



SP MANWEB

The North Wales Wind Farms Connection Project

Environmental Statement Chapter 1 - Introduction

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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)

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Environmental Statement

Chapter 1 Introduction

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Table of Contents

1	Introduction.....	1
1.1	Overview.....	1
1.2	SP Manweb.....	1
1.3	Need for the Proposed Development.....	2
1.4	Strategic Options.....	3
1.5	Proposed Development.....	5
1.6	Statutory Consents Procedure.....	7
1.7	Requirement for an EIA.....	7
1.8	Structure of the Environmental Statement.....	8
1.9	Project Team.....	9

Environmental Statement Documents

Volume 6: Environmental Statement		
DCO Document Reference	Chapter	Document
6.1	1	Introduction
6.2	2	Description of the Proposed Development
6.3	3	Alternatives and Design Evolution
6.4	4	EIA Methodology
6.5	5	Planning Policy Considerations
6.6	6	Ecology and Biodiversity
6.7	7	Landscape and Visual
6.8	8	Historic Environment
6.9	9	Flood Risk and Water Resources
6.10	10	Land Use and Agriculture
6.11	11	Socio-Economics and Tourism
6.12	12	Traffic and Transport
6.13	13	Emissions
6.14	14	Electric and Magnetic Fields
6.15	15	Summary of Environmental Effects
6.16		Environmental Statement Figures
6.17 – 6.26		Appendices
6.27		Glossary
6.28		Non-Technical Summary

This Chapter includes the following Appendices:

DCO Document Reference	Appendix	Document
6.17	1.1	Proposed Works at St Asaph Substation
	1.2	Proposed Underground Cable; St Asaph Substation to the Terminal Point
	1.3	Proposed Collector Substation; Clocaenog Forest; Environmental Report
	1.4	Lower Voltage Diversions
	1.5	Potential Connection Routes for the Derwydd Bach, Nant Bach and Brenig Wind Farms

Reference is also made to the following documents:

DCO Document Reference	Document
7.3	North Wales Wind Farms Connections Project: Strategic Options Report (March 2014)

1 INTRODUCTION

1.1 Overview

1.1.1 This Environmental Statement (ES) accompanies an application by SP Manweb plc (SP Manweb) under the Planning Act 2008 (the "Act") for the North Wales Wind Farms Connection Project Development Consent Order (the "DCO"). The DCO would grant powers to construct, operate and maintain a new 17 kilometre 132,000 volt (132 kV) connection from the proposed North Wales windfarm substation near Clocaenog Forest into the existing SP Manweb network at St Asaph Grid substation ("the Proposed Development"). The Proposed Development is in the administrative boundaries of Denbighshire County and Conwy County Borough in the north of Wales (see Figure 1.1 Location Plan¹).

1.2 SP Manweb

1.2.1 SP Manweb plc is the electricity distribution network operator (DNO) for North and Mid Wales, Cheshire, Merseyside and parts of Shropshire.

1.2.2 As an electricity distribution network operator SP Manweb holds a distribution licence pursuant to the Electricity Act 1989 (the "1989 Act") and is subject to a number of conditions under its licence and statutory duties under the 1989 Act.

1.2.3 Section 9(2)(a) of the 1989 Act requires SP Manweb to:-

'develop and maintain an efficient, co-ordinated and economical system of electricity transmission';

1.2.4 Section 38 and Schedule 9 of the 1989 Act, require SP Manweb, when proposing new works to:-

"To have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest".

And to:-

"Do what it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or any such flora, fauna, features, sites, buildings or objects".

1.2.5 Under condition 16 of its distribution licence SP Manweb is required to provide a connection to its distribution network as and when it is asked to do so by any of its customers.

¹ Figures are included within the 'Figures' Volume of the ES ; DCO Document Ref 6.16

1.3 Need for the Proposed Development

- 1.3.1 The UK has signed up to the EU Renewable Energy Directive, which includes a UK target of 15 percent of energy from renewables by 2020. To meet this target, along with emission reduction targets, generation from new renewable energy is required.
- 1.3.2 In support of this, in July 2005, the Welsh Assembly Government (WAG) published Technical Advice Note No 8 'Planning for Renewable Energy' (TAN 8). This document identified seven broad 'Strategic Search Areas' (SSAs) for onshore wind farms in Wales.
- 1.3.3 Clocaenog Forest in North Wales was identified in TAN 8 as a Strategic Search Area for renewable development (SSA A). As a result, new generation projects have been promoted in the area and require connections to the distribution system.
- 1.3.4 Four wind farm developers in SSA A have applied for and agreed terms with SP Manweb to provide them with connections to the electricity distribution network. Under the terms of its distribution licence, SP Manweb is obliged to make an offer of connection in response to each valid application made.
- 1.3.5 These four contracted wind farms are listed below and shown in Figure 1.2 (TAN8 and Consented Wind Farms);
- Clocaenog Forest (SJ013578)

In September 2014 RWE NPower Renewables received a development consent for a new wind farm in Clocaenog Forest in North Wales. The wind farm is expected to generate between 64 and 96 MW, from 32 turbines. The turbines will have a total height (to tip) of 145m. Clocaenog Forest Wind Farm does not require a connection route as the wind farm substation is located next to the Collector Substation.
 - Brenig (SJ021742)

In April 2009, Brenig Wind Ltd received planning permission to build a 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. SP Manweb understands that the connection from this wind farm to the Collector Substation will run underground, along existing forest tracks, through Clocaenog Forest.
 - Nant Bach (SJ989470)

In May 2011, Vattenfall received planning permission to build an 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. SP Manweb understands that the connection from this wind farm to the Collector Substation will run underground, along existing forest tracks, through Clocaenog Forest.

Derwydd Bach (SJ030500)

In July 2011 Tegni received planning permission to build a 10 turbine wind farm at Derwydd Bach, with an installed generating capacity of 23 MW. The turbines will have a total height to tip of 120.5m. Connection to the Collector Substation will be by underground cable along existing forest tracks.

- 1.3.6 Together the four windfarms are known at the "Wind Farms"². Potential connection routes for Derwydd Bach, Nant Bach and Brenig Wind Farms have been identified following discussions with the developers for the Wind Farms and are indicated in Appendix 1.5 (DCO Document Ref 6.17).

1.4 Strategic Options

- 1.4.1 SP Manweb investigated a number of strategic options³ in order to connect wind generation from SSA A. These options are summarised in Table 1.1 below.

Table 1.1: Strategic Options Considered

Option	Commentary
DN: Do nothing	Discounted as it would be a breach of SP Manweb's distribution licence statutory obligation to provide connections to its distribution network. Furthermore, failure to provide any connection would have wider consequences for the overall UK electricity supply, and could adversely impact on achieving government targets for renewable and low carbon generation.
CEN: Connect to existing network	Discounted as the existing network is already close to capacity, and the 33 kV network is not capable of connecting the Windfarms. This option would therefore have been in a breach of SP Manweb's distribution licence statutory obligations.
GC: New Grid Supply Point near Corwen	Although this was a viable option, the associated equipment and construction costs would be much greater than a 132 kV overhead line. This option was therefore not taken forward in the context of the requirement placed on SP Manweb by the Electricity Act 1989 to develop and maintain an economical system of electricity transmission.
BL: 132 kV connection to the existing substation at Brymbo or	The 132 kV substations at Brymbo and Legacy are both to the east of SSA A, and are the same distance from the SSA. Approximately 35 km of new overhead line would be needed. The route of this line would cross the Clwydian Range Area of Outstanding Natural Beauty (AONB) which

² Potential connections from the Wind Farms to the Collector Substation are indicated in Appendix 1.5 (DCO Document Ref 6.17)

³ North Wales Wind Farms Connections Project: Strategic Options Report (March 2014) (DCO Document Ref 7.3)

Option	Commentary
Legacy	is considered a strategic environmental constraint. If the connection was to Brymbo, it would also have been necessary to uprate an existing 132 kV circuit between Brymbo and Legacy.
CQ: 132 kV connection to Connah's Quay	The 132 kV substation at Connah's Quay is to the north east of SSA A. New network infrastructure and approximately 36 km of new overhead line would be needed. The route of this line would cross the Clwydian Range AONB which is considered a strategic environmental constraint.
H: 132 kV connection to Holywell	The 132 kV substation at Holywell is to the north east of SSA A. In addition to the network infrastructure required, approximately 30 km of new overhead line would be needed. The route of this line would cross the Clwydian Range AONB which is considered a strategic environmental constraint. It would also have been necessary to uprate the existing 132 kV circuit between Holywell and Connah's Quay.
SA: 132 kV connection to St Asaph	The existing 132 kV substation at St Asaph is to the north of SSA A. In addition to the network infrastructure required, approximately 20 km ⁴ of new overhead line would be needed. National Grid is establishing a Grid Supply Point at Bodelwyddan, adjacent to SP Manweb's existing substation at St Asaph, therefore any further reinforcement of the 132 kV network to accommodate the SSA A wind farms was likely to be minimal when compared to the other options.
D: 132 kV connection to Dolgarrog	The 132 kV substation at Dolgarrog is to the north west of SSA A. In addition to the network infrastructure required approximately 35 km of new overhead line would be needed. It would also be necessary to reinforce the existing 132 kV system at Dolgarrog by establishing a 132 kV substation and uprating the 132 kV circuit between Dolgarrog and St Asaph.
T: 132 kV connection to Trawsfynydd	The 132 kV substation at Trawsfynydd is to the south west of SSA A. In addition to the network infrastructure required, approximately 45 km of new overhead line would be needed. Trawsfynydd is situated within the Snowdonia National Park which is considered a strategic environmental constraint.

⁴ This was the preferred option which has become the North Wales Wind Farms Connection Project. Following detailed routing and design the route length is now approximately 17km.

- 1.4.2 The Strategic Options Report concluded that the preferred option was for a 132 kV circuit to be constructed from SSA A northwards to the existing St Asaph substation (Option SA and the "Preferred Option"). This option was technically capable of accommodating all the contracted generation and had the shortest 132 kV connection of all the technically viable options. All other things being equal, shorter options are preferred on the basis of minimising both impacts and costs.
- 1.4.3 The option also had the benefit that potential routes would avoid significant environmental constraints such as the Snowdonia National Park or the Clwydian Range AONB. Options GC and D also avoided Snowdonia National Park and Clwydian Range AONB. However, on the basis of the high level early routing option investigations, it was not considered that the environmental performance was sufficiently improved to justify taking forward these options as the Preferred Option had the best performance in economic terms.
- 1.4.4 Options 'GC', 'BL', 'CQ', 'H', and 'T' were all deemed technically viable options but were not taken forward for further study due to the additional costs and/or environmental concerns such as new infrastructure within nationally designated sites.

1.5 Proposed Development

- 1.5.1 Since the selection of the Preferred Option further studies (see Chapter 4 'Alternatives and Design Evolution') have led to the development of the Proposed Development.
- 1.5.2 The Proposed Development includes the following principal elements:
- Construction of a 17km 132kV overhead electricity distribution connection between Clocaenog Forest and 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 overhead line could not be constructed;
 - Access points for pedestrians and vehicles along the length of the Proposed Development for the duration of construction, without which the 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.
- 1.5.3 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.

- 1.5.4 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 132 kV 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.
- 1.5.5 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.
- 1.5.6 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.
- 1.5.7 Further detail is included within Chapter 2 'Description of Proposed Development' of this Environmental Statement (DCO Document Ref 6.2).
- 1.5.8 The Proposed Development does not include all elements of the North Wales Wind Farms Connection Project. 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. Those elements not included within the Proposed Development are known as the Wider Scheme and comprise:
- 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) (see Appendices 1.1 and 1.2 (DCO Document Ref 6.17));
 - a new 132 kV electrical substation at Clocaenog Forest to act as the collector substation for four consented wind farms (see Appendix 1.3 (DCO Document Ref 6.17)). A planning application for the Collector Substation was submitted to Denbighshire County Council in December 2014 (Ref 23/2014/1440);
 - 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 (see Appendix 1.4 (DCO Document Ref 6.17)).

1.6 Statutory Consents Procedure

- 1.6.1 The Act amended the existing planning system in England and Wales for consenting overhead lines. 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 Nationally Significant Infrastructure Projects (NSIPs), to be determined by the Secretary of State in accordance with the requirements of the Act.
- 1.6.2 The Secretary of State is required by S.104 of the Act to have regard to any national policy statement which has effect in relation to development of the description to which the application relates. Those relevant to the North Wales Wind Farm Connections Project are the Overarching National Energy Infrastructure Policy (EN-1), Renewable Energy (EN-3) and Electricity Networks Infrastructure (EN-5).
- 1.6.3 The proposed Clocaenog Forest substation does not form part of the application for development consent and a planning application has been submitted to the Local Planning Authority, in this case Denbighshire County Council.
- 1.6.4 The 1.8km section of new underground cable between the existing St Asaph Substation and the terminal point is considered to be permitted development for SP Manweb under the Town and Country Planning (General Permitted Development) Order 1995. SP Manweb is discussing this with Denbighshire County Council to confirm the use of permitted development rights in respect of the underground cable.
- 1.6.5 The works to the existing St Asaph Substation itself include the installation of electrical plant, equipment and switchgear are within the existing substation compound. This is permitted development for SP Manweb under the Town and Country Planning (General Permitted Development) Order 1995.

1.7 Requirement for an EIA

- 1.7.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 as amended (the "EIA Regulations") impose requirements, in particular, in respect of the carrying out of Environmental Impact Assessment ("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.
- 1.7.2 The definition of Schedule 2 development includes transmission of electrical energy by overhead cables (Schedule 2 (3)(b)).
- 1.7.3 SP Manweb have previously sent formal notification to the Secretary of State under Regulation 6(1)(b) of the EIA Regulations that they propose to provide an Environmental Statement in respect of the DCO application.

- 1.7.4 Section 5(2)(a) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, require that, where applicable, the Environmental Statement ("ES") required pursuant to the EIA Regulations, together with any scoping or screening opinions or directions, must accompany the DCO application.
- 1.7.5 SP Manweb has undertaken relevant environmental investigations in respect of the environmental effects of the Collector Substation, and has reported the outcome of these investigations as part of the submission of the planning application to Denbighshire County Council. The environmental effects of the substation forms part of the assessment of the Wider Scheme within this ES, but it is important to note that the proposed Collector Substation does not form part of the DCO application.
- 1.7.6 Similar environmental information relating to the underground cable route and the works at the St Asaph substation have also been included within this this Environmental Statement (Appendices 1.2 and 1.3 respectively).
- 1.7.7 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'. The works within St Asaph substation, the underground cabling and the Collector Substation, are referred to as the "Wider Scheme". Information is provided in Appendices 1.1, 1.2 and 1.3 relating to the Wider Scheme.
- 1.7.8 SP Manweb are also proposing a number of diversions to existing lower voltage lines affected by the construction of the Proposed Development. These works also form part of the Wider Scheme and further information as to the nature and location of these diversions is included in Appendix 1.4.
- 1.7.9 Connections from the Wind Farms to the Collector Substation will be by means of undergrounds cables along existing forest tracks. Potential connection routes for the Derwydd Bach, Nant Bach and Brenig Wind Farms are shown in Appendix 1.5.

1.8 Structure of the Environmental Statement

- 1.8.1 The Environmental Statement comprises
- A Non-Technical Summary (DCO Document Ref 6.28)
 - Environmental Statement (DCO Document Refs 6.1 to 6.15)
 - Environmental Statement Technical Appendices (DCO Document Refs 6.17 to 6.27) and
 - Figures (DCO Document Ref 6.16)
- 1.8.2 The main text is divided into 15 chapters. The first five chapters describe the Proposed Development, the Wider Scheme the background to the EIA and the planning context within which the Proposed Development is set. Chapters 6 – 14 cover the assessment by technical discipline. Chapter 15 summarises significant effects and includes details of environmental commitments.

1.8.3 Within each of the specialist chapters, the following format has been adopted, as appropriate:

- Introduction
- Legislation and Policy Background
- Consultation
- Methodology
- Baseline Context
- Embedded Mitigation
- Assessment of Effects
- Specific Mitigation Measures
- Assessment of Combined and Cumulative Effects
- Summary of Residual Effects

1.9 Project Team

1.9.1 The Project Team for the Environmental Impact Assessment comprises:-

SP Manweb	
Gillespies	EIA Management Planning Landscape and Visual Assessments Land Use and Agriculture
Peak Ecology	Ecology and Biodiversity
Network Archaeology	Historic Environment
Acoustic Air	Noise and Vibration
Peter Brett Associates	Socio-economic and Tourism
Development Transport Planning Consultancy Ltd	Traffic and Transport
Mr B Sargent	Water Resources
Mott MacDonald	Electro Magnetic Fields