



**Nant y Moch Wind Farm, Nationally
Significant Infrastructure Project (NSIP)**

DRAFT NON TECHNICAL SUMMARY

November 2010

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Preface

1. This document comprises the Non Technical Summary (NTS) of the Environmental Statement (ES), which has been prepared to accompany a Development Consent Order (DCO) application to the Infrastructure Planning Commission (IPC) for the proposed Nant y Moch Wind Farm, which is located east of the A487 between Machynlleth and Aberystwyth and north of the A44 between Aberystwyth and Llangurig.
2. More specifically the site would adjoin the Nant y Moch Reservoir in the south east, be located to the north and east of Bont-goch, to the east of Tal-y-bont and Tre-Taliesin, to the north of Ponterwyd and to the north-east of Capel Bangor. The site is located in an area of upland rotational forestry and agricultural grazing upland. The proposed wind farm would be approximately two to three kilometres north-east of the existing Mynydd Gorddu wind farm at its closest point. Please see Figure 1 for the location of the proposed development.
3. The planning application is for 64 wind turbines with a maximum tip height of 146.5 metres, ancillary equipment and on site infrastructure for an operational period of twenty-five years (25) for the purposes of generating renewable energy through wind power.
4. The Applicant, SSE Renewables Holdings (UK) Limited (SSE Renewables), is responsible for the development and construction of SSE Group's European portfolio of renewable energy projects, including onshore and offshore wind, hydro, marine, biomass, and solar. SSE Renewables is the leading generator of renewable energy in the UK and Ireland, with over 2,200MW of renewable electricity generation capacity and a portfolio of over 15,000MW of renewable energy projects in construction, consented or in development.
5. The Nant y Moch Wind Farm development is subject to the new consenting regime introduced through the Planning Act 2008 ('The Act'), which itself is supported by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009, SI 2009 No. 2263 and Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, SI 2009 No. 2264.
6. The Environmental Impact Assessment, which has been compiled on the basis of the above statutory requirements, comprises the following documents:
 - A Non-Technical Summary (this document), Volume 1;
 - The Environmental Statement (the principal document), which is prepared in three volumes, including the Written Statement (Volume 2), Figures (Volume 3) and Landscape and Visual figures (Volume 4); and
 - A series of Technical Appendices, to supplement the content of the ES (Volume 5 of the ES).
7. A copy of the full ES is on display at the following locations during the determination period by the IPC:
 - Offices of Ceredigion County Council, Penmorfa, Aberaeron, Ceredigion, SA460PA; and
 - Powys County Council County Hall, Llandrindod Wells, Powys, LD1 5LG.
8. In addition, copies of the Non Technical Summary and some Figures are available to download at www.nantymochwindfarm.com / www.ffermgwyntnantymoch.com. Hard copies of the ES have also been sent directly to the principal Community Councils in which the development resides.
9. The assessment process and production of the ES has been managed and compiled by Dulas Ltd, a dedicated renewable energy company based in mid Wales. Dulas has been responsible for the consent of over 315MW in wind energy and the development of over 700MW of renewable energy schemes in the UK. Dulas has drawn together competent ES contributors, all with experience in the wind energy sector, for the purposes of producing this ES. Details are provided in the table below.

Organisation	Project Role
SSE Renewables	Developer and Applicant.
Dulas Ltd	EIA project management and collation; planning policy context; human environment, rights of way and land use; air-safeguarding and telecommunications; air quality and climate change; and shadow flicker assessment.
ADAS (UK) Ltd	Ecology and Ornithology (with Ecology Matters) assessments; Peat Assessment sections; and Forestry assessment.
SLR Consulting	Landscape and visual assessment.
EcoTec Research and Consulting	Socio-economic assessment.
Hayes McKenzie Partnership	Noise and vibration assessment.
Natural Power & Colletts	Civils Construction, Operation and Decommissioning assessments; Peat Assessment sections; and Transport and Access.
Cambrian Archaeology	Cultural heritage and Archaeology assessment.
SKM Consulting	Hydrology, hydrogeology and geology assessment; Peat Assessment section; and Mining assessment.

1.0 Introduction and Brief Overview

1. SSE Renewables Holdings (UK) Ltd (hereafter referred to as 'SSE Renewables or the 'Applicant') is seeking a Development Consent Order (DCO) for the construction and operation of the proposed Nant y Moch Wind Farm (hereafter known as the 'Development'). The development site is located east of the A487 between Machynlleth and Aberystwyth and north of the A44 between Aberystwyth and Llangurig (see Figure 1). The development will comprise 64 wind turbines and ancillary infrastructure and will have an indicative generating capacity of 128 to 160MW based on the Applicant's review of the turbines currently available. Consent is sought for a period of 25 years following the commissioning of the Development whereby all of the wind turbines are generating and exporting electricity to the grid network. It is expected that construction will take 30 months, followed by a 25 year operational life, and finally decommissioning, which will occur over a shorter period than that required for construction.
2. The parent company, Scottish and Southern Energy (SSE) plc, whose headquarters are in Perth, Scotland, is an integrated electricity and gas supplier and generator, listed on the London Stock Exchange. SSE Renewables is responsible for the development and construction of SSE Group's European portfolio of renewable energy projects, including onshore and offshore wind, hydro, marine, biomass, and solar. In January 2010, Airtricity, the renewable energy development division of SSE, became SSE Renewables. SSE Renewables is the UK's largest generator of renewable energy with over 2,200MW of renewable electricity generation capacity in the UK and Ireland, and a portfolio of over 15,000MW of renewable energy projects under construction, consented or in development.
3. The Development is subject to the new consenting regime introduced through the Planning Act 2008 ('The Act') (Ref 1). The Act establishes the following that are relevant to the Development:
 - The Infrastructure Planning Commission (IPC) as the new authority responsible for granting development consent for Nationally Significant Infrastructure Projects (NSIPs);
 - Government will produce national policy statements (NPSs) to be used as the policy framework for the Commission's decisions;
 - A requirement on project promoters to consult affected parties and local communities prior to submitting an application; and
 - A new process for making and examining applications.
4. As a scheme greater than 50MW, the scale of the Development is such that it falls within the thresholds that define it as a NSIP and as such a DCO is required from the IPC.
5. This NTS provides a summary of the findings of the full ES which accompanies SSE Renewables' DCO application to the IPC. The ES documents the findings of the assessments that have been undertaken to provide the information reasonably required by the Commission to assess the environmental effects of the Development, in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (SI 2009 No 2263) (Ref 2). The Regulations impose procedural requirements, in particular, the carrying out of environmental impact assessment (EIA) in relation to applications for development consent.
6. The likely significant effects of the Development on the receiving environment have been studied systematically as part of the EIA process, the results of which are presented within the ES. This ES describes the likely significant environmental and socio-economic effects during each of the phases of the project, including construction, operation and decommissioning, and is designed to inform consultees and decision makers of the nature of the Development, the likely environmental effects, and the measures proposed

to mitigate any identified likely significant environmental effects. Where required, cumulative effects with other built, under construction, consented or in planning wind farm schemes have been assessed. In some instances schemes not yet in the planning system are also considered cumulatively as they are known NSIPs that will be submitted during the period of examination for the Development.

7. The Development will also require a new grid connection (for which a formal connection agreement from National Grid currently exists), which will be subject to a separate design process and for which a separate consent will be required. Such an application will also be the subject of an EIA pursuant to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (Ref 1-1), which would be undertaken by SSE Power Distribution (SSE-PD) who will determine the consenting process to be followed. Section 19 of this NTS presents an overview of the likely impacts associated with the grid connection, through making informed assumptions about the likely routing of the grid connection. However, a detailed environmental impact assessment of the effects associated with this aspect has therefore not been considered as part of the ES for this Development.

Brief Description of the Application Site

8. The Development site is located east of the A487 between Machynlleth and Aberystwyth and north of the A44 between Aberystwyth and Llangurig. More specifically the site would adjoin the Nant y Moch Reservoir in the south east, be located to the north and east of Bont-goch, to the east of Tal-y-bont and Tre-Taliesin, to the north of Ponterwyd and to the north-east of Capel Bangor. The site is located in an area of upland rotational forestry and agricultural grazing upland. The proposed wind farm would be approximately two to three kilometres north-east of the existing Mynydd Gorddu wind farm at its closest point (Figure 1).
9. The surrounding area is typified by rural farming and upland rotational forestry. Bont-goch, approximately 3km from the western edges of the upland rotational forestry at Nant y Moch, is the only village that would be in close proximity to the proposed Development. However, there are a number of isolated properties, particularly situated in and around Cwm Einion (Blaeneinion, Llwyngwnau and Bronwion for example), Cwm Ceulan (Blaen-Ceulan for example), along the Afon Leri (Cyneiniog for example), and at Angler's Retreat (a single isolated property), that may be affected by the Development. There are also a significant number of public rights of way crossing the proposed development site.
10. Several smaller C class roads access Bont-goch and the dispersed properties in the area using the river valleys descending from Nant y Moch. Use of these roads is largely limited to residents although some access by recreational users such as walkers occurs.
11. The area that has been considered for the siting of wind turbines, termed the Potential Development Area (PDA), is shown in Figure 2, and covers an area of approximately 4,780 hectares (ha). The permanent development infrastructure requires land take of approximately 67.8ha comprising primarily of widening of existing tracks, new access tracks, wind turbine bases and associated hardstandings and a substation compound.
12. Access to the site would be provided by three routes from the trunk road network:
 - from the A487 at Furnace, using an existing Forestry Commission Wales access track to access the site;
 - from the A44 at Ponterwyd via a minor road across the Nant y Moch reservoir dam to site; and
 - from the A44 at Nant yr Arian via upgrades to existing forestry and other tracks.
13. The latter of these routes would be used to accommodate the delivery of abnormal loads only, including wind turbine components.

Proposed Development

14. In summary, the Development will comprise the following:
 - 64 wind turbines, 51 of which will be up to 146.5m height (to tip of blade) and 13 of which will be up to 126.5m (to tip of blade);
 - External transformer housings for each turbine;
 - Crane hardstandings and blade laydown areas;
 - 1 control building (including office accommodation) and substation housing the switchgear, plus a set of electrical transformers;
 - Upgrading of existing on-site access tracks and construction of new tracks, including crossings of ditches/streams;
 - 1 new site access point off the public road and modifications to a number of other accesses;
 - 3 permanent meteorological masts;
 - Underground electrical cables;
 - A concrete batching plant;
 - 9 Borrow Pits;
 - Widening and upgrading of sections of existing unclassified public road within the site area;
 - Minor modifications to the existing A road network along the proposed access route for wind turbine components;
 - Site signage; and
 - The felling and replanting of trees.
15. Temporary infrastructure will also be required for the construction of the wind farm, particularly construction compounds and laydown areas for the temporary storage of wind turbine components. The land used for such infrastructure would be reinstated to its original condition following the construction period.
16. An example turbine, the Siemens 2.3MW machine (93m rotor diameter model), has been selected for the purpose of the assessments in this ES, including the calculation of expected output CO₂ emissions savings over the lifetime of the Development. There are however other turbines available of similar physical size and appearance, and it is possible that market conditions at the time of construction may make other models preferable. Any turbines that may qualify for this site would have to meet any relevant planning requirements attached to any DCO.
17. The Development will also require an electrical connection to the transmission network. The underground 33kV cables from the turbines would be brought together at the on-site substation, metering and control building, located within a 65m x 65m compound in the centre of the Nant y Moch forestry, at a location shown on Figure 2. The on-site substation is required to step up the voltage to 132kV for transmission to the main grid connection point.
18. In order to enable access to the site for abnormal loads, modifications outside of the PDA at certain locations along the public highway or its verges are likely to be required. Such modifications, as associated development, will be subject to separate agreements with the relevant Highways Authorities.

Wind Energy Development

19. The Development will contribute to national and devolved renewable energy targets, including a target of 15% of primary energy from renewable sources to be delivered by 2020, as detailed within the UK Renewable Energy Strategy 2009 (Ref 1-3). The Nant y Moch Wind Farm site has been selected with careful regard to national and local guidance on land use and renewable energy planning policy in the UK, and in particular Welsh policy and guidance. SSE Renewables also applies its own site identification and development criteria to ensure it develops schemes that are unlikely to lead to unacceptable significant impacts. A selection of other factors has been reviewed in the process of establishing the Nant y Moch Wind Farm proposal, including air-safeguarding and telecommunications issues, connection to the electricity grid network, site access via the local road network, and ensuring the protection of noise amenity to local residents.
20. The above approach to site selection has been further guided by the Welsh Assembly Government's Technical Advice Note 8: Renewable Energy (TAN8) (Ref 3) in 2005. This guidance, in part, sets out seven wind farm zones called Strategic Search Areas (SSAs). These areas have been identified as being suitable for large scale wind energy development as part of the Assembly's policy to meet climate change objectives, including the generation in Wales of 4TWh of electricity per annum to be produced by renewable energy by 2010 and 7TWh by 2020. One of these areas, SSA D – Nant y Moch, encompasses the area proposed for the Nant y Moch Wind Farm development.
21. The potential benefits of this Development in this regard are summarised as follows:
 - Annual electricity output of 394,578MWhrs based on the example Siemens 2.3MW capacity machine and a 30.6% capacity factor;
 - Annual reductions in carbon dioxide emissions equivalent to 169,669 tonnes based on savings of 0.43 grams per MWhr generated;
 - Total reductions in carbon dioxide emissions over the 25 year operational lifetime of the development of 4,520,160 tonnes;
 - Clean electricity generation equivalent to the domestic requirements of 83,953 homes based on an annual average household consumption of 4.7MWhrs/annum; and
 - Contribution to energy generation diversity and security of energy supply.

UK Government Policy

22. Global climate change is the single greatest challenge facing the world today. The principal cause is a rise in the concentration of carbon dioxide in the atmosphere, a major contributor being the established and growing use of fossil fuels to generate electricity. Renewable sources of energy are those that are not based on finite reserves stored within the earth. Using wind to generate electricity creates no CO₂ or other air pollutants (except limited quantities during manufacture, construction and decommissioning), and therefore does not contribute to climate change or localised air pollution.
23. The UK Government set a domestic goal of reducing CO₂ emissions to 20% below 1990 levels by 2010 and launched the UK Climate Change Programme in November 2000. This programme outlines the target areas and policies through which it aims to achieve this domestic target. Renewable sources of energy are an essential element of this climate change programme.
24. In 2002, the UK Government placed a 'Renewables Obligation' on all UK licensed electricity suppliers to provide 10% of their electricity from renewable sources by 2010 and 15% by 2015. Generators that fail to meet their targets are forced to pay a 'buy-out price', which is effectively a financial penalty. The primary purpose of this Obligation is to

- assist the UK in meeting its National and International targets for greenhouse gas reduction. It also promotes a secure, diverse, competitive energy supply market, stimulates the UK renewables energy industry and makes a contribution to the development of the rural economy.
25. On 24th February 2003, the UK Government published its Energy White Paper: Our Energy Future - creating a low carbon economy (Ref 4). In this, the Government established a goal of cutting the UK's CO₂ emissions by 60% by 2050, with 'real progress' by 2020, further strengthening their commitment to the development of renewable energy generation.
 26. The UK Government reiterated its commitment to cut the UK's CO₂ emissions by 60% by 2050 and by 26-32% by 2020 against a 1990 baseline in May 2007, with the publication of "Meeting the Energy Challenge: A White Paper on Energy" (Ref 5). In October 2008, the Department for Energy and Climate Change (DECC) was created and the now former Secretary of State, David Milliband, announced that the Climate Change Bill was to be amended to provide a target of 80% reduction in CO₂ emissions by 2050. There is now a new Conservative / Liberal Coalition Government and their commitment to carbon reduction is also initially supportive.
 27. The Climate Change Act 2008 (Ref 6) sets legally binding targets for greenhouse gas emission reductions of at least 80% by 2050, and reductions in CO₂ emissions of at least 26% by 2020, against a 1990 baseline. The Climate Change Act 2008 (2020 Target, Credit Limit and Definitions) Order 2009 (Ref 7) increased this target from 26% to 34%.
 28. Latest estimates in DBERR's Energy Trends show that total UK CO₂ emissions in 2007 were 8% below 1990 levels (Ref 8). Further action is needed to curb carbon dioxide emissions over the next few years if the Government's targets are to be met.
 29. In order to ensure that legislation supports the UK's long-term energy and climate change strategy, the Energy Act (Ref 9) was given royal assent in 2008. Among other matters, the Energy Act strengthens the Renewables Obligation in order to increase the diversity of our electricity mix, improve the reliability of our energy supplies and reduce carbon emission from the electricity sector.
 30. This UK wide commitment to renewable energy has been further strengthened through the Renewable Energy Strategy 2009 (Ref 10) (a direct obligation arising from the Renewable Energy Directive detailed below) in which the former Labour Government outlined views on a range of measures that could be used to deliver the UK portion of the EU renewable energy generation target which is set out in the EU Renewable Energy Directive. These include:
 - Extending and raising the level of the Renewables Obligation to encourage up to 30-35% of UK electricity to come from renewable sources by 2020 (currently it is approximately 5.5%); and
 - Helping the planning system to deliver the targets, by agreeing a clear deployment strategy at regional level similar to the approach established for housing.
 31. In order to meet the 2020 target, the Renewable Energy Strategy 2009 expects the current commercial technology of wind power (both on and offshore) to be a key growth area. Initial modelling suggests the UK needs 14 Gigawatts (GW) of onshore wind power generation capacity compared to approximately 4GW today.

2.0 Consultations, Key Issues and Assessment Methodology

32. Within the Infrastructure Planning (Environmental Impact Assessment) Regulations, installations for the harnessing of wind power for energy production (i.e. wind farms) are listed in Schedule 2. Schedule 2 developments require an EIA where the development is likely to have significant effects on the environment by virtue of factors such as its nature,

size or location. EIA is more likely to be required for commercial developments of 5 or more turbines or more than 5 MW of new generating capacity as advised by DETR Circular 02/99 (Ref 11).

33. Whether or not a Schedule 2 development is classified as EIA development can be confirmed via a request to the IPC for a “screening opinion” under Part 2 Regulation 5 of the Regulations. If an Applicant voluntarily submits an ES with a planning application for a Schedule 2 development then the application becomes an EIA application for the purposes of the Regulations. SSE Renewables has prepared an Environmental Statement to submit in support of the DCO application for the Development having found, with the benefit of considerable experience, that the iterative nature of the design process associated with the preparation of an ES is beneficial in wind farm design. Accordingly, the DCO application for the Development is an EIA application.

Scoping and Consultation

34. Under the Regulations, an Applicant may submit a “Request for Scoping Opinion”. SSE Renewables prepared a Scoping Consultation Document through its principal EIA contractor, Dulas Ltd, detailing the proposed scope of the ES. This was originally submitted to DECC on 5th June 2008 and was followed by a Scoping meeting with Ceredigion County Council (CCC), Powys County Council (PCC) and other consultees including Countryside Council for Wales (CCW) and Cadw, on 30th June 2008 at the CCC offices in Aberaeron. Following the introduction of the Planning Act an updated scoping consultation document was issued to the newly appointed IPC on 14th April 2010 to seek a “Scoping Opinion”. The document was also issued via the IPC to other statutory and principal interest consultees requesting comments on the proposed scope.
35. A Scoping Opinion from the IPC was received in May 2010, which included consultee responses. This ES has been prepared to take account of the suggested inclusions or variations to the scope of ES works. A meeting with the IPC and Ceredigion and Powys County Councils was held on the 9th April 2010 at Ceredigion County Council offices in order to confirm the pre application process and to discuss specific community consultation requirements.

Key Issues

36. Based upon the scoping opinion, consultation responses and public consultations, the following table summarises the key, and potentially significant, environment issues that were identified as requiring assessment.

Table 1 Summary of Consultee Responses during 2008 & 2010 Scoping

Consultee	Environmental Issue Raised													
	Conceptual Design	Planning Policy	Ecology	Landscape and Visual	Traffic and Transport	Land use, recreation and socio economics	Cultural Heritage	Hydrology and Hydrogeology	Aviation and Telecoms	Air Quality	Cumulative issues	Noise	Amenity and shadow flicker	Grid connection
IPC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ceredigion County Council	✓	✓	✓	✓	✓	✓						✓	✓	
Powys County Council	✓			✓	✓	✓					✓	✓	✓	
The National Trust				✓			✓							
RSPB			✓											
Environment Agency								✓			✓			
Countryside Council for Wales (CCW)	✓		✓	✓							✓			
National Grid											✓			✓
CADW				✓			✓							
Ministry of Defence (MOD)	✓								✓		✓			
Civil Aviation Authority (CAA)	✓								✓		✓			
Air Traffic Management Services (NATS)	✓								✓		✓			
Telecommunication Operators, including Vodafone, Orange, Arqiva	✓								✓		✓			
Wildlife Trust			✓											
Highways Agency					✓						✓			
British Horse Society						✓								
Forestry Commission Wales (FCW)	✓													
Welsh Assembly Government		✓												
Local Health Boards										✓			✓	

37. The resulting assessments and findings are presented within Sections 6 - 20 of this NTS.

Assessment Methodology and Significance Criteria

38. In order to evaluate the potential significant environmental effects, information relating to the existing environmental conditions was collected. This forms the baseline, alongside a consideration of these conditions into the future. The baseline is used to assess what changes may take place as a result of the construction, operation and decommissioning phases of the Development.
39. The prediction of potential significant environmental effects considers the construction, operation and decommissioning phases of the project, as different environmental effects are likely to arise during each phase of development. Each technical assessment considers the nature of effects and includes cumulative effects with other developments where appropriate.
40. For the purposes of environmental assessment, 'effect' is generally considered on a scale from Negligible to Major. Where specific technical assessments adopt a variation such as in the Ornithology and Noise assessments, for which the terms 'significant' / 'not significant' or 'compliance' / 'non compliance' with specified limits are required, these have been applied in line with the appropriate guidance for their respective assessments. Moderate or major effects have been considered to be 'significant' for the purpose of satisfying the EIA Regulations. The significance of environmental effects has generally been categorised using the terms 'negligible', 'minor', 'moderate', or 'major', and as either negative, neutral or positive. The duration of effect has been categorised as short-term, long-term, temporary and/or permanent depending upon the nature of the impact. In many cases any effect is considered to be reversible following the decommissioning of the Development.
41. The proposed mitigation measures that are designed to offset or reduce any significant adverse effects are described with a commitment made by SSE Renewables to implement the measures where possible, either during construction or operation. Any significant effects that are remaining after this mitigation is termed residual effects.
42. Cumulative effects have also been assessed, taking into account the effects of the Development along with other proposed developments that have either been built, are under construction, consented or in planning. In some instances schemes not yet in the planning system are also considered cumulatively as they are known NSIPs that will be submitted during the period of examination for the Development.
43. A full and detailed assessment of the grid connection will be undertaken by SSE-PD; although a high level review of the possible effects of the grid connection based on the best current information has been undertaken.

3.0 Site Selection and Design Evolution

Site Selection

44. The Welsh Assembly Government's Technical Advice Note 8 (TAN8): Planning for Renewable Energy identifies 7 'Strategic Search Areas' (SSAs) within Wales considered suitable for the development of large scale (over 25MW) onshore wind farms. The aim of this approach is to concentrate such developments into defined areas which are intended to offer sufficient land to deliver the Welsh Assembly Government's 2010 targets for onshore wind. The identification of Strategic Search Areas considered those areas throughout Wales most suitable for such developments on the basis of avoiding National Parks and Areas of Outstanding Natural Beauty and of a number of other broad environmental and technical constraints.
45. The proposed Nant y Moch Wind Farm lies within Strategic Search Area D, Nant y Moch, and would comprise the majority (if not all) of the potential wind farm development within this SSA. The Welsh Assembly Government set an indicative target of 140MW installed

- wind generation capacity for SSA D by 2010.
46. From 2005, subsequent to the publication of the consultation draft of TAN8, Dulas Ltd. on behalf the Applicant sought to identify potential wind farm sites within the SSAs in Wales. This exercise focussed to a large extent on identifying areas where there was a prospect of reaching agreement with the relevant landowners, whilst also reviewing the key technical, commercial and environmental criteria as identified above.
 47. Within SSA D, the Applicant identified three distinct areas with potential for development:
 - Land lying to the east of Tal y Bont and Bont Goch, on the western side of SSA D, the owners of which chose to form a consortium to negotiate with potential wind farm developers. This land became known as the 'Moel Fferm' site;
 - Extensive landholding forming part of the (National Assembly for Wales) NAW estate (managed by FCW), largely in the centre of the SSA, for which development rights had to be secured under the National Forest Estate Wind Farm Programme; and
 - Land toward the eastern edge of the SSA, north of the Nant y Moch reservoir and land in the north-western part of the SSA between Cwm Ceulan and Artists Valley / Cwm Einion the owners of which chose to form a second consortium to negotiate with potential wind farm developers.
 48. Of these areas, the first two had potential to be developed independently whilst development of the remaining land was reliant on also securing rights of access across the NAW estate in order to facilitate wind farm construction. The identified land within SSA D as a whole was considered by the Applicant to be appropriate for wind farm development.

Wind Farm Design Evolution

49. The Nant y Moch Wind Farm proposal has developed over the period since the Applicant and its consultant, Dulas Ltd, identified the potential for a wind farm in the area in 2005 following the publication of TAN8. The Applicant has revised its proposals over time in response to securing necessary land agreements and to extensive studies, consultation and survey work supporting initial outline site design and the subsequent environmental impact assessment.
50. The Development was originally focussed on the Moel Fferm site, for which a scheme was devised comprising 22 turbines and an overall wind farm capacity of 44-55MW. Following the award of the rights to develop Forestry Commission Wales land at Nant y Moch, a greater land area became available for development. Preliminary layouts for the wider area included for 108 wind turbines and therefore a potential wind energy scheme with the capacity to deliver 216-270MW.
51. Subsequently the process of developing the layout has been undertaken through a number of iterations that have been informed by a number of specific attributes of the available development area, including cultural heritage, ecology and ornithology, hydrology and mining, available land, nearby residences, peat, public rights of way, topography, transport and access, noise and visual effects, and the available wind resource.
52. Avoidance of potential effects by the proposed development has been enabled through appropriate site selection and the iterative design process described above. Changes made as a consequence of this process are referred to as 'embedded' mitigation. The Development contains considerable embedded mitigation as a result of the site selection and design iterations.

4.0 Project Description

53. The site will consist of 64 wind turbines. 51 turbines will have a maximum height of 146.5m and 13 will have a maximum height of 126.5m (with a blade in the vertical position). The capacity of each turbine is expected to be 2-2.5MW, giving an indicative installed capacity of 128 to 160MW. Wind farm performance would be remotely monitored using three permanent anemometer masts together with a Supervisory Control and Data Acquisition system (SCADA) that would monitor the individual turbines and the grid connection. Anemometry equipment, including wind speed and direction measurement sensors, would be positioned at prescribed heights and near the top of the anemometer masts on booms. The masts would be the same height above ground level as the turbine hubs, constructed on 8m x 8m buried concrete base (see Figure 3 for turbine and met mast schematics).
54. The layout, shown in Figure 2, will require a land-take for all Development infrastructure during construction of approximately 73.8 hectares (ha). After construction, the land-take would be approximately 67.8ha. 61 turbines are located in Ceredigion and 3 turbines are located in Powys.
55. The total area of felling prior to construction will be approximately 285ha. However 197ha will be available for replanting, leaving 88ha of land currently managed as upland rotational forestry that will be maintained free of trees for the life of the wind farm (see Figure 4).
56. Approximately 40km of upgrades to existing tracks and 32km of new on-site tracks would be required to allow the wind farm's construction. Existing and new watercourse crossings will be required throughout the site. Most on site water crossings will comprise appropriately sized culverts. A bridge crossing is required to link the main site with 3 turbines to the east of FCW land at Esgair Las. A second bridge is required to widen the existing structure on the minor public road crossing of the Afon Cyneiniog near Bwlch Glas.
57. It is envisaged that the construction of site tracks and crane pads and areas of temporary hardstanding will utilise stone quarried from borrow pits within the Development site itself. 9 borrow pits have been identified at strategic locations and are estimated to yield approximately 525,000m³ of crushed rock.
58. Each turbine foundation would be approximately 20m x 20m and 3-4m below finished ground level. Each would require approximately 650 cubic metres of concrete and 80 tonnes of steel reinforcing bar (see Figure 5). Transformer foundations would be adjacent to the turbine foundation and linked to the turbines through cable ducts in the turbine foundations.
59. Two crane hardstandings are required adjacent to each turbine to provide stable, firm ground for safe operation of the cranes during the installation of turbines. The main crane pads are generally triangular in plan view and approximately 56m long and 32m wide whilst the secondary crane pad would be approximately 50m long and 10m wide.
60. In order to provide a safe working area for the construction of the substation, a compound of approximately 100m x 100m is required during construction. Upon completion the compound extent would be reduced to 65m x 65m for the operational phase. A building would be located within the compound to house the wind farm switchgear, metering, control and communication equipment required to operate the wind farm (see Figure 6).
61. In addition to the above infrastructure components, the construction of the wind farm will involve the temporary construction of 3 construction compounds, an additional lay down space for the temporary storage of wind turbine components and a concrete batching plant.
62. The main construction period for the whole of the proposed development is envisaged to

last for 30 months. Construction would consist of the following phases which may overlap or occur concurrently:

- Construction of site storage compounds for off loading materials and to accommodate site offices and mess facilities;
- Excavation of borrow pits;
- Public highway improvements;
- Construction of site tracks for access to turbine locations;
- Excavation for, and construction of, turbine foundations;
- Stabilisation of shallow unrecorded mine workings by appropriate methods;
- Construction and commissioning of temporary batching plant;
- Construction of turbine and anemometer crane hardstandings;
- Laying of on-site cabling;
- Installation of turbine transformers;
- Construction of temporary laydown areas to accommodate turbine components;
- Delivery and erection of turbine towers and installation of nacelles and blades;
- Construction of the on-site substation, metering and control buildings;
- Erection of anemometry masts;
- Testing and commissioning of the turbines and the wind farm electrical system; and
- Site reinstatement (ongoing during works).

63. The principal phases of construction are outlined in the indicative construction programme below. In addition, felling or clearance of some areas of forestry is required in order to permit construction of the wind farm. This would be timetabled in coordination with FCW, giving consideration to other operations associated with FCW's normal management of the forest.
64. At the end of the 20-25 year operational period of the wind farm, it is proposed that the turbines, transformers, met masts and the on-site substation would be removed or an application made for consent to extend the operational life of the Development.

Table 2 Indicative Construction Timeframe

TASK NAME	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
MOBILISATION		■	■	■																											
BORROW PIT WORKING AND REINSTATEMENT			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■							
OFF SITE TRACKS AND ENABLING WORKS				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
ACCESS AND SITE TRACKS				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
TRACK REINSTATEMENT					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
FOUNDATIONS						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
ON-SITE CABLING										■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
ON-SITE SUBSTATION / CONTROL BUILDINGS CIVIL & ELECTRICAL																															
CRANE PADS																															
TURBINE TRANSFORMER INSTALLATION																															
TURBINE DELIVERY																															
TURBINE ERECTION																															
REINSTATEMENT AROUND TURBINES																															
COMMISSIONING OF WIND FARM																															
RELIABILITY TESTING																															
DEMOBILISATION																															

5.0 Planning Policy Context

National Policy

65. The application for the Development will be made under section 37 of the Planning Act 2008 and as such is to be evaluated against any adopted or emerging national policy statement. Nant y Moch Wind Farm is a renewable energy development and as such the relevant consultation draft NPSs are:
- EN-1: Overarching National Policy Statement (Ref 12);
 - EN-3 Renewable Energy Infrastructure (Ref 13); and
 - EN-5 Electricity Networks Infrastructure (Ref 14).
66. Of the above, EN-1 sets out national policy for the UK's energy infrastructure and affects the decisions by the IPC on applications for energy developments that fall within the scope of the NPSs. For such applications, EN-1 when combined with the relevant technology-specific NPS, in this case EN-3, provides the primary basis for decisions by the IPC. EN-1 builds on the commitments of the Renewable Energy Strategy 2009 and UK Low Carbon Transition Plan 2009 (Ref 15) which seek to establish a comprehensive strategy for cutting emissions, maintaining secure energy supplies, maximising economic opportunities, and fulfilling the UK's commitment to meet its EU target for significant increases in the proportion of energy supplied from renewable sources.
67. EN-3 is the primary decision-making guidance document for the determining body on nationally significant onshore renewable energy infrastructure projects in England and Wales. This draft NPS sets out clear criteria for the development of renewable energy schemes and matters to be taken under consideration in appraising an application by the determining body.
68. In 2009 UK Government issued the Renewable Energy Strategy 2009 (RES). Prior to the RES, whereas the Government had been working towards a UK 2020 target of 20% of electricity coming from renewable sources, the adopted scenario in the RES is that this figure is now to be raised dramatically. The Government has signed up to the EU requirement that 15% of all energy consumed in the UK should be from renewable sources by 2020, but as the RES points out this also covers fuel and heating – i.e. all energy sources and not just electricity. In the light of the difficulties in providing significant elements of fuel and heating from renewables by 2020, the proportion of electricity supply that will have to come from renewables to balance this out will need to be raised substantially, to 30% or more. Onshore wind and offshore wind are expected to provide about 64% of all the electricity from renewable sources by 2020, made up of 29% onshore and 35% offshore. This is estimated to mean that potentially a further 6000 wind turbines will need to be installed onshore by 2020 and 4000 offshore (where turbine sizes are bigger).
69. Wales acquired devolved powers such as health, education, and land use planning through the Government of Wales Act 1998. Planning Policy Wales (PPW) was originally brought out in 2002 and was recently reissued in 2010. The PPW is supported in Wales by topic based Technical Advice Notes.
70. Technical Advice Note 8 (2005): Renewable Energy provides technical advice to supplement the policy set out in PPW. TAN8 established, following the Ministerial Statement on Planning Policy: Renewable Energy 2005 (MIPPS 2005), that for efficiency and environmental reasons large scale (over 25MW) onshore wind developments should be concentrated into particular areas defined as Strategic Search Areas (SSAs). Nant y Moch is one such SSA with an indicative target of 140MW.
71. A Statement by the Welsh Assembly Government in 2010 (A Low Carbon Revolution: The Welsh Assembly Government Energy Policy Statement) provides broad information on how the Welsh Assembly Government will try to maximize energy savings and energy

efficiency in order to meet their ambition for low carbon energy and how they intend to make it a reality. The aim is to have 4.5kWh/d/p (kilowatt hours per day per person - based on a population of 3 million) of installed onshore wind generation capacity by 2015/2017. As part of the ambition to generate twice as much electricity from renewable sources as people in Wales consume, the use of the existing strategic search areas set out in TAN8 should be optimised.

Local Policy

72. Work on the Ceredigion draft Unitary Development Plan 2001 – 2016 (Deposit Version 2002) has now ceased and the Council is instead focussing on the preparation of the Local Development Plan, as required under the Planning and Compensation Act 2004 (Ref 16). However, the draft UDP is still considered to be relevant by the Council in determining planning applications. In addition key strategic policies relevant to this Development are emerging in the preparation of the Ceredigion Local Development Plan 2007 – 2022, whilst the Dyfed Structure Plan is still relevant until such time as the Local Development Plan is adopted.
73. The development plan for Powys County Council comprises the Powys Unitary Development Plan, adopted in March 2010. Work is currently underway to consolidate the Deposit Draft Unitary Development Plan with the 2007, 2008, 2009 and 2010 modifications. Once this work is complete the Adopted Powys Unitary Development Plan will be made available. The Council has consulted on a Draft Delivery Agreement for the Powys LDP in June 2008. Since this consultation, the Council has received a direction from the Welsh Assembly Government which has delayed the preparation of the Powys Local Development Plan.

6.0 Landscape and Visual

74. The landscape and visual assessment has been prepared using methodology consistent with current national and regional guidelines and considers the potential effects of the proposed Nant y Moch wind farm on the landscape and visual amenity of a 30km radius study area. Given the presence of a number of existing wind farms in the vicinity, including Mynydd Gorddu (located approximately 2.7km to the west of the proposed Nant y Moch turbines) there would be few locations from where the proposed turbines would be seen in isolation. Consequently, the assessment has focused primarily on the cumulative effects of the proposal.
75. An analysis of the zone of theoretical visibility of the wind farm (see Figure 7) indicates that it would have a relatively constrained viewshed to the south-east, potential visibility being almost entirely terminated at the raised ridge of Plynlimon Fawr. Consequently, the influence of the proposed turbines would be limited in comparison with other similar development in the UK.
76. Of the 30 representative viewpoints assessed (also shown on Figure 7), 22 would experience significant effects on both their visual amenity and character.
77. Routes predicted to experience significant residual effects include the A4120, A44, A487, A493, B4343, B4353 and B4572, although significant effects on these routes would be localised (i.e. often only affecting a small part of the route) with the remainder of the routes often not experiencing significant effects.
78. Sections of some rights of way, including Glyndwr's Way, and areas of Open Country would also experience significant effects. Again, significant effects on these routes would be localised.

79. Of the settlements assessed those predicted to experience significant residual effects include Aberdyfi, Borth, Tal-y-bont, Llandre, Penrhyncoch, Ponterwyd and Bont-goch. These significant effects would generally be confined to a small number of locations on the outskirts of these settlements, the interior of the settlements being generally well screened, thereby preserving their character and amenity.
80. Significant effects would be experienced in a number of designated landscapes in the study area. For Snowdonia National Park (SNP), significant cumulative effects in this designated area would be confined to a relatively small number of locations on the south-facing escarpment overlooking the Dyfi estuary; between Allt Gwyddgwion, Mynydd Esgairwedden and the side of the Dyfi Estuary (including the settlement of Aberdyfi). However, whilst receptors at this location would experience significant cumulative effects as a result of the proposed Development the proposed wind farm would not represent a wholly new feature and would not dominate the SNP due to the wind farm's distance and lower elevation, relative to the majority of the National Park. Moreover, the Development would be screened from the majority of the National Park, thereby leaving its character and scenic quality largely unaltered. For the Areas of Natural Beauty within the SNP the pattern of significant effects is similar to that described for the SNP.
81. For the Ceredigion Special Landscape Area (SLA) it is inevitable that significant effects would occur within this designated area as it contains the application site. However, given the scale and variability of the landscape covered by this designation, potential residual effects are anticipated to vary greatly. Significant effects would be experienced at Plynlimon Fawr and Foel Uchaf, to the east and south-east of the application site, respectively. Significant effects would also be experienced at a number of elevated summits to the north-east, within 10km for the proposed turbines including Foel Fadian and Cefn Modfedd and at Glaslyn.
82. To the west significant residual effects would also occur in locations on the Dyfi grazing levels and Ynyslas Dunes. Significant effects would also occur on the elevated slopes between the A487 and the application site and within Cwm Ceulan. To the north-west significant effects would be experienced in parts of the Dyfi Valley, Cwm Einion and the adjoining summits of Pen Carreg Gopa and Foel Goch. Significant effects would affect the majority of the SLA within 10km, more distant locations being mitigated by distance.
83. The proposed turbines, whilst not a new feature in the landscape, would result in significant residual and cumulative residual effects in parts of 27 Landscape Character Areas (LCAs). However, such effects would not necessarily apply to the entire LCA.
84. Overall it is apparent from the landscape and visual assessment that the zone of theoretical visibility for the proposed wind farm at Nant y Moch would be relatively constrained, especially when compared to similar sized developments elsewhere in the UK. Moreover, the majority of significant effects associated with the Development would occur within 10km of the proposed turbines, and in a small number of more distant locations along the northern side of the Dyfi Estuary and adjoining southern edge of the Snowdonia National Park. It is likely that any regional scale wind energy development within SSA D would cause a similar extent of significant effects. Consequently, it is difficult to reconcile the extent of SSA D, the stated yield targets and current TAN 8 policies which, on the one hand, contain an explicit acceptance of significant landscape and visual change to the landscape character from wind turbine development within and immediately adjoining the SSA, and the policy of no change in the landscape character of the National Park as a result of wind farm development.

85. The nature of the residual effects are almost exclusively cumulative insofar as the Development would be seen in conjunction with a number of existing, consented and proposed wind farms in the vicinity. The majority of wind farm development in the study area is concentrated in locations to the north-east and east of the application site, with a number of smaller wind farms positioned to the south and west of the Development. This configuration of developments means that Nant y Moch would often be seen distinct and separate from other cumulative schemes, the exception to this being views from the south where Nant y Moch, Mynydd Gorddu, Rheidol and Cefn Croes can be seen above the skyline of the Cambrian Mountains in close succession. Additionally, the Nant y Moch and Mynydd Gorddu turbines would be seen in close conjunction from locations adjoining Borth and the Dyfi Estuary, where the proposed turbines extend along the skyline inland.
86. The viewpoint analysis and analysis of residual effects on Landscape Character Areas identified that, with the exception of locations within and immediately adjoining the application site, the proposed turbines would form a prominent addition to the existing cumulative context of the study area, but without becoming a defining characteristic of the landscape. Consequently, the result would be a landscape with wind farms, rather than a wind farm landscape.
87. An example photomontage and cumulative wireframe image are shown in Figures 8 and 9 respectively.

7.0 Noise

88. An assessment of the potential noise impact associated with the proposed Nant y Moch wind farm Development has been performed. The guidance contained within ETSU-R-97 (Ref 17) has been used to assess the potential operational noise impact of the Development and the noise associated with construction works has also been assessed.
89. The assessment of construction noise has considered noise impacts on residential properties neighbouring the Development assuming a worst case scenario for construction activities on site during the period of most intensive traffic movements to site along the proposed accesses from the trunk road network. Construction noise is predicted not to exceed limits set out in the relevant guidance applicable. Noise from construction traffic accessing the site has the potential to exceed the relevant limits if all traffic were to use a single route. However, a mitigation strategy consisting of splitting the traffic between the three proposed access routes will be applied which would ensure that the applicable limits are met.
90. Construction noise impacts on the Nant yr Arian Visitor Centre were similarly assessed. Relevant noise limits are predicted to be met except in the case of the most intensive period of works required to form a new access adjacent to the Visitor Centre. During this short period the Visitor Centre would be closed in the interest of public safety.
91. Background noise measurements were taken at twenty four property locations neighbouring the proposed wind farm, the selection of these having been based upon preliminary predictions of noise from the operation of the wind farm.
92. Analysis of the measured data has been performed in accordance with ETSU-R-97 (with an adjustment in line with the IoA Bulletin (Ref 18) to account for wind shear) in order to determine the pre-existing background noise environment at these locations.
93. Predictions of wind turbine operational noise have been made, based upon a warranted sound power level for a candidate turbine, a Siemens 2.3MW, and a calculation procedure which follows industry agreed guidelines.

94. When considering only the proposed Nant y Moch wind farm scheme, the predicted turbine noise levels and measured background noise levels indicate that for most receptors (inhabitable properties) neighbouring the proposed site, wind turbine noise will meet the Day-time hours and Night-time hours Noise Criteria specified in ETSU-R-97. The exceptions to this are Angler's Retreat, which the Applicant is currently in the process of agreeing a contract to purchase if successful in obtaining Development Consent and Dolgarnwen, for which there is a suggested mitigation strategy which may be easily implemented to ensure compliance with the ETSU-R-97 Criteria.
95. Predictions have been undertaken to assess the potential cumulative effect of the presence of the Mynydd Gorddu wind farm. These have been based on the worst case source sound power levels for the type of turbine installed at this development. The cumulative assessment reached the same conclusion as above regarding compliance of the Development with the ETSU-R-97 criteria.
96. In light of the stated mitigation measures, no significant residual adverse effects are predicted from either the construction or operation of the proposed wind farm.

8.0 Ecology

97. The main ecological study was undertaken between March 2008 and June 2010. Ecological baseline conditions were assessed through a combination of desk study and original field surveys. The scheme lies within 3km of several internationally-designated sites, and this raised the requirement to consider the proposal in terms of an Appropriate Assessment. Full consideration was given to the need for an Appropriate Assessment and it was concluded that this was not necessary.
98. Potential impacts of the construction, operational and decommissioning phases have been assessed, with particular attention paid to species and habitats of high vulnerability to the proposed development.
99. A number of species and habitats that were recorded within the study area are subject to protection through legislation requirements. These species and habitats include Blanket bog, Valley mire, Mine spoil lichen community, Bog orchid, Pine marten, Otter, Water vole, Badger, Bats (Pipistrelles, Myotis sp., Noctule, Lesser horseshoe), Brown hare, Reptiles, Amphibians, Red kite, Hen harrier, Goshawk, Peregrine, Merlin, Nightjar, Skylark, Reed bunting, Song thrush and Chough.
100. Potential significant effects on these species and habitats have been assessed and mitigation measures are proposed to reduce such effects whilst a Habitat Management Plan has been prepared to seek improvements to the ecology of the site, for which an Environmental Management Group will be established, if consent is granted. This will represent the interests of all involved parties, and seek to institute a habitat restoration and monitoring programme.
101. Following the implementation of the proposed mitigation measures and compensation/enhancement proposals, all identified significant effects can either be reduced or avoided. A key part of this process is the role of the Ecological Clerk of Works, who will oversee work close to sensitive habitats and implement pre-construction surveys for protected species. In areas of mine workings (dependent on the local sensitivities), the Clerk will work in close liaison with a lichenologist as some of the mine areas have been identified as key sites for nationally rare lichen communities.
102. Appropriate site design, based on a variety of constraints mapping has meant that by far the majority of ecological interests have been avoided. The constraints identified included areas of blanket bog, areas of mine spoil, breeding locations for Schedule 1 bird species, locations of protected mammal species (otter, water vole and badger) and the location of bog orchid.

103. Habitat Enhancement proposals in particular will result in positive effects for certain habitat types, e.g. blanket bog and metal mine metallophyte lichen communities. A programme of habitat, bird and bat monitoring will be agreed with CCW prior to the development being commissioned. The habitat enhancement areas, and in particular the large area of bog in the east of the study area, will be subject to monitoring.
104. No significant effects arising from the transport route or cumulative effects with other schemes are predicted.

9.0 Forestry

105. Minimising the impact on forestry has been a key objective of the National Forest Estate Wind Farm Programme. An assessment of impacts has been carried out in the context of the currently existing forestry blocks that fall within the area considered for development of the wind farm or are crossed by proposed access routes to the wind farm. The total area of this forestry (termed the Forest Area) is 2,983ha. The entire Forest Area falls under the management of Forestry Commission Wales (FCW).
106. Consultants have worked closely with FCW to reduce the felling required to enable construction of the development to 285ha, which represents 9.5% of the Forest Area. The impact is further reduced by returning 197ha of land to forestry after construction making a net change of land use over the life time of the wind farm of only 88ha. This represents just 2.9% of the Forest Area.
107. In addition to the felling required to accommodate the wind farm, a further 142ha (4.8% of the Forest Area), is proposed to be felled or cleared for habitat restoration or improvement as part of a Habitat Management Plan to be implemented following completion of wind farm commissioning.
108. Careful assessment and design of the felling coupes means that the potential for wind-throw following felling has been limited to an acceptable extent and is therefore not considered to be significant.
109. The productive area of the forest will be reduced in the short term, but the areas not required to be kept clear of trees will be replanted in accordance with the FDP in force at the time, which will have been reviewed in light of the felling required for the Development. The long term productive area will be reduced by a small amount but this is not considered to be a significant effect.
110. The landscape impacts in relation to forest design plans and the management of the forest are considered to be minimal and potentially positive as areas of even aged conifers will be felled and replanted with a broader range of species with more open space.
111. The soil and hydrological impacts are considered to be insignificant when Forestry Commission Guidelines on water and soils are implemented. In addition felling and restocking work will be managed and supervised by FCW forest managers.
112. Potential impacts on recreation and access as a result of felling operations are not considered to be significant. The Forest Area is a working commercial forest with ongoing harvesting and felling operations. Felling work for the wind farm development will be managed in accordance with standard FCW guidelines.

10.0 Hydrology, hydrogeology and geology

113. An assessment of potential significant effects to hydrology, hydrogeology and geology was undertaken primarily for the site and its surroundings up to 1km from the Potential Development Area boundary. The hydrological assessment comprised an information review, a number of site visits, to identify local hydrology, water features and private

- water supplies, and consultation with the Environment Agency and local Environmental Health departments. A study of the peat resource within the PDA and its hydrology was also undertaken.
114. The study area comprises approximately 48km² of land across the Nant y Moch site, crossing a number of hydrological sub-catchments. The site is predominantly underlain by the Mudstones and Sandstones of Silurian and Ordovician Age, described in places as having many small folds and 'strike ridges'.
115. A number of hydrological constraints are present which provide challenges for the construction of the wind farm. These constraints are:
- A number of water features, including ponds, wetlands, reservoirs, watercourses, drainage ditches and springs, located throughout the site. It is important that a suitable buffer remains between sensitive features and wind farm infrastructure;
 - Localised areas of deep peat;
 - Private water supplies – particularly with regard to:
 - a number of isolated properties located along the western boundary of the PDA,
 - to the north of the proposed site access route along the forestry haul road from the A487,
 - within Cwm Einion
 - and along the public access road from Ponterwyd to the south of the site; and
 - Former metal mines and their associated water discharges and mine waste which is contaminated with heavy metals.
116. Fifty six potential private water supply abstractions have been identified and two licensed surface water abstractions were identified within 2km of the site, one for Nant y Moch reservoir and one relating to an off take from a reservoir at Llyn Penrhaeadr. Through a detailed assessment the effects of the wind farm are considered to be very small due to the underlying geological conditions and location and scale of activities proposed. However, a programme of monitoring is proposed before, during and after the wind farm construction of private water supply sources with potential to be affected by the Development.
117. Various peat deposits over 0.5m thickness (and occasionally over 2m in places), were identified across areas of the site. Extensive work has been undertaken to date to identify deep areas of peat and to locate wind farm infrastructure away from these deposits. Where possible the wind farm infrastructure has been designed around the peat to minimise effects. The proposed development will lead to some changes in peat hydrology and the excavation of some peat soils. Consequently, careful consideration has been given to understanding the peat deposit and to the design of access tracks, turbine foundations, peat storage areas and water management. These measures will minimise the effects of the development on the peat deposits within the PDA.
118. Mitigation measures have been outlined to prevent and minimise effects to groundwater and surface water resources (including private water supplies) as far as is practicable during the construction and operation of the wind farm. These measures focus on reducing and controlling runoff from access tracks and preventing/managing spills, leaks or concrete contamination of groundwater and surface water. Such measures will ensure that sub-catchments to Nant y Moch Reservoir and all private water supplies remain unaffected by the proposed development.

11.0 Mining

119. An assessment of potential effects to mines has been carried out to establish the potential effects and issues associated with historical mine workings. With respect to mining, the potential effects resulting from the wind farm development are considered to be limited to risks associated with the movement of contaminated mine spoil. The principle risks associated with disturbance of such mine spoil during construction works include the potential for sediment input into adjacent water courses and short term human health exposure risks.
120. The primary approach to mitigation has been through avoidance of identified spoil areas, although it is considered possible that some small scale disturbance of mine spoil at the site will occur as a result of the construction activities. Potential associated risks will be controlled through the use of sediment control and spoil management plans as required. Mitigation measures outlined for the control of any spoil movement activities are expected to control the potential release of contaminated sediments to watercourses. Residual effects posed by the presence of historical mine workings are not predicted to be significant.

12.0 Archaeology and Cultural Heritage

121. An assessment of potential significant effects to archaeology and cultural heritage has been conducted, comprising a full desk based assessment and field walkover survey of the Potential Development Area. A number of potentially significant direct effects to archaeology and indirect effects to cultural heritage features were identified.
122. Following the implementation of embedded mitigation, only 16 significant direct effects are predicted on cultural heritage or archaeological sites associated with the Development. This number includes only 3 sites where the significance of the effect will be moderate/major, 10 sites where the significance of effect will be moderate and 3 sites where the significance of the effect will be moderate/minor. The sites which will be affected to a moderate/major level include an area of former peat-cutting (Site No. 759 - medium value), a former mine building (Site No. 408 - high value) and a stone (Site No. 436 - medium value).
123. Following the appropriate mitigation measures (primarily the use of protective fencing and an archaeological watching brief during construction) for each of these predicted direct effects, the significance of the effect on each of these sites would be greatly reduced to an insignificant level.
124. In terms of indirect effects, the assessment will undoubtedly have an indirect effect on all high value sites within the bounds of the study area, due to the proposed development's large scale form and appearance. However, the assessment has concluded that only 22 sites will be significantly indirectly affected by the proposals. Of this number only 1 site will be affected to a major level, 7 sites significantly affected to a major/moderate level, 9 sites significantly affected to a moderate level and 5 sites significantly affected to a moderate/minor level.
125. Although mitigation measures such as micro-siting of certain turbines has slightly reduced the predicted indirect effect on inter-visible group settings and sight-lines of a number of sites, it has not reduced the overall significant effect that the proposed development's form and appearance will have on these sites' general setting.
126. As such the residual indirect effect of the proposed development on the heritage resource within the proposed development area will be continually governed by the overall form and appearance of the development throughout the lifetime of the wind farm.
127. Regarding high value sites within the 15km radius from the proposed development, a separate Historic Landscape and Visual Assessment (HLVA) has been undertaken. In

summary, this HLVA study concluded that no Conservation Areas would be significantly impacted upon. Of the 9 Conservation Areas assessed, only two were predicted to experience a slight indirect effect, Daronwen and Llanwrin, both in the county of Powys. Both of these conservation areas are positioned approximately 10km north-east from the proposed development.

128. The assessment of the indirect visual effects of the proposed development on Scheduled Ancient Monuments (SAMs) within a 5km band from the edge of the development area identified 24 circumstances from a total of 149, where the proposed development would affect the monument's setting to a significant degree i.e. moderate or above.
129. For the SAMs found within the 5km – 15km radial bands from the edge of the PDA, the assessment considered that these sites were a significant enough distance away from the proposed development, such that the predicted indirect visual effects would be either slight or else negligible. From this assessment no sites were considered to be effected to a significant degree.
130. The assessment of the indirect visual effects of the proposed development on Listed Buildings within the 5km band from the edge of the PDA identified 7 circumstances, from a total of 1,047, where the proposed development would significantly affect the sites setting to a significant degree i.e. moderate or above. For the Listed Buildings found within the 5km – 15km band from the edge of the PDA, the assessment considered that these sites were at a significant enough distance away from the proposed development, whereby the predicted indirect visual effect would be either slight or else negligible.
131. The assessment of the indirect visual effects of the proposed development on Registered Parks & Gardens within the 15km band from the edge of the PDA identified no circumstances where the proposed development would significantly affect their setting.
132. Potentially significant in-direct cumulative effects will arise on a number of prehistoric summit cairns and Iron Age hill forts, from the proposed Nant y Moch wind farm in conjunction with the neighbouring Mynydd Gorddu wind farm.
133. In respect of the predicted impact on the Registered Historic Landscape of the Uplands Ceredigion, the assessment (ASIDOHL) concluded that the impacts range from 'severe' immediately surrounding the PDA, to 'fairly severe' within approximately 5km, falling to 'moderate' and 'slight or 'very slight'' between 5 and 10km and 'negligible' up to 15km, from the PDA.

13.0 Peat

134. Ecological, hydrological and geotechnical/civil engineering surveys conducted in the course of the EIA process considered peat and peat habitats as a significant constraint in the wind farm design. It was considered necessary (in response to consultation) to conduct a bespoke peat study within the footprint of the proposed Development and this was carried out in late 2009, as a means of further refining infrastructure placement with regard to peat habitats and in order to provide adequate data for a detailed Carbon Balance calculation (following the methodology of Nayak (Ref 19)) of the proposed wind farm
135. Both the desk top studies and fieldwork, including peat depth probing, peat core sampling, water table observations and shear vane measurements, were undertaken.
136. These studies showed that the peat resource within the PDA is largely small scale and 'pockety' in nature reflecting the characteristics of the terrain where peat has formed in areas with shallow gradients, catchment areas to small tributaries, plateaux below steep slopes adjacent to hydrological features and ridges that are either broad enough that surface water is retained or have hummocks with depressions in which peat has developed.

137. The Cranfield soils dataset indicates the presence 2 more substantial bodies of peat; on the north eastern flank of the PDA and to the south of the PDA and east of Llyn Craig y Pistyll. Peat probing confirmed these peat bodies to some degree. The former body is partially contained within an area of stunted forestry which has been identified as an area suitable for tree clearance and peat restoration as part of the Development's Habitat Management Plan (HMP)
138. The assessment found that all potential hydrological impacts on peat resource can be effectively mitigated and eliminated providing appropriate provisions are made in the design, and construction planning and execution of the Development.
139. A negligible risk of peat slide occurring has been determined with the semi quantitative methods employed within this study.
140. Continued iterative site design following the peat fieldwork enabled all but one turbine and a single section of track to be located away from sensitive peat habitats. Potentially significant ecological effects exist in these two locations. However, the assessment concludes that the implementation of habitat management measures in the peat restoration area will more than compensate for this.
141. The Nayak carbon balance model (which considered many of its variables in a worst case scenario fashion) predicts that the wind farm will effectively pay back its expected carbon debt from manufacture, construction, impact on habitat and decommissioning, within just over 1.8 years, if it replaces the cleanest current generation method (gas). The margins for error, based on the minimum and maximum scenarios shown in the Nayak calculation give a range of between 19 and 43 months, demonstrating that in carbon terms, the Nant y Moch project could generate over 21 years worth of carbon neutral electricity.

14.0 Telecommunications and Air Safeguarding

142. On the basis of an assessment of potentially significant effects to telecommunications and air safeguarding interests, it is unlikely that there will be any significant effects will arise.
143. The MOD has not objected to the final proposed wind farm layout. However, due to the Development being in close proximity to an area used for low flying (the Mid Wales TTA), the MOD has requested that aviation lighting be fitted on some of the proposed wind turbines, in the interests of air safety. The MOD request states that this may be in the form of wholly Infra-Red lighting. The Applicant will use this form of lighting, which is not visible to the naked eye, in order to avoid any adverse visual effects.
144. No significant effects on aviation are predicted.

15.0 Traffic and Access

145. Traffic generated by the Nant y Moch Wind Farm proposal would almost entirely consist of vehicle movements relating to the construction and decommissioning phases of the wind farm. During the operation of the wind farm, traffic would be at a low level since much of the operation of the wind farm would be automated although the site would be manned from Monday to Friday between the hours of 9am to 5pm, and would require regular maintenance, normally using vans or 4x4 vehicles.
146. Construction traffic required to deliver the wind farm falls into three broad categories namely Abnormal Indivisible Loads (AIL), Heavy Goods Vehicles (HGV) and light vehicles. The great majority of vehicle movements are expected to be light vehicles delivering personnel and small loads to site. Roughly 4% would be normal HGVs carrying materials and approximately 1% would be AILs which will principally be wind

- turbine components.
147. Wind turbine component AILs are proposed to come in from the Port of Swansea, an established entry point for other wind farm developments using similar sized turbines. The preferred route is shown in Figure 10. Some small modifications to the highway along this route would be required, consisting of modifications to or replacement of street furniture such as traffic islands and small changes to curb alignments. Modifications would be agreed with the highways authorities to ensure that the safety of other road users including pedestrians is maintained at the existing level or enhanced.
 148. The Applicant has brought forward proposals in the form of a draft Traffic Management Plan (TMP) for the safe management of AILs on the route from Swansea to site, such that they will cause the minimum of disruption to other road users and avoid any significant adverse effects.
 149. Three accesses to the Nant y Moch wind farm would be used during construction (see Figure 2):
 - off the A487 south of Furnace;
 - via a minor road from the A44 at Ponterwyd (the Nant y Moch Reservoir Road); and
 - off the A44 at Nant yr Arian (AIL deliveries only).
 150. An assessment of potentially significant effects from traffic accessing the site during the construction period has been conducted. Based on relevant guidance and the nature and sensitivity of roads around the site, a 10% or greater increase in total traffic or in HGV traffic would be categorised as significant. The assessment concluded that the residual effects of general construction traffic (other than wind turbine AILs) on the public road network will be as follows:
 - traffic on the A487 north of the site is considered to have potentially significant effects with respect to the projected increase in HGV movements but through appropriate distribution of HGVs between the two designated site entrances and hence across different sections of the road network, traffic loads can be dispersed to acceptable levels and significant effects can be avoided;
 - traffic on all other sections of the main public road network is considered to be of 'low significance';
 - a temporary significant effect in terms of increase in total vehicle movements and HGV movements is predicted on the Nant y Moch Reservoir Road. Use of this road is essential to the Development as it runs through the site. It currently experiences very low traffic flow and it is not possible to eliminate this significant impact. It is however possible to mitigate the effects to some extent via, for example, the addition of passing places, signage and edge protection adjacent to steep drops; and
 - residual effects are deemed to be of low significance since the overall increase in traffic is of low significance, with the exception of the Nant y Moch Reservoir Road. Despite this the adoption of good practice measures will further reduce effects such as noise, vibration, dust, dirt, air pollution and driver delay.
 151. During the operational period of the wind farm, no significant effects are foreseen. Equivalent procedures to those proposed for the construction phase would be used during the operational phase of the wind farm should a major component require replacement, necessitating AIL deliveries.
 152. During the decommissioning period, the activities have the potential for similar significant effects to those during the construction phase. The effects cannot be fully assessed until the methods for decommissioning have been agreed, nevertheless it would be expected that the effects would be similar to or less than those identified during construction and that similar mitigation measures would be applied. If large wind turbine components are

removed whole, equivalent procedures to those outlined in the draft TMP for wind turbine component delivery would be applied. Alternatively, large wind turbine components may be reduced to easily transportable sizes on site prior to removal.

153. Taking into account the mitigation measures proposed, the overall effect of the proposed transport during construction and operation and decommissioning is deemed to have low significance on the main public road network and will therefore not result in any significant effects in this respect in EIA terms.

16.0 Land Use, Amenity and Rights of Way

154. The Development will occupy an area of land owned and managed by Forestry Commission Wales for upland rotational forestry as well as an area of upland agricultural land, consisting mainly of grazing. There are a number of landowners, in addition to FCW, within the Development area.
155. Land cover is varied and includes open moorland and steep sided hill and valley sides, both typified by both improved and rough grassland, extensive upland rotational forestry, lakes/reservoirs and interconnected streams as well as occasional areas of bare rock and craggy outcrops and scree. The landscape contains relatively limited settlement which usually takes the form of scattered dwellings, farmsteads and hamlets concentrated within valleys or the more low lying sheltered locations.
156. It is envisaged that the landowners will be able to continue farming and forestry activities within the application site throughout the lifetime of the project. Of the total area of land within the proposed development area, the land-take for all Development infrastructure during construction is approximately 73.8ha and post-construction, would be approximately 67.8ha. The loss of upland agricultural land would occur only for the lifetime of the Development and is limited by the use of existing forestry tracks in the design, and represents only a little under 1.5% of the Potential Development Area. Loss of land to farming and forestry activities is therefore considered not significant in terms of the EIA Regulations.
157. In terms of the loss of timber from the upland rotational forestry areas, this is also considered not significant in terms of the EIA Regulations. It is envisaged that forestry practices can continue as normal with certain restrictions on land immediately around the turbines.
158. Following construction, the Development will not require substantial changes to land use on the application site. It is therefore anticipated that the development will have long-term negligible effects on local land use and these effects are not considered significant.
159. There are numerous Public Rights of Way (PRoW) across the site in the form of FCW promoted routes, footpaths, restricted byways, unrestricted byways, bridleways and a small number of public roads. The proposed development area and its vicinity contains a number of promoted longer distance walks and rides as well as a large number of local footpaths and bridleways including the Lon Las Cymru national cycleway, Prince Llewellyn Ride, mountain bike trails, trails at the Nant yr Arian visitor centre, the Severn Way, Glyndwr's Way and open access land.
160. Wind farm use of the existing forest road network, which is often coincident with established PRoW routings, for access and on site tracks has been deemed in many cases to be the most environmentally sensitive option, as well as being the most practicable in engineering terms in a landform with many large and small scale topographic constraints. Limiting the required closure of such sections during their upgrade and managing public traffic on them during the wider construction period has been judged to be the most effective way of achieving the least environmental impact.
161. It has been assessed that the short term effects of temporary closures during

construction and decommissioning will result in a negative effect of minor significance for the affected PRowWs. As no Long Distance Recreational Routes (such as the Borth to Devil's Bridge route) are directly impacted no effect of any significance is predicted on these routes.

162. During the operation of the wind farm, no restrictions would be placed on movement of walkers, cyclists, horse riders and motor vehicles in areas where access is currently provided in the form of PRowWs or public roads. Where existing PRowWs pass in proximity to turbines, clear sign posting of alternative routes will be provided. As such, negligible effects are expected during the operational period on the original PRowW and public access across the proposed development and when combined with the low sensitivity attributed to the local PRowW network, the overall level of significance is considered to be minor.
163. The residual effects associated with the construction, operation and decommissioning phases of the Development have been identified as being negligible overall or of minor significance with regards to land use and the use of the PRowW and public road network.
164. With regard to shadow flicker, 5 receptors (properties) that could potentially be affected by shadow flicker have been identified, in accordance with the established proximity criteria (being within 10 rotor diameters of a proposed wind turbine) and no significant effects are predicted. Nevertheless, should development consent be received, the Applicant would conduct a survey to precisely assess window sizes and orientation and potential screening from trees, vegetation, buildings or other ground cover. This survey would inform an updated model of when and where shadow flicker could potentially occur. An automated control system would be implemented which would use a combination of the above model and real time monitoring of sunlight strength and turbine rotor orientation to shut down specific wind turbines when they had potential to cause shadow flicker at a property.

17.0 Socio-economics

165. With regards to the prospective economic impacts of the proposed Nant y Moch wind farm development, it is estimated that the Development would support on average 100 full time equivalent (FTE) jobs in the local area per annum during the construction phase (30 months), and a further 20 FTE jobs and 90 FTE jobs in the local area per annum during the operation and maintenance (25 years) and decommissioning (18 months) phases respectively.
166. Nationally, it is estimated that the Development would contribute 490 FTE jobs and 300 FTE jobs per annum during the construction and decommissioning phases respectively. With a further 80 FTE jobs per annum during the 25 year operational life of the proposed wind farm.
167. Whilst the economic impacts associated with the operation and maintenance phase would be sustained the longest (approximately 25 years), the most significant annual average economic impacts would be achieved during the construction and decommissioning phases.
168. On the basis of the estimates presented above, the proposed Nant y Moch wind farm development can be seen to support local and national sustainable economic development policy by supporting job creation and economic growth in the short, medium and long-term, as well as encouraging clean energy generation. Furthermore, many of the employment opportunities created will be high quality jobs with relatively high earnings, particularly during the operational phase, contributing to the national objective of narrowing the earnings gap with the UK. Indeed, recent research evidence suggests that the average expenditure on staff (including employer contributions) in the wind energy sector is approaching £44,000 per FTE job.

169. In order to maximise local and national economic impacts of wind farm developments, there are a number of measures that can be implemented in the short, medium and long-term. These include raising awareness of opportunities among local contractors and consultants; identifying and mapping local capabilities; and promoting skills development and training courses.
170. In terms of prospective cumulative impacts, planning consent for the proposed Nant y Moch wind farm, together with other nationally significant wind farms has the potential to provide more confidence for businesses to invest in the renewable energy sector in Wales, which in turn would stimulate the development of the supply chain for the renewable energy sector locally, and across Wales. With a higher share of local and national sourcing of inputs, it is estimated that, nationally, the Nant y Moch wind farm development would support on average 850 full time equivalent jobs per annum and 350 full time equivalent jobs per annum during the construction and decommissioning phases respectively. Throughout its operational life, it is estimated that, nationally, the wind farm would support approaching 100 full time equivalent jobs on average per annum.
171. In addition to the prospective economic impacts associated with the construction, operation and decommissioning phases, the proposed wind farm can also be expected to directly and/ or indirectly result in a range of wider socio-economic impacts, as a result of the community benefits package; and in relation to the visitor economy; transport and accessibility; and the grid network.
172. For example, the proposed Nant y Moch wind farm development includes a community benefit package which is estimated to generate a one-off payment of £384,000-£480,000 and annual payments of £256,000-£320,000 (based on an installed capacity of 128-160MW). In addition to this, the Applicant will pay 2.5% of the ROC recycling scheme. Whilst it is incredibly difficult to quantify the potential socio-economic impacts of this level of community funding, it is beyond doubt that it would enhance short-term and, more importantly, long-term welfare, in terms of energy efficiency measures; education and environmental enhancement; and improvements to community facilities. This may be particularly important, as grant funding is becoming increasingly difficult to obtain in rural communities in Mid Wales.
173. With regards to the potential impact on tourism and the visitor economy, available survey and research evidence suggests that wind farms do not, in general, have a significant adverse effect on tourism. Whilst wind farms may act to deter a small proportion of visitors from visiting an area, the overwhelming majority would not be deterred from making repeat visits to the area in the future.
174. Notably, large areas of Wales, including National Parks or designated Areas of Outstanding Natural Beauty, have been excluded from the SSAs, on the basis that it would be contrary to well established planning policy. Similarly, the highest level of nature conservation and heritage designations, and thus Natura 2000 sites, the core area of the Dyfi Biosphere Reserve, and the World Heritage Site at Blaenafon were all excluded from consideration as SSAs.
175. Transport and accessibility have been identified as significant issues in relation to large wind farm developments, including the proposed Nant y Moch wind farm. The transport and accessibility concerns are amplified further by the possibility of concurrent construction of a number of wind farms at the identified SSAs, particularly in Mid Wales. Importantly, in this regard, the Applicant is proposing multiple access routes to the site and a different delivery route to the majority of other proposed wind farm developments. This in order to minimise any potential adverse impacts, The benefits of using multiple access routes include limited traffic by the Nant yr Arian visitor centre, reduced volumes of traffic at any one point and accelerated construction.
176. Notably, available survey and research evidence show that there is considerable discrepancy between perceived and real transport and accessibility impacts of wind farm

developments for local residents.

18.0 Climate Change and Air Quality

177. Mitigation measures to reduce the potential for effects to air quality are presented in the ES, however some dust emissions may arise from the construction and decommissioning operations. It is considered that this will result in negligible, temporary impacts on local receptors and negligible impacts on overall local air quality.
178. Due to the absence of likely significant effects throughout the lifetime of the Development it is not proposed that air quality monitoring be undertaken during the construction, operation and decommissioning phases of the development.
179. In regards to climate change resilience, as the detailed design of the scheme will consider increased capacities for elements such as culverts, crossings, siltation traps, ongoing maintenance of existing run-off regimes and locating the sub-station away from flooding risk, there are no anticipated residual effects during the lifetime of the development.

19.0 Grid Connection

180. The grid connection of the proposed Development requires that significant new transmission and distribution network capacity is provided in mid Wales. Currently, there are significant uncertainties regarding the location of a new 400kV hub substation planned by National Grid in the Mid-Wales area (along with the transmission lines that will be required to connect it to the wider transmission network). Until this is determined by National Grid, detailed proposals for the grid connection cannot be formulated.
181. It is known that a 132kV single circuit will be required to connect the wind farm to the proposed new hub substation. Connection will be via overhead line (OHL) of predominantly wood pole construction and subject to a separate planning application via the Infrastructure Planning Commission (or relevant consenting authority at the time of submission). The development of and application for the 132kV element of the grid connection will be made by SSE Power Distribution (SSE PD) and will be accompanied by the required environmental information.
182. As both of these elements of the grid connection will be subject to separate applications and full assessment by the relevant parties (National Grid and SSE-PD) and strong uncertainties exist in the locational plans for both, the ES for the Nant y Moch wind farm can only provide a high level assessment of indicative and potential routings of lines and grid corridors. As such it is not considered appropriate to attribute levels of significance of effect to the potential environmental impacts identified.

20.0 Residual Effects Overall and Conclusions

183. Many potentially significant effects that might otherwise have arisen as a result of the Development, through the course of the EIA, have been mitigated (avoided where possible or minimised) through modifying the design of the Development.
184. A number of significant adverse effects are defined in relation to certain landscape and visual effects, cultural heritage effects, peat and traffic and transport effects. The indirect visual effects are considered to be reversible on the decommissioning of the wind farm.
185. Following the implementation of appropriate mitigation, including the use of a best practice Construction Method Statement (CMS), Traffic Management Plan (TMP), ecological mitigation in the form of a Habitat Management Plan (HMP), and a Site Environmental Management Plan (SEMP), any temporary adverse effects associated

with the site clearance and construction phase, such as felling, traffic movements and any potential impacts to onsite ecology, will be effectively addressed. These effects will be short term in nature and locally occurring. SSE Renewables will also employ specialist advisors such as archaeologists, ecologists and hydrologists to be called upon as required to ensure that the mitigation measures are implemented during the construction of the Development.

186. The Development will lead to beneficial effects through the contribution to national and regional targets for renewable energy, which themselves constitute part of the national efforts to address and mitigate the effects of climate change. On the basis of current policy, these effects can be considered to be significant benefits arising from the Development. In addition, the Development will act as a disaggregated embedded source of electricity, thereby contributing towards the security of UK energy supplies.
187. Overall, a number of significant adverse effects will arise from the Development, many of these are visual in nature, reversible on decommissioning of the Development, and would be likely to arise from any wind farm development within this designated Strategic Search Area capable of meeting the Welsh Assembly's targets as detailed in TAN8. The significant beneficial effects arising from the Development would be felt at a wider level and their contribution to efforts to halt and mitigate the effects of climate change would be more long lasting, thereby ensuring the sustainable contribution of this proposal to UK policy targets.

21.0 References

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- Ref 2 Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (SI 2009 No 2263) Department of Energy and Climate Change, 2009.
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- Ref 10 Renewable Energy Strategy. 2009
- Ref 11 Department for Communities and Local Government Circular 02/1999 Environmental Impact Assessment: Guidelines to Procedures, 1999
- Ref 12 Department of Energy and Climate Change (DECC). EN-1 Overarching Energy National Policy Statement (Revised Draft). October 2010
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- Ref 15 HM Government. The UK Low Carbon Transition Plan- National Strategy for climate and energy. 2009
- Ref 16 Department of Communities and Local Government (DCLG) Planning and Compulsory Purchase Act 2004
- Ref 17 The Assessment and Rating of Noise from Wind Farms: ETSU-R-97: September 1996: Energy Technology Support Unit for the Department of Trade and Industry
- Ref 18 Acoustics Bulletin Vol 34 No2: Prediction and assessment of wind turbine noise p35-37, March/April 2009
- Ref 19 Nayak, D.R. et al. Calculating Carbon Budgets of Wind Farms in Scottish Peatlands (May 2010).