



**SP MANWEB**

# The North Wales Wind Farms Connection Project

## Environmental Statement Chapter 4 - EIA Methodology

Application reference: EN020014

March 2015



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

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## **Environmental Statement**

### **Chapter 4 EIA Methodology**

March 2015

PINS Reference: EN020014

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



**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**

**Environmental Statement**

**Chapter 4 EIA Methodology**

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## Environmental Statement Documents

| <b>Volume 6: Environmental Statement</b> |         |   |
|--|---------|---|
| Document Reference                       | Chapter | Document                                |
| 6.1                                      | 1       | Introduction                            |
| 6.2                                      | 2       | Description of the Proposed Development |
| 6.3                                      | 3       | Alternatives and Design Evolution       |
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| 6.16                                     |         | Environmental Statement Figures         |
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| 6.27                                     |         | Glossary                                |
| 6.28                                     |         | Non-Technical Summary                   |

This Chapter does not have any Appendices:

Reference is made to the following documents:

| <b>DCO Document Reference</b> | <b>Document</b>   |
|-------------------------------|---|
| 2.3                           | Works Plans   |
| 2.6.1 – 2.6                   | Landscape Plans   |
| 6.17                          | Proposed Works at St Asaph Substation (Appendix 1.1 to this ES)   |
|                               | Proposed Underground Cable; St Asaph Substation to the Terminal Point (Appendix 1.2 to this ES)             |
|                               | Proposed Collector Substation; Clocaenog Forest; Environmental Report (Appendix 1.3 to this ES)             |
|                               | Lower Voltage Diversions (Appendix 1.4 to this ES)  |
|                               | Potential Connection Routes for the Derwydd Bach, Nant Bach and Brenig Wind Farms (Appendix 1.5 to this ES) |
| 6.18                          | Construction Environmental Management Plan (Appendix 2.1 to this ES)  |
| 6.29                          | North Wales Wind Farm Connections Project; Scoping Report, (January 2014)                                   |
| 6.30                          | Planning Inspectorate: North Wales Wind Farm Connections Project; Scoping Opinion: (February 2014)          |
| 7.4                           | Planning Statement  |

## **4 EIA METHODOLOGY**

### **4.1 Introduction**

4.1.1 This chapter describes the methodology used in the preparation of the Environmental Impact Assessment (EIA) which SP Manweb has undertaken in support of its application for a DCO. This includes an overview of the methodology used to identify, assess and mitigate the likely significant environmental effects associated with the construction, operation (including maintenance) and decommissioning phases of the Proposed Development.

### **4.2 Objectives of EIA**

4.2.1 The purpose of the EIA is to assess the likely significant environmental effects of a proposed project, which in turn allows the determining authority to consider an application taking account of, among other things, any the significance of such effects. The findings of the EIA are presented in an Environmental Statement (ES). The ES forms the basis for consultation by the determining authority with statutory consultees and other stakeholders, and enables decision makers to consider these effects when determining the related applications.

### **4.3 The ES Requirements**

4.3.1 In accordance with Section 14(1)(b) of the Act, overhead lines installed above ground with a nominal voltage of greater than, or equal to, 132kV are considered NSIPs. This requires an application to be made to the Secretary of State for an order granting development consent.

4.3.2 The EIA Regulations impose requirements, in particular, the carrying out of EIA in relation to applications for DCOs. All development in Schedule 1 (Schedule 1 development) requires EIA. Development in Schedule 2 (Schedule 2 development) requires EIA if it is likely to have significant effects on the environment.

4.3.3 The definition of Schedule 2 development includes transmission of electrical energy by overhead cables (Schedule 2 (3)(b)).

4.3.4 Formal notification was provided to the Secretary of State (10 January 2014) under Regulation 6(1)(b) of the EIA Regulations that SP Manweb proposed to provide an Environmental Statement in respect of the DCO application.

4.3.5 Schedule 4 of the EIA Regulations highlights the information to be included in an Environmental Statement. This information is highlighted in Table 4.1 below, which also provides confirmation of where the information is provided within this Environmental Statement.

**Table 4.1: Information Required for Inclusion in an Environmental Statement**

| EIA Regulations: Schedule 4, Part 1   | Location within ES   |
|---|--|
| <p>Description of the development, including in particular :</p> <p>A description of the physical characteristics of the whole development and the land use requirements during the construction and operational phases;</p> <p>A description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;</p> <p>An estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc) resulting from the operation of the proposed development.</p> | <p>Chapter 2 ‘Description of the Proposed Development’ (DCO Document Ref 6.2) provides details of the construction and operation of the Proposed Development, including the nature and quantity of the materials used.</p> <p>Chapter 2 also details the land use requirements during the construction and operational phases.</p> <p>Estimates of the likely emissions are included in the technical chapters (Chapters 6 to 14, DCO Document Refs 6.6 – 6.14).</p> |
| <p>An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for the choice made, taking into account the environmental effects.</p>  | <p>Chapter 3 ‘Alternatives and Design Evolution’ (DCO Document Ref 6.3) describes how the Proposed Development has developed from strategic options to the proposed scheme which is the subject of the application for a DCO.</p>  |
| <p>A description of the aspects of the environment likely to be significantly affected by the development, including in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors.</p>  | <p>Information is presented in the Baseline sections of each of the respective technical assessment chapters (Chapters 6 to 14).</p>   |
| <p>A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from:</p> <ul style="list-style-type: none"> <li>- The existence of the development;</li> <li>- The use of natural resources;</li> </ul>   | <p>Information is provided in the ‘Assessment of Effects’, ‘Assessment of Combined and Cumulative Effects’ and ‘Summary of Residual Effects’ sections of the respective technical chapters (Chapters 6 to 14) (DCO Document Ref 6.6 - 6.14). The methods used are also described in each of the respective chapters.</p>   |

| <b>EIA Regulations: Schedule 4, Part 1</b>   | <b>Location within ES</b>  |
|--|--|
| <p>- The emission of pollutants, the creation of nuisances and the elimination of waste</p> <p>and the description of the forecasting methods used to assess the effects on the environment.</p> |  |
| <p>A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.</p>  | <p>Measures are described in the sections covering 'Embedded Mitigation' and 'Specific Mitigation Measures' within each of the respective technical chapters (Chapters 6 to 14).</p> <p>A Construction Environmental Management Plan (Appendix 2.1 (DCO Document Ref 6.18)) has also been prepared and is subject to a Requirement in the draft DCO. This identifies the measures to be used by the contractor(s) prior to and during construction to address environmental effects and the various commitments being made to address environmental effects.</p> |
| <p>A non-technical summary of the above information.</p>   | <p>A Non-Technical Summary is included at (DCO Document Ref 6.28)</p>  |
| <p>An indication of any difficulties (technical deficiencies or lack of know-how) encountered in compiling the required information.</p>   | <p>Information is included within the respective technical chapters as to any difficulties encountered in undertaking the assessment.</p>  |
| <b>EIA Regulations: Schedule 4, Part 2</b>   | <b>Location within ES</b>  |
| <p>Description of the development, comprising information on the site, design and size of the development.</p>   | <p>This information is provided in Chapter 2 'Description of the Proposed Development' (DCO Document Ref 6.2).</p>   |
| <p>A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.</p>   | <p>Measures are described in the sections covering 'Embedded Mitigation' and 'Specific Mitigation Measures' within each of the respective technical chapters (Chapters 6 to 15).</p> <p>A Construction Environmental</p>   |

| <b>EIA Regulations: Schedule 4, Part 1</b>  | <b>Location within ES</b>  |
|---|--|
|   | Management Plan (CEMP) has also been prepared (Appendix 2.1) and is secured by a Requirement in the draft DCO. This identifies the measures to be used by the contractor(s) prior to and during construction to address environmental effects and the various commitments being made to address environmental effects. |
| The data required to identify and assess the main effects which the development is likely to have on the environment.   | Information is provided in the 'Baseline Context, 'Assessment of Effects, Assessment of Cumulative Effects and 'Summary of Residual Effects sections of the respective technical chapters.   |
| An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for the choice made, taking into account the environmental effects. | Chapter 3 'Alternatives and Design Evolution' (DCO Document Ref 6.3) describes how the Proposed Development has developed from strategic options to the proposed scheme which is the subject of the application for a DCO  |
| A non-technical summary of the above information.   | A Non-Technical Summary is included (DCO Document Ref 6.28).   |

## 4.4 ES Guidance

- 4.4.1 Regulation 5(2)(a) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, require that, where applicable, the ES required pursuant to the EIA Regulations, together with any scoping or screening opinions or directions, must accompany the DCO application.
- 4.4.2 As well as legislative requirements, various guidance has been developed by decision makers, developers and professional institutions to guide the EIA process and preparation of an ES. Relevant guidelines and the approach taken to individual technical assessments is presented in Chapters 6 to 14 as appropriate.
- 4.4.3 In addition, PINS has published Advice Notes to help guide applicants through the application process, PINS Advice Notes directly relevant to the EIA are as follows:
- Advice Note Three: The Planning Inspectorate and Nationally Significant Infrastructure Projects. (Subtitled 'EIA Consultation and Notification') (July 2013 – Version 5);
  - Advice Note Six: Preparation and submission of application documents; (October 2014 – Version 6);
  - Advice Note Seven: Environmental Impact Assessment: Screening, Scoping and Preliminary Environmental Information (July 2013 – Version 4);
  - Advice Note Nine – Rochdale Envelope (April 2012 – Version 2);
  - Advice Note Ten: Habitat Regulations Assessment relevant to nationally significant infrastructure projects (August 2013 – Version 5); and
  - Advice Note Twelve – Developments with Significant Transboundary Impacts Consultation (April 2012 – Version 3).

## 4.5 Scoping and Consultations

### Screening

- 4.5.1 In January 2014 SP Manweb notified the Secretary of State of its intention to voluntarily submit an Environmental Statement, thereby removing the need for a Screening Opinion.

### Scoping

- 4.5.2 A Scoping Report<sup>1</sup> was submitted to the Secretary of State in January 2014 (DCO Document Ref 6.29). A Scoping Opinion was received in February 2014 which provided commentary from the Secretary of State on the proposed scope of the EIA (DCO Document Ref 6.30). This included copies of statutory consultation responses from the Consultation Bodies.

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<sup>1</sup> North Wales Wind Farm Connections Project; Scoping Report, SP Manweb (January 2014) (DCO Document Ref 6.29)

- 4.5.3 Table 4.2 below summarises the general comments made by the Secretary of State and indicates where, within the ES, a detailed response can be found. Further detail on the response to the Scoping Opinion is provided within the individual technical chapters as appropriate.

**Table 4.2: Response to Scoping Opinion**

| SoS Comments   | Location within ES   |
|--|--|
| <p>In addition to the detailed baseline information to be provided within topic-specific chapters of the ES the SoS would expect the ES to include a section that summarises the site and its surroundings. This would identify the context of the proposed development and any relevant designations and sensitive receptors. This section should identify land that could be directly or indirectly affected by the proposed development and any associated auxiliary facilities, landscaping areas and potential off site mitigation or compensation schemes. (para 2.45)</p> | <p>Information on the site and its surroundings, identifying the context for the Proposed Development and the Wider Scheme is provided within Chapter 2 'Description of the Proposed Development' of the ES (see para 2.2.8).</p> <p>Land within the Order Limits and the Limits of Deviation is indicated on Figure 2.1 to this ES<sup>2</sup>. Chapter 2 also details the land use requirements during the construction and operational phases.</p> <p>Relevant designations and sensitive receptors, and land which could be directly or indirectly affected is identified as appropriate within the technical chapters (6 – 14) to this ES.</p> <p>Areas for off-site mitigation are identified in Chapter 7 'Landscape and Visual'.</p> |
| <p>The applicant should ensure that the description of the proposed development that is being applied for is both accurate and as fixed as possible since this will form the basis of the environmental impact assessment. It is understood that at this stage in the evolution of the scheme the description of the proposals may not be confirmed. The applicant should be aware however that the description of the development in the ES must be sufficiently certain to meet the requirements of paragraph 17 of</p>  | <p>Chapter 2 also provides the description of the Proposed Development that has formed the basis of the EIA.</p> <p>The parameters of the Proposed Development have been established to provide the degree of flexibility that SP Manweb consider necessary.</p>   |

<sup>2</sup> Figures are included within the 'Figures' Volume of the ES; DCO Document Ref 6.16

| SoS Comments  | Location within ES   |
|---|--|
| Schedule 4 Part 1 of the EIA Regulations, and there should therefore be more certainty by the time the ES is submitted with the DCO. (para 2.46)  |  |
| The SoS acknowledges that the applicant is currently considering options for the related development which are not subject to the DCO application process....The applicant should ensure that a consistent approach is followed in the ES in relation to both the proposed development and related development. (para 2.47) | Throughout this document the 132kV Overhead Line, together with the required accesses, construction and laydown areas and other integral works are referred to as The "Proposed Development".<br><br>The Collector Substation, works at St Asaph substation and underground cabling are referred to as the "Wider Scheme" and do not form part of the application for development consent. |
| The SoS recommends that the ES should include a clear description of all aspects of the proposed development, at the construction, operation and decommissioning stages.... (para 2.48)   | Chapter 2 provides the description of the Proposed Development through all stages of development, including construction, operation and decommissioning.   |
| Limited information is provided on elements of the development such as for instance, laydown areas and access tracks ....The SoS expects all the potential receptors to be identified and a full assessment of potential effects to be provide in the ES. (para 2.49)   | Chapter 2 provides the description of the Proposed Development that has formed the basis of the EIA. This includes ancillary elements such as laydown areas and access tracks. This information has been used as the basis of the EIA.   |
| The applicant should clearly define which elements of the proposed development are integral to the NSIP and which elements are related but do not form part of the proposed development (para 2.10)   | Throughout this document the 132kV Overhead Line, together with the works which are integral to the Proposed Development are referred to as the "Proposed Development" and are described in Chapter 2.<br><br>The Collector Substation, works at St Asaph substation and underground cabling are referred to as the "Wider Scheme" and do not form part of the Proposed Development.       |

| SoS Comments   | Location within ES   |
|--|--|
| <p>The environmental effects of all wastes to be processed and removed from site should be addressed. The ES will need to identify and describe the methods, control; processes, and mitigation procedures for storing and transporting waste off site.... (para 2.51)</p>   | <p>Chapter 13 'Emissions' (DCO Document Ref 6.13) assesses the effects of emissions from the Proposed Development.</p>   |
| <p>The ES requires that the applicant provide 'An outline of the main alternatives studied ...(para 2.52 – 2.54)</p>   | <p>Chapter 3 of the ES provides information on the alternatives considered and the evolution of the final design.</p>  |
| <p>The SoS considers that the site access routes for construction traffic and any vehicles carrying abnormal indivisible loads (AIL) should be clearly identified and assessed within the ES...The ES should also identify whether any alterations to the existing road network would be retained or reinstated and assess the potential effects arising (para 2.58)</p>   | <p>The Proposed Development does not require any vehicles to carry abnormal indivisible loads. Further there is no requirement for any alterations to the road network.</p> <p>Chapter 12 'Traffic and Transport (DCO Document Ref 6.12) assess the potential effects on the road network and identifies any required mitigation measures.</p> |
| <p>Limited information on construction has been provided....A clear indication of the length of that period should be included in the ES.</p>  | <p>Chapter 2 'Proposed Development Description' provides information on the likely construction methods and the duration of the construction phase.</p>  |
| <p>...information on construction including: phasing of programme, construction methods and activities associated with each phase. Siting of construction compounds (including on and off site); lighting equipment / requirements; and number, movements and parking of construction vehicles (both HGVs and staff). .....and whether any construction activities are restricted to a particular time of year</p> | <p>Chapter 2 'Proposed Development Description' provides information on the likely construction methods, programme, and the construction compound and temporary storage areas.</p> <p>Chapter 12 'Traffic and Transport' provides information on likely traffic movements.</p>   |
| <p>...limited information has been provided .... regarding the size and location of construction compounds and temporary storage areas....this information is required in the ES and ...such areas must be included in the DCO redline</p>   | <p>Chapter 2 also provides information on the location of the construction compound and laydown areas. These areas are included within the DCO Order Limits.</p>   |

| SoS Comments   | Location within ES   |
|--|--|
| boundary. (para 2.61)  |  |
| In order to demonstrate that topics have not simply been overlooked, where topics are scoped out prior to the submission of the DCO application, the ES should explain the reasoning and justify the approach taken. | Topics to be scoped out are identified within Section 4.8 of this chapter. |

### Preliminary Environmental Information

- 4.5.4 SP Manweb undertook pre-application consultation under sections 42 and 47 of the Act in March 2014 and provided preliminary environmental information (PEI), in the form of a Preliminary Environmental Information Report (PEIR)<sup>3</sup> at the same time. The purpose of providing this information is to ensure that those responding to the consultation have the best possible understanding of the likely environmental issues of the Proposed Development. This then enables the applicant to demonstrate that in developing their proposals that it has taken account of information received during the consultation process.

### Consultation

- 4.5.5 Under Part 5, Chapter 2 of the Act, SP Manweb has a duty to undertake pre-application consultation on its proposed application for a DCO.
- 4.5.6 Under section 42 of The Act, there is a requirement to consult with a range of consultees. Under section 47 there is also a requirement to consult local communities.
- 4.5.7 Prior to this formal consultation there have been a number of non-statutory consultation stages throughout the development of the Proposed Development. Further details about the consultation, and how this has influenced the Proposed Development and the Wider Scheme, is included in Chapter 3 'Alternatives and Design Evolution' (DCO Document Ref 6.3).

## 4.6 Assessment Methodology

### Temporal & Spatial Scope of ES

- 4.6.1 The assessment study areas and assessment periods are set out in each chapter.
- 4.6.2 The need for the 132 kV Overhead Line is dependent on the contracted wind farms, which have an anticipated operational life of 25 years. Operational requirements of the local electricity network and associated demand will be kept under continuous review throughout this period to determine the long term use and retention of the 132 kV Overhead Line.

<sup>3</sup> North Wales Wind Farm Connections Project: Preliminary Environmental Information Report (March 2014); SP Manweb; <http://www.nwwindfarmsconnection.co.uk/>

- 4.6.3 The following interpretation is applied with regard to temporal effects.
- Short-term effects are those which extend over a short period only and, in the context of the proposed overhead line, are typically those associated with the construction or decommissioning period.
  - Other temporary effects, which persist for less than the life of the overhead line are described as medium-term,
  - Effects extending to the full lifetime of the overhead line described as long-term.

4.6.4 The ES has been prepared on the basis that the DCO will be granted in 2016 and construction works would commence as soon as possible afterwards and would be likely to continue for a minimum of 18 months. The ES however has assessed that construction could however take place any time within the five year period from the likely year that the development consent will be made (therefore the assessment assumes that the development could commence between 2016 and 2021).

4.6.5 The study assessment area of the ES includes the area over which any effect may arise from the Proposed Development. The ES concentrates on areas, which may experience significant environmental effects. The study assessment areas are defined within individual technical chapters by reference to professional guidance, consultation and professional judgement.

#### **Significant Effects Approach**

4.6.6 The EIA Regulations require a '*description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the development.*' Assessing which effects are significant and which are not is determined at an individual topic level and relies mainly on the professional judgement of the assessor, taking account of policy, good practice, guidance and statute, while also considering stakeholder feedback. Significance assessment criteria (i.e. defining the significance of an effect, and determining the point at which that effect becomes 'significant') will vary depending on the quality, status and sensitivity of the resource, and the magnitude of change that is forecast. Within each of the technical chapters the term 'significant effect' in the context of the EIA Regulations has been defined. Where any effects are assessed as 'uncertain', they are highlighted and an explanation provided as to why their significance cannot be determined. It should be noted, however, that any effect or combination of effects that is described as 'significant' does not mean that a development is necessarily unacceptable in planning terms.

#### **Baseline Context**

4.6.7 Identifying and evaluating 'baseline' conditions is an initial step in the environmental assessment process. A thorough review of the existing environment is undertaken in order to analyse the character and sensitivity of environmental resources and the human environment within the study area, and identify the principal constraints and key issues which would arise from constructing, operating and decommissioning the Proposed Development.

- 4.6.8 The sensitivity of the baseline receptors and the magnitude of change is determined using the criteria established in the respective methodologies. Where appropriate existing environmental trends, which would occur in the absence of the Proposed Development, are also identified.

#### **Assessment of Potential Effects**

- 4.6.9 Each chapter of the ES introduces and explains the particular significance assessment criteria which have been applied to a particular topic area. As discussed above, these assessment criteria might be based upon either professional judgement or good practice, or on the guidelines of professional bodies or statutory organisations which aim to provide a common approach to the environmental assessment process.
- 4.6.10 Generally any effect assessed as **major** or **moderate** is considered significant within the terms of the EIA Regulations.
- 4.6.11 Where any effects are assessed as **uncertain**, they are highlighted as such and an explanation provided as to why their significance cannot be determined.
- 4.6.12 In addition to identifying the significance of effects, the assessment also considers whether the nature of the effect is considered to be adverse, beneficial or neutral, as well as reversible or irreversible, and short-term (e.g. construction phase only), medium-term (e.g. until mitigation measures take full effect) or long-term (e.g. the operational life of the Wider Scheme).

#### **Consideration of Direct, Indirect, Secondary, Combined and Cumulative Effects**

- 4.6.13 The EIA Regulations and good practice dictate that an EIA should consider various aspects of environmental effects. In practice this requires an applicant to consider not only the direct consequences of development upon the natural and human environment, but also indirect, secondary, combined and cumulative effects.
- 4.6.14 Where it has been determined through scoping that a project may result in significant environmental effects and therefore an EIA is required, it does not necessarily mean that a significant effect is the ultimate conclusion of the ES. The structured EIA process allows for the identification of the potential for these effects to occur and then allows mitigation techniques to be built into the project development, construction or operation to prevent, reduce and where possible offset any significant adverse effects. The EIA process then assesses the significance of any residual effects following the consideration of such mitigation measures. Assessment of any effect as being 'significant' does not mean that a development is necessarily unacceptable in planning terms.

## Approach to Mitigation and Enhancement

- 4.6.15 SP Manweb is mindful of its obligations under the 1989 Act (as noted in Chapter 1.2: The Obligations on SP Manweb). Schedule 9 of the 1989 Act requires that the licence holder:
- ‘Shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiological features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest’*
- ‘Shall do what (s)he reasonably can to mitigate any effect that the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.’*
- 4.6.16 The Proposed Development may give rise to significant environmental effects requiring mitigation. The mitigation of these effects during construction, operation and decommissioning are an integral part of the design and construction management process.
- 4.6.17 Through the route optioneering process described in Chapter 3: ‘Alternatives and Design Evolution’, the environmental effects of the Proposed Development have been considerably reduced through embedded mitigation, i.e. avoidance of significant effects through the design process.
- 4.6.18 Mitigation is also embedded in the project through standard mitigation techniques for the construction phase. As described in Chapter 2 ‘Description of the Proposed Development’ SP Manweb has produced a Construction Environmental Management Plan (CEMP) (Appendix 2.1 to this ES, (DCO Document Ref 6.18) which identifies those responsible for overseeing the construction works and outlines a series of established good practice working methods intended to minimise environmental disturbance. Compliance with the CEMP is secured as a requirement within the draft DCO.
- 4.6.19 Further information on topic specific embedded mitigation is provide within the individual topic chapters of this ES. These measures are also secured through the CEMP, and through the measures indicated on the Landscape Plans (DCO Document Ref 2.6).
- 4.6.20 SP Manweb has a statutory duty imposed upon it as described in Section 1.2 of this ES which means that when it delivers electricity infrastructure projects it has to ensure that it reinstates vegetation, trees, hedgerows, soils and other environmental resources which are unavoidably removed or displaced during construction operations, unless reinstatement would breach any necessary safety clearance distances. In practice, this means for example that hedgerows which are removed within the construction corridor to facilitate construction access or enable wood pole installation would be directly reinstated, and trees which were unavoidably felled would be replaced (subject to maintenance of safety clearances). Wildlife resources which were lost to construction, for example, bat roosts and nesting habitat in mature trees, would also be mitigated through the installation of proven solutions such as bat boxes and bird boxes.

4.6.21 In addition to the like for like replacement of vegetation and other resources directly affected by construction, SP Manweb employs a policy of discretionary planting, trees lost for example are replaced on a 2 for 1 basis although these will not necessarily be planted within the Order Limits. Discretionary planting aims not only to mitigate the landscape and visual effects of the Proposed Development during its operational phase, but also to enhance local environmental resources. These environmental enhancement measures would be delivered beyond the immediate footprint of construction-related losses. Enhancement measures may include the reinforcement of existing hedgerows, new tree planting within hedgerows, tree planting along field boundaries or block woodland planting. SP Manweb will secure this environmental enhancement pursuant to powers sought under the DCO, and through joint working with wildlife organisations and through landowner agreements.

#### **Identification of Residual Effects**

4.6.22 The significance of any effects identified in the technical assessments is reassessed taking account any committed mitigation measures.

#### **Consideration of Combined and Cumulative Effects**

4.6.23 NPS EN-1 states that consideration should be given in an Environmental Statement to the accumulation of, and interrelationship between, effects. Chapter 15 'Summary of Environmental Effects' provides this consideration.

4.6.24 The EIA Regulations require the consideration of the potential for any cumulative effects arising from a proposed development when considered in conjunction with proposed or committed developments in the area. This is in recognition that the combined effects of a number of similar developments concentrated in one area may be greater than the sum of the effects from the same developments if considered individually.

4.6.25 NPS EN-1 advises that when considering cumulative effects, information should be provided on 'how the effects of the applicant's proposal would combine and interact with the effects of other development (including projects for which consent has been sought or granted, as well as those already in existence)'.

4.6.26 DCLG Guidance on the Pre-Application Process<sup>[1]</sup> notes that applicants should consider the potential cumulative impacts on an area as a result of increasing development in the proposed area, as well as those developments which are:

- In the process of being built.
- Permitted application(s), but not yet implemented.
- Submitted application(s) not yet determined.
- Projects on the National Infrastructure's programme of projects.
- Identified in the Local Development Plans (in this instance for Denbighshire and Conway);

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<sup>[1]</sup> DCLG, August 2014. *Planning Act 2008: Guidance on the Pre-Application Process*

- Identified in other plans and programmes (as appropriate) which set the framework for future development consents/ approvals, where such development is reasonably likely to come forward.

4.6.27 In its response to the Scoping Report Denbighshire County Council requested that :

*‘ ... existing, new and proposed electricity infrastructure projects and windfarms developments in Denbighshire and Conwy are include in the cumulative assessment. In particular, there has been a number of new electricity infrastructure developments converging in and around St Asaph, including grid connection works for offshore wind farm development off the North Wales coast (underground cables, new substations and sealing end compounds), and the cumulative effect of this project in combination with these developments and the existing electricity infrastructure (i.e. SP Manweb and National Grid substations) in the St Asaph area should be fully assessed’.*

4.6.28 It continued;

*“... there is a likelihood that this project and the four windfarm developments in the Clocaenog Forest Strategic Search Area (SSA) will be constructed within the same timeframe, and therefore the ES should fully consider both the temporary and permanent cumulative effects arising as a result of this development in combination with other infrastructure developments”.*

4.6.29 Denbighshire County Council also requested that the following developments were included in the cumulative assessment:

- Existing SP Manweb and National Grid electricity infrastructure in the St Asaph as area; and
- The pending Llys Dymper windfarm in Conwy.

4.6.30 SP Manweb has considered the combined and cumulative impacts of the Proposed Development, taking into account the consultation response of Denbighshire County Council, using the following staged approach:-

- **Stage 1** – The Proposed Development, the Wider Scheme, and the Wind Farms;

The Collector Substation, works within St Asaph substation, the underground cabling and the proposed lower voltage diversions are referred to as the "Wider Scheme". Consideration of the Wind Farms also includes potential connections into the Collector Substation by means of underground cables along existing forest tracks.

- **Stage 2** - Any other relevant developments (which includes developments already in existence, together with committed developments and for projects where consent is being sought).

4.6.31 Further information on the projects identified for inclusion within Stage 1 and Stage 2 of the assessments is provided in Table 4.3 below.

**Table 4.3: Combined and Cumulative Assessment**

| Development                               | Description & Data Source  |
|---|--|
| <b>Developments Included in Stage 1</b>   |  |
| Works at St Asaph Substation              | Part of the SP Manweb Wider Scheme – details are included in Appendix 1.1 (DCO Document Ref 6.17)  |
| Underground Cable                         | Part of the SP Manweb Wider Scheme – details are included in Appendix 1.2 (DCO Document Ref 6.17)  |
| Clocaenog Substation                      | Part of the SP Manweb Wider Scheme – details are included in Appendix 1.3 (DCO Document Ref 6.17)  |
| Lower Voltage Diversions                  | Part of the SP Manweb Wider Scheme – details are included in Appendix 1.4 (DCO Document Ref 6.17)  |
| Clocaenog Forest Wind Farm and substation | <p>Consented September 2014 - Expected to generate between 64 and 96 MW, from 32 turbines. The turbines will have a total height (to tip) of 145m.</p> <p>Clocaenog Forest Wind Farm does not require a connection route as the wind farm substation is located next to the Collector Substation.</p> <p><b>Data Source:</b> Clocaenog Forest Wind Farm Environmental Statement (National Infrastructure Planning website).</p>  |
| Brenig Wind Farm and substation           | <p>Consented April 2009, - 16 turbine wind farm at Llyn Brenig, with an installed generating capacity of 40MW. The turbines will have a total height (to tip) of 100m.</p> <p>SP Manweb understands that the connection from this wind farm to the Collector Substation will run underground, along existing forest tracks, through Clocaenog Forest. Potential connections are illustrated in Appendix 1.5 (DCO Document Ref 6.17).</p> <p><b>Data source:</b> ZTV from Brenig Wind Farm Environmental Statement. Denbighshire planning</p> |

| Development  | Description & Data Source   |
|--|---|
|  | application ref: 25/2007/0565   |
| <b>Developments Considered But Not Included in the Stage 1</b> |   |
| Nant Bach Wind Farm  | <p>Consented May 2011 - 11 turbine wind farm at Nant Bach, with an installed generating capacity of up to 27.5 MW. The turbines will have a total height to tip of 100m.</p> <p>SP Manweb understands that the connection from this wind farm to the Collector Substation will run underground, along existing forest tracks, through Clocaenog Forest. Potential connections are illustrated in Appendix 1.5 (DCO Document Ref 6.17).</p> <p><b>Data Source:</b> Nant Bach Wind Farm ES Non-Technical Summary &amp; Site Map</p> <p>As stated in the PIER, Nant Bach Wind Farm is considered to be too far from the Order Limits to give rise to any significant effects and has therefore not been taken forward for consideration.</p> |
| Derwydd Bach Wind Farm   | <p>Consented July 2011 - 10 turbine wind farm at with an installed generating capacity of 23 MW. The turbines will have a total height to tip of 120.5m.</p> <p>Connection to the Collector Substation by underground cable (see Appendix 1.4) (DCO Document Ref 6.17)</p> <p><b>Data Source:</b> Derwydd Bach Environmental Statement</p> <p>As stated in the PIER, Derwydd Bach Wind Farm is considered to be too far from the Order Limits to give rise to any significant effects and has therefore not been taken forward for consideration within the cumulative assessment.</p>  |
| <b>Developments Included in Stage 2</b>                        |   |
| Hafod Ty Ddu Wind Turbine                                      | <p>Single wind turbine (55m hub height and 26m blades, up to 81m height to blade tip) located in relatively close proximity to the Proposed Development.</p> <p><b>Data Source:</b> Denbighshire planning application reference: 25/2014/0337</p>   |

| Development  | Description & Data Source   |
|--|---|
| Tyn y ffynnon Wind Turbine                             | Single wind turbine (up to 48m height to blade tip).<br><b>Data Source:</b> Denbighshire planning application reference: 25/2014/1035 (Note: Pending determination)   |
| Meifod Farm, Saron, Wind Turbine                       | Single wind turbine (up to 34.5m to blade tip).<br><b>Data Source:</b> Denbighshire planning application reference: 23/2014/0529 (Note: Pending determination)  |
| Pant y Maen Wind Farm                                  | 8no. wind turbines in SSA A.<br>Scoping Report has been submitted. No planning application submitted as of January 2015.  |
| Bryn Cocyn Wind Turbine                                | Single wind turbine (up to 25m height to blade tip).<br><b>Data Source:</b> Conwy planning application reference 0/41046 (Note: Planning application approved with conditions on 10/09/2014)  |
| Burbo Bank Extension (including onshore substation)    | Extension to an existing offshore wind farm (maximum 75 turbines) and Proposed substation near the northern end of the proposed overhead line.<br><b>Data Source:</b> Burbo Bank Extension Offshore Wind Farm ES. Denbighshire planning reference for underground cable route and new substation 31/2013/0400 obtained planning consent in November 2013. |
| Llys Dymper Wind Farm                                  | 10no. wind turbines (5 no. up to 100m to blade tip and 5no. up to 110m to blade tip, 23mw wind farm) to be connected to the National Grid locally at Llansannan.<br>Data Source: Conwy planning application reference 0/38695. (Note: Planning application refused on 15/05/2014 but could go to appeal)  |
| Crematorium proposal on land to south of Glascoed Road | <b>Data Source:</b> Denbighshire planning application ref: 31/2013/1537. (Note: Planning permission granted in early 2015 following an appeal to the Planning Inspectorate)   |
| Pilkington Playing fields site on the St               | Development of 3.9ha of land for office/light industrial use (Class B1) and construction of new   |

| Development   | Description & Data Source   |
|---|---|
| Asaph business park   | vehicular/pedestrian access.<br><b>Data Source:</b> Denbighshire Council – outline application  |
| Bodelwyddan Key Strategic Site A  | Development Plan allocation in Denbighshire. Development brief adopted by Denbighshire in July 2014 for a mixed use development ‘1,715 new dwellings including affordable housing, 26 ha of B1, B2, B8 employment land, education and health provision, infrastructure improvements, open space, community facilities and other associated elements.’<br><b>Data Source:</b> Denbighshire Council website |
| Application for a residential development at former H M Stanley Hospital site, Upper Denbigh Rd, St Asaph | Conversion of former St Asaph hospital into a housing development (85 homes)<br><b>Data Source:</b> Denbighshire planning application ref: 46/2014/0126   |

## 4.7 Basis of Assessment

### Limits of Deviation

- 4.7.1 As is common for major infrastructure projects it is necessary for a limited degree of flexibility to be included within the application for development consent, by way of defining both lateral and vertical limits of deviation, which will allow the Proposed Development to take place within those limits. The reasons why limits of deviation are required are included in Chapter 2 ‘Description of the Proposed Development.
- 4.7.2 In summary the Limits of Deviation (LoD) identify a maximum distance or measurement of variation within which all the permanent works must be sited. The LoD provide a degree of flexibility which is required as:
- following consent, during pre-construction environmental constraints would be reviewed;
  - following consent and pre-construction, micro-siting would take place involving more detailed technical survey information, particularly for unconfirmed ground conditions; and
  - minor alterations may be requested by landowners.
- 4.7.3 The lateral LoD are 20m wide in areas of good ground conditions, with some areas widened to 40m, due to poor ground conditions, or to accommodate

changes in direction. The extent of the lateral LoD are shown on the Works Plans (DCO Document Ref 2.3).

- 4.7.4 The vertical LoD are designed to take account of standard 132kV wood pole design. The double wood pole design varies from 10.8m above ground height to 16.4m above ground height with the average height of the structures being 13m. The vertical LoD is +4m based on the average height of 13m. As with the lateral LoD the variation in height between adjacent structure positions is generally limited to 2m as this would greatly impact on the uplift force at adjacent poles. The final design of poles may be lower in height; there is no restriction placed on a reduction in height.
- 4.7.5 The ES has assessed the 'likely worst case' in instances where flexibility is applied for. This is referred to as the 'Rochdale Envelope' after the legal cases which established its precedent. PINS Advice Note 9 addresses the use of the 'Rochdale Envelope' approach under the Act.
- 4.7.6 The approach adopted is therefore as follows:-
- Where linear features are crossed (for example hedgerows) it has been assumed that no more than 20m will be required for construction;
  - For point receptors (for example an archaeological asset or tree groups) it is assumed that these are affected (where a separate commitment to retain/protect does not exist);
  - Distances to receptors beyond the boundaries of the LoD have been calculated to the closest point along the boundary (although due to technical considerations, for example conductor swing and failure containment structures, it would never be possible to locate a pole along this boundary).
- 4.7.7 This approach has been adopted as it is necessary to identify all of the receptors that could potentially be affected by the Proposed Development, should the pole positions change. The alternative would be to consider the effects of all permutations of pole positions within the Limits of Deviation, which is not feasible.

### **Order Limits**

- 4.7.8 The Order Limits include a wider area of land which is required for a temporary period for construction activities. This temporary construction area provides a working corridor together with sufficient land to allow for access to the working corridor, stringing and tensioning of the conductors, mitigation planting, felling of trees for safety purposes. The Order Limits also include the construction compound at Broadleys Farm adjacent to the A543 (the proposed works in this location are described in Chapter 2 'Description of the Proposed Development'.
- 4.7.9 For the short section of underground cable included, the Order Limits enclose a much narrower 10m corridor within which the underground cable will be laid. The DCO includes the land rights to install (and keep installed), retain, use, inspect, maintain, renew, remove and relocate the underground cable.

## **4.8 Matters Scoped Out of the Assessment**

- 4.8.1 The Scoping Report identified matters proposed to be scoped out of the environmental assessment. The SoS Scoping Opinion confirmed some of these matters but others have been addressed and incorporated with the assessment. These are summarised in the Table 4.4 below.

**Table 4.4 Matters to be Scoped Out**

| <b>Matter to be Scoped Out</b>   | <b>SoS Comments</b>  | <b>Assessment in the ES</b>  |
|----------------------------------|--|--|
| Operational Noise                | .. the applicant has also stated .... that it is not intended to assess noise effects during the operational phase of the proposed development, on the basis that overhead lines do not emit audible noise at a significant level. The SoS agrees that noise effects during the operational phase can be scoped out of the assessment (para 3.14)  | Not taken forward for assessment.  |
| Air Quality                      | The SoS agrees that air quality impacts during the operational phase can be scoped out but does not agree at this stage that air quality impacts during the construction and decommissioning phases can be scoped out as insufficient information has been provided (para 3.15).   | Potential air quality effects during construction / decommissioning are covered in Chapter 13 'Emissions'. |
| Transport during decommissioning | ... the SoS acknowledges that transport options during decommissioning cannot be reliably predicted at this time (para 3.15)   | Not taken forward for assessment   |
| Other Emissions                  | The SoS agrees that the 'other emissions' included in paragraph 15.4 ( <i>spillages and leakages, mud, light pollution and waste</i> ) can be scoped out of the EIA for all phases of the proposed development with the exception of waste. Information on waste arising generated by the construction of the proposed development and methods of disposal does not need to be contained in a discrete chapter but should be included in the ES (para 3.17). | This information is provided in Chapter 13 'Emissions'.  |

| Matter to be Scoped Out                           | SoS Comments   | Assessment in the ES  |
|---|--|---|
| Civil and Military, Aviation and Defence Interest | The SOS does not agree at this stage that civil and military aviation and defence interests can be scoped out....referred to comments from the Civil Aviation Authority (para 3.18).   | <p>Subsequent to their response to the Scoping Report the Civil Aviation Authority has confirmed to SPEN (27<sup>th</sup> February 2014) that their response should have read:-</p> <p><i>“Given that you advise that the supporting poles and therefore the overhead wires would be no higher than approximately 18m, I can clarify that the proposed overhead line and supporting structures would not constitute aviation en-route obstructions for civil aviation purposes”</i> . .</p> <p>This matter has therefore been scoped out of the EIA</p> |
| Vibration   | Vibration has not been covered in the Scoping Report ...nor has it been identified as a matter to be scoped out.... As no reasons for scoping out vibration have been provided the SoS does not agree that it can be scoped out of the assessment. | <p>Since the submission of the Scoping Report additional investigations have been carried out as to the ground conditions along the route of the Proposed Development. Information on working methods is provided in the Construction Environmental Management Plan (CEMP) (Appendix 2.1) which demonstrates that the construction methods proposed are unlikely to result in vibration effects.</p> <p>Potential effects are considered in Chapter 13’.</p>  |

## **4.9 Assumptions and Limitations**

4.9.1 The assumptions made for the individual technical assessments are included within the respective chapters. Any limitations are also identified.

## **4.10 Structure of the ES Chapters**

4.10.1 Following the scoping exercise and identification of environmental topics, technical assessments were carried out in order to identify significant potential effects associated with the Proposed Development and to propose measures to mitigate any such potential adverse effects.

4.10.2 Whilst the assessment and presentation for each of the individual technical disciplines varies according to the guidance and practice applicable to the particular area of expertise, each technical assessment topic (Chapters 6 – 15) adopt the following systematic approach:

- Introduction;
- Legislation and Policy Background;
- Scoping & Consultations;
- Methodology;
- Baseline Context;
- Embedded Mitigation;
- Assessment of Effects;
- Specific Mitigation Measures;
- Assessment of Cumulative Effects; and
- Summary of Residual Effects.