated.

3.3 Landscape and Visual

- 3.3.1 Chapter 7 of the ES (DCO Document Reference 6.7) assesses the effects of the Proposed Development on landscape and visual considerations.
- 3.3.2 The Chapter identified embedded mitigation measures:
- Primary mitigation measures which have been developed through the iterative design process and have become integrated mainstream components of the Proposed Development's design (for example, sensitive routeing and avoidance of features); and
 - Standard construction practices identified in the CEMP for avoiding and minimising environmental effects. This includes tree protection and replanting of trees and hedgerows removed to facilitate construction. Replanting of hedgerows would be in locations where they were removed and is classed as a standard construction practice. Replanting of trees would be partially undertaken as secondary mitigation and partially by agreement with landowners.
- 3.3.3 The Chapter identifies primary mitigation that has shaped the design and development of the Proposed Development:
- i. The decision to route to the St Asaph substation rather than the Legacy substation near Wrexham;
 - ii. The selection of wood poles rather than steel towers;
 - iii. Sensitive routeing in accordance with the Holford Rules;
 - iv. The development of an alternative route option to the west of Henllan in response to consultation;

- v. Refinement of the route alignment to avoid areas where significant effects had been identified during preliminary assessment, including re-alignment of the route at Tan Yr Allt, Pandy and Hafod to minimise the overall magnitude of effects; and
- vi. Careful consideration of the balance of effects along the ridge line at Tan Yr Allt, and a decision to minimize effects on receptors in closer proximity to the ridge.

3.3.4 Where avoidance of specific landscape and visual constraints was not possible, the routeing process sought to lessen likely significant effects. Such measures typically included:

- i. Minimising the need to remove areas of established broadleaved woodland;
- ii. Optimising the opportunities for backclothing (by following the edge of woodland or field boundaries with mature trees) to help reduce the visibility of the above ground components of the Proposed Development, particularly the wood pole structures, which would be the most visible aspect; and
- iii. Following as straight an alignment as possible where the 132kV Overhead Line crosses through more open parts of the landscape in order to minimise angle poles and stays.

3.3.5 The EcMP (Appendix 3) sets out a detailed method statement for managing trees and woodland removal prior to construction. This includes the standard construction practices that will be employed to reduce construction effects as identified in Chapter 7 of the ES (DCO Document Reference 6.7).

3.4 Historic Environment

3.4.1 Chapter 8 of the ES (DCO Document Reference 6.8) assesses the effects of the Proposed Development on historic environment.

3.4.2 The Chapter identifies embedded mitigation that has shaped the design and development of the Proposed Development:

- i. The design process has sought to avoid sensitive heritage assets at all stages – from the initial routeing study, to the development of the Proposed Development.
- ii. The selection of double wood poles was also an important contributor which sought to minimise the heritage assets affected by the Proposed Development.
- iii. The tolerances within the Limits of Deviation allow for the micro-siting of the Proposed Development.

3.4.3 The assessment identified a number of key mitigation measures that are required during the construction, operation and/or decommissioning of the Proposed Development that are required to prevent, reduce or offset the effects. The measures outlined below shall be developed into a Written Scheme of Investigation in consultation with Cadw and the relevant local authority.

Preservation in situ and Demarcation

3.4.4 The positions of heritage assets will be taken into account when micro-siting wood pole positions. Where an asset is considered to be of significance, consideration will be given to preserving it in its present form, condition and location. This mitigation will also be considered where assets of lesser importance can be readily avoided. This may be achieved during layout finalisation by micro-siting, and after detailed site survey. Where this option is specified for an asset, it will be demarcated (see below) to prevent accidental damage during construction work.

3.4.5 Archaeological remains which are inside the Order Limits will be demarcated on the ground using unique and readily visible materials and appropriate signage erected prior to the commencement of construction and regularly monitored. This may include assets which already benefit from micro-siting and will be proportionate to the importance of the asset. Those remains identified outside of the Order Limits will be identified clearly on plans and the Construction Contractor will be responsible for ensuring the locations are communicated to all workers.

Observation & Recording

3.4.6 Archaeological observation will take place of sensitive groundworks in order to identify and record any previously unknown archaeological remains which may be revealed. This work is likely to focus on excavations for the installation of poles and stays and the stripping of any access tracks and working areas. Sufficient time will be allowed for adequate recording of any remains that are encountered, and in the case of assets considered to be of medium, high or very high value, their continuing preservation will be considered by the appointed monitor in conjunction with SP Manweb.

Waterlogged Deposits, including Peat

3.4.7 Below-ground, waterlogged archaeological deposits, including peat shall be protected through the following measures:

- Avoidance of dewatering during construction;
- Use of low permeability barriers to limit the lateral extent of the zone of dewatering;
- Artificial recharge in the event of accidental dewatering; and
- Application of in-situ conservation techniques to prevent/reduce degradation of exposed waterlogged remains, if found.

3.5 Flood Risk and Water Quality

3.5.1 Chapter 9 of the ES (DCO Document Reference 6.9) assesses the effects of the Proposed Development on flood risk and water quality.

3.5.2 The Chapter identifies embedded mitigation that has shaped the design and development of the Proposed Development:

- i. Routing of the Proposed Development away from flood plains where possible;
- ii. Crossing rivers by a short route rather than running along river valleys; and
- iii. Using wood poles rather than steel towers.

3.5.3 The assessment points to the general principles and embedded mitigation identified in section 2,13 of this CEMP to manage flood risk and water quality in relation to the Proposed Development. No further specific mitigation is required to prevent, reduce or offset potential adverse effects on flood risk and water quality.

3.6 Land Use and Agriculture

3.6.1 Chapter 10 of the ES (DCO Document Reference 6.10) assesses the effects of the Proposed Development on land use and agriculture.

3.6.2 The Chapter identifies embedded mitigation to mitigate effects on land use and agriculture:

- i. The majority of pole positions would be accessed by existing farm access arrangements and field gates.
- ii. SP Manweb will arrange pre-entry meetings with owners and occupiers of land or their agents to ensure that disruption to farming activities is kept, where possible, to a minimum and there will be liaison with farmers and / or their agents throughout.
- iii. SP Manweb will ascertain, with the assistance of the landowner/occupier, the location of any field drains which could be damaged by the construction works. These drains may be diverted at pole sites and protected elsewhere. Any damage to land drainage caused by the construction works will be reinstated and/or compensation paid as appropriate.
- iv. On grassland, where required, the agreed access routes will be clearly delineated. Any area damaged by the works and agreed to be not in the permanent use of SP Manweb will be reinstated and/or reseeded, to bring it back into agricultural use. Care will be taken to prevent the disturbance and straying of livestock. In the interests of security, all field gates will be kept shut unless otherwise requested.
- v. Any hedges or fences will be replaced, as appropriate, where breached for access and construction purposes.
- vi. Care will be taken in locating storage sites away from watercourses and standing water stockpiling of soil or stone will also be kept away from watercourses and standing water, as per section 2.16 above.
- vii. Wood pole erection sites and other work areas will be demarcated where necessary.

- viii. Topsoil and subsoil from the pole foundations will be stored separately. Any surplus subsoil or rock following backfilling, will be removed to a licensed tip or otherwise disposed of as agreed in consultation with the landowner/occupier and / or agent.
- ix. Any timber cut will remain the landowner's property and will be stacked at a convenient location in accordance with the EcMP and landowner/occupiers reasonable requirements unless removal is requested.
- x. Prior to work commencing, the land will be inspected and a detailed record of its condition agreed, including private roads, gateways and fences along the route of the line and access routes.
- xi. If biosecurity measures are required, the principles set out in section 2.15 shall be followed.

3.6.3 Embedded mitigation measures were identified in relation to forestry and woodlands:

- i. Protection of soil structure: Upland soils with a moderate to high peat or clay content can be vulnerable to structural damage from excessive trafficking by heavy machines when forestry clearance is undertaken. This can promote soil erosion and reduce soil fertility. Damage will be minimised by the use of 'brash mats', which consist of branches and treetops with no commercial value. The brash is formed into mats on the access and extraction routes upon which the forestry clearance harvesters and forwarders travel within harvesting areas. This increases the ground bearing capacity of the soil.
- ii. Protection of watercourses: It may be necessary for extraction routes for forestry clearance to cross rivers and streams. The frequent passage of machines can cause siltation of stream water. Watercourses will be bridged, where appropriate, to minimise the risk of siltation. On the completion of operations bridges will be removed.
- iii. Protection against spillage: The fuelling and servicing of machines on-site will be carried out in designated locations well away from watercourses. Fuel and diesel bowsers will be bunded against accidental spillage. Machines will carry appropriate spillage kits and there will be additional spillage equipment kept on site. Operators will be provided with the contact details of relevant organisations, including NRW, who will be contacted in the event of a spillage occurring.
- iv. Where broadleaved trees are removed for the purposes of construction of the Proposed Development SP Manweb will replace the trees lost on a two for one basis, in agreement with local landowners and the local community;

3.6.4 The general principles identified in this CEMP sets out key ways in which to manage the Proposed Development. The EcMP (Appendix 3) sets out a detailed method statement for managing trees and woodland removal prior to construction.

3.6.5 No further specific mitigation is required to prevent, reduce or offset potential adverse effects on land use and agriculture.

3.7 Socio-Economic and Tourism

3.7.1 Chapter 11 of the ES (DCO Document Reference 6.11) assesses the effects of the Proposed Development on socio-economics and tourism in the area. No specific mitigation measures are required during the construction, operation and/or decommissioning of the Proposed Development to prevent, reduce or offset the effects.

3.8 Traffic and Transport

3.8.1 Chapter 12 of the ES (DCO Document Reference 6.12) assesses the effects of the Proposed Development on traffic and transport in the area.

3.8.2 The Chapter identifies embedded mitigation that has shaped the design and development of the Proposed Development:

- i. The programme has minimised the overlap between activities that generate higher flows on the network;
- ii. The areas where work is to commence will be signed to show the times the construction traffic will be in the area and any routes that may be affected;
- iii. Narrow roads will be accessed using escort vehicles to highlight the approach of the larger pole carrying or material vehicles to ensure conflicts are removed or reduced; and
- iv. Safe access points for the construction of the 13kV Overhead Line have been identified.

3.8.3 No specific mitigation measures are required during the construction, operation and/or decommissioning of the Proposed Development.

3.8.4 SP Manweb has prepared an outline Traffic Management Plan (Appendix 5) which sets out the traffic management measures which SP Manweb will require its contractors to adopt and implement for relevant construction works for the Proposed Development.

3.9 Emissions

- 3.9.1 Chapter 13 of the ES (DCO Document Reference 6.13) describes the potential emissions associated with the Proposed Development.
- 3.9.2 The Chapter identifies embedded mitigation that has shaped the design and development of the Proposed Development. Due to the nature of air quality and noise controls during construction, these embedded mitigation measures are listed in sections 2.6 and 2.8 of this CEMP.
- 3.9.3 The Chapter identified two locations where the Proposed Development is in proximity to sensitive receptors and there is the potential for poor ground conditions and therefor the use of an excavator with a hydraulic jackhammer. In this location the following specific mitigation measure is proposed:
 - i. The use, where practicable, of a portable noise screen close to the hydraulic jackhammer at relevant points between the noise source and the distant receptor.
- 3.9.4 Noise barriers shall be constructed of timber no less than 19mm thick with tight joints.
- 3.9.5 No specific mitigation measures are required during the construction, operation and/or decommissioning of the Proposed Development to prevent, reduce or offset the potential air quality issues or waste.