Abergelli Power Limited

ABERGELLI POWER PROJECT

Environmental Impact Assessment Scoping Report

June 2014

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Glossary

Abergelli Power Limited (APL)	A special purpose vehicle which has been established by Watt Power Limited (WPL) to develop the Project.
Above Ground Installation (AGI)	The Above Ground Installation incorporates the minimum offtake connection (MOC) facility, which would be owned by National Grid, and a Pipeline Inspection Gauge (PIG) Trap Facility (PTF), owned by APL. The AGI forms part of the Gas Connection and is located within the Gas Connection Opportunity Area.
Above Ordnance Datum (AOD)	Ordnance Datum is the vertical datum used by Ordnance Survey as the basis for deriving height of ground level on maps. Topography may be described using the level in comparison to 'above' ordnance datum.
Access Road	The proposed purpose built access road from the public highway to the Generating Equipment Site. It is located within the Power Generation Plant Site.
agriculture	Section 336(1) of the Town and Country Planning Act 1990 defines agriculture as including: • Horticulture, fruit growing, seed growing, dairy farming; • The breeding and keeping of livestock (including any creature kept for the production of food, wool, skins or fur, or for the purpose of its use in the farming of land); • The use of land as grazing land, meadow land, osier land, market gardens and nursery grounds; and • The use of land for woodlands where that use is ancillary to the farming of land for other agricultural purposes.
Agricultural Land Classification (ALC)	The ALC provides a method for assessing the quality of farmland to enable informed choices to be made about its future use within the planning system.
air pollutants	Amounts of foreign and/or natural substances occurring in the atmosphere that may result in adverse effects on humans, animals, vegetation and/or materials.
Air Quality Management Area (AQMA)	A defined area by virtue of Section 82(3) of the Environment Act 1995, where it appears that the air quality objectives prescribed under the UK Air

	Quality Strategy will not be achieved. In these areas, a Local Authority must designate Air Quality Management Areas, within which an Action Plan can be proposed to secure improvements in air quality so that prescribed air quality objectives can be achieved.
Air Quality Sensitive Receptors	People, property or designated sites for nature conservation that may be at risk from exposure to air pollutants that could potentially arise as a result of the Project.
amenity	The preferable features of a location which contribute to its overall character and the enjoyment of residents or visitors.
Ancient Woodland	Ancient woodland is defined as an area that has been wooded continuously since at least 1600 AD. Ancient Woodland is divided into ancient semi-natural woodland and plantations on ancient woodland sites. Both types of stand are classed as ancient woods.
Applicant	Abergelli Power Limited (APL)
Area of Outstanding Natural Beauty (AONB)	An area designated by Natural England under the National Parks and Access to the Countryside Act 1949 by virtue of being a precious landscape whose distinctive character and natural beauty are so outstanding that it is in the nation's interest to safeguard them.
Archaeological Desk Based Assessment	An assessment of the known or potential archaeological resource within a specified area or site on land, inter-tidal zone or underwater. It consists of a collation of existing written, graphic, photographic and electronic information in order to identify the likely character, extent, quality and worth of the known or potential archaeological resource in a local, regional, national or international context as appropriate.
archaeological interest	Heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.
Balance of Plant	All infrastructure required to support Gas Turbine Generators within the Generating Equipment Site and includes: stacks; Air Cooled Condensers (ACC)/ cooling plant; demineralised water tank; raw/ fire water tank; administration/ workshop/ control building and gas receiving facility.
baseline	Environmental conditions at specific periods of

	time, present on, or near a site, against which future changes may be measured or predicted.
biodiversity	Abbreviated form of 'biological diversity' referring to variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part.
Biodiversity Action Plan (BAP)	Plans which set specific, measurable, achievable, realistic and time bound conservation targets for species and habitats. The UK BAP is the UK Government's response to the Convention on Biological Diversity (CBD) signed in 1992. More information is available at www.ukbap.org.uk.
British Standards (BS)	The display of a British Standard number shows that the manufacturer claims to have made the produce in accordance with British Standard. A standard is a published document that contains a technical specification or other precise criteria designed to be used consistently as a rule or definition. Standards are designed for voluntary use and do not impose any regulations. However, laws and regulations may refer to certain standards and make compliance with them compulsory. Sometimes BS will be accompanied by the letters EN and/or ISO. These mean that the standard was developed as a European (EN) or International (ISO) standard and then adopted by the UK as a British Standard.
Carbon Monoxide (CO)	A colourless, odourless and tasteless gas that is produced from the partial oxidation of carbon containing compounds.
Combined Cycle Gas Turbine (CCGT)	Gas plant technology system comprising Gas Turbine(s) fuelled by natural gas, a Heat Recovery Steam Generator(s) utilising heat from the Gas Turbine exhaust gases, and a steam turbine plant with associated condensing system.
Combined Heat and Power (CHP)	A cogeneration power station capable of supplying power to the National Grid and also heat to local heat users (such as industry or leisure) through a direct connection to waste heat/steam produced as part of the combustion process.
Conceptual Site Model	The objective of constructing a Conceptual Site Model is to record all the potential pollutant linkages between the source of contamination and the receptors, i.e. the reasonably possible ways in which the receptors may experience

	exposure and consequent adverse effects.
Conservation Area	An area of special environmental or historical importance that is protected from changes by law by statutory designation.
Construction Environmental Management Plan (CEMP)	Strategic document setting out best practice methods to minimise environmental impacts (including dust) during construction.
consultation	Procedures for assessing public, landowner and statutory consultee opinion about a plan or major development proposal including seeking the views of affected neighbours or others with an interest in the Project or affected land
contamination	Where land has been affected by contamination it may present a risk to humans, ecosystems, water quality and property.
cropmarks	A mark that is produced by the effect of underlying archaeological or geological features influencing the growth of a particular crop.
Cultural Heritage	The legacy of physical artefacts and intangible attributes of a group or society inherited from past generations, maintained in the present and bestowed for the benefit of future generations. Cultural heritage includes both physical culture (such as buildings, monuments, landscapes, books, works of art and artefacts) as well as intangible culture (such as folklore, traditions, language and knowledge).
cumulative effects	The summation of effects that result from changes caused by a development in conjunction with other reasonably foreseeable development that is either consented but not yet constructed or is in the process of seeking consent.
Desk Based Assessment (DBA)	Research based primarily on database and internet data gathering methods.
Development Consent Order (DCO)	A Development Consent Order (DCO) is made by the Secretary of State (SoS) pursuant to the Planning Act 2008 (PA 2008) to authorise a Nationally Significant Infrastructure Project (NSIP).
Development Consent Order Application (DCO Application)	The Application for a DCO made to the SoS under section 37 of the PA 2008 in respect of the Project, required pursuant to section 31 of the PA 2008 because the Project constitutes an NSIP under section 14(1)(a) and section 15 PA 2008 by virtue of being an onshore generating station in

	England or Wales of 50 MWe capacity or more.
Development Plan Documents (DPD)	Development plan documents (DPD) include the core strategy, allocations, proposals map and action area plans.
dust	Fine particles of solid materials capable of being re-suspended in air and settling only slowly under the influence of gravity where it may cause nuisance.
Electrical Connection	The Electrical Connection will comprise all the necessary elements to enable power to be exported from the Generating Equipment to the NETS. It includes new electrical circuits proposed as either underground cable or overhead lines and cable terminal chambers on the GIS (Gas Insulated Switchgear) circuit at the point where the underground cable or overhead line emerges to facilitate its connection into the NETS. The Electrical Connection is located within the Electrical Connection Opportunity Area.
Electrical Connection Opportunity Area	The area being investigated for the location of the Electrical Connection.
emission	A material that is expelled or released to the environment. Usually applied to gaseous or odorous discharges to the atmosphere.
Environmental Impact Assessment (EIA)	A systematic means of assessing a development project's likely significant environmental effects undertaken in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009.
Environmental Statement (ES)	Statutory report summarising the findings of an environmental impact assessment.
features (landscape feature or element)	A component part of the landscape (e.g. hedgerow, wood, stream)
findspot	Location of individual or groups of archaeological artefacts.
Flood Consequences Assessment (FCA)	A desk based study which considers the contributing factors and predicts / quantifies the risk of flooding to and from a proposed development and also identifies a water level in the event of flooding.
Flood Zone	An area identified, through modelling, that is at risk of flooding from rivers or the sea, to varying levels of magnitude and frequency. There are four classifications for flood zones as defined in the Technical Advice Note 15: Development and

	Flood Risk: • Zone A: Considered to be at little or no risk of fluvial or tidal/coastal flooding; • Zone B: Areas known to have been flooded in the past evidenced by sedimentary deposits; • Zone C: Based on Environment Agency extreme flood outline, equal to or greater than 0.1% (river, tidal or coastal); • Zone C1: Areas of the floodplain which are developed and served by significant infrastructure, including flood defences; and • Zone C2: Areas of the floodplain without significant flood defence infrastructure.
Gas Connection	A new underground gas Pipeline connection and Above Ground Installation (AGI) to bring natural gas to the Generating Equipment from the Gas National Transmission System (NTS) or Local Transmission System (LTS). The Gas Connection is located within the Gas Connection Opportunity Area.
Gas Connection Opportunity Area	The area being investigated for specific route corridor options for the Gas Connection.
Gas Turbine Generators	Between one and five Simple Cycle Gas Turbine (SCGT) generators (as proposed in the Power Generation Plant) which utilise the combustion of gas and air to generate hot gases that are routed across turbine blades, which generate rotational forces that turn an electrical generator. The exhaust gases are discharged directly to the stack without providing heat for a secondary steam cycle. Each Gas Turbine Generator may constitute one or two gas turbines venting to a single stack. The Gas Turbine Generators form part of the Generating Equipment and are located within the Generating Equipment Site.
Generating Equipment	Gas Turbine Generators and balance of the plant which are located on the Generating Equipment Site.
Generating Equipment Site	The site where the Generating Equipment is located.
groundwater	Water occurring in the ground which can be reasonably attributed to relatively geologically recent recharge and which can be reasonably considered to be wholesome (potable) unless it has been contaminated (altered) by anthropogenic activity.

habitat	The environment in which populations or individual species live or grow.
Heavy Goods Vehicle (HGV)	A mechanically propelled road vehicle that is of a construction primarily suited for the carriage of goods or burden of any kind and designed or adapted to have a maximum weight exceeding 3,500 kilograms when in normal use and travelling on a road laden.
hectare	A unit of area (10,000 m^2 / 2.471 acres).
heritage asset	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage assets include designated heritage assets identified by the local planning authority (including local listing).
historic environment	All aspects of the environment resulting from the interaction between people and places through time including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped, planted or managed flora. Those elements of the historic environment that hold significance are called heritage assets.
Historic Environment Record (HER)	The repository for all archaeological and historical information relating to a county or district.
Historic Parks and Gardens	A register of historic parks and gardens of particular historic importance.
hydrology	The movement, distribution and quality of water throughout the earth.
impact	A physical or measurable change to the environment attributable to the Project.
kilometre (km)	Measurement of distance (1000 metres).
kilovolt (kV)	Measurement of the amount of electric potential energy.
landscape assessment	An umbrella term for description, classification and analysis of the landscape.
landscape character	The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement.
landscape effects	Change in the elements, characteristics,

	character and qualities of the landscape as a result of development. These effects can be positive or negative.
Laydown Area	The area required during construction for storing materials and equipment. It is located within the Power Generation Plant Site.
Listed Building	The Secretary of State compiles a list of buildings of special architectural or historic interest for the guidance of local planning authorities in the exercise of their planning functions under the Planning (Listed Buildings and Conservation Areas) Act 1990 and the Town and Country Planning Act 1990. Buildings are graded as follows: • Grade I – Buildings of exceptional interest; • Grade II* - Particularly important buildings of more than special interest; and • Grade II – Buildings of special interest.
Local Nature Reserve (LNR)	A site of importance for wildlife, geology, education or public enjoyment. Some are also nationally important Sites of Special Scientific Interest. Local Nature Reserves must be controlled by the local authority through ownership, lease or agreement with the owner.
Local Transmission System (LTS HP Pipeline)	The LTS distributes the gas supply from the NTS to the locations where the load requirement is required, generally in smaller pipelines (<24”/600 mm diameter) operating at lower pressure (<50 barg).
magnitude	A combination of the scale, extent and duration of an effect.
metre (m)	Measurement of length.
mitigation measures	Actions proposed to prevent, reduce and where possible offset significant adverse effects arising from the whole or specific elements of a development.
millimetre (mm))	Measurement of size.
Minimum Offtake Connection (MOC)	A connection that will offtake gas directly from the National Transmission System. The MOC forms part of the AGI and therefore the Gas Connection. It is located within the Gas Connection Opportunity Area.
National Grid Electricity Transmission System (NETS)	A high-voltage electric power transmission network connecting power stations and major substations and ensuring that electricity

	generated anywhere in England, Scotland and Wales can be used to satisfy demand elsewhere.
National Park	A national park is an area designated for its special landscape rich in character and distinctiveness, wildlife history and heritage.
National Policy Statement (NPS)	Overarching policy designated under the PA 2008 concerning the planning and consenting of NSIPs in the UK.
National Transmission System (NTS)	A network of gas pipelines throughout the United Kingdom that supply gas to large industrial customers from natural gas terminals situated on the coast, and also gas distribution companies which lead indirectly to homes.
Nationally Significant Infrastructure Project (NSIP)	The Project constitutes a Nationally Significant Infrastructure Project (NSIP) by virtue of s.14(1)(a) and s.15 of the PA 2008 which include within the definition of a NSIP any onshore generating station in England or Wales of 50 MW capacity or more.
Nitrous Oxides (NO_x)	Gases produced during combustion, including nitric oxide (NO) and nitrogen dioxide (NO_2).
noise	Noise defined as unwanted sound, is measured in units of decibels, dB. The range of audible sounds is from 0dB to 140 dB. Two equal sources of sound, if added together will result in an increase in level of 3 dB i.e 50dB + 50dB = 53 dB. Increases in continuous sound are perceived in the following manner: • 1dB increase – barely perceptible • 3dB increase – just noticeable • 10dB increase – perceived as twice as loud
Noise Sensitive Receptor (NSR)	Principally houses (existing or for which planning consent is being sought / has been given) and any building used for long-term residential purposes (such as a nursing home).
Non-Technical Summary (NTS)	A report which briefly describes the main points discussed in the Environmental Statement in a clear manner, without the use of technical jargon and phraseology.
particulate matter	Solid particles or liquid droplets suspended or carried in the air.
peaking plant	Peaking plants are operated when there is a stress event.
Phase 1 Habitat Survey	An ecological survey technique that provides a

	standardised system to record vegetation and wildlife habitats. It enables a basic assessment of habitat type and its potential importance for nature conservation.
photomontage	A type of visualisation or illustration that is based on photographs and that simulates the likely appearance of a proposed development in the photographic view. Photomontages are used as illustrations of the professional judgement of a landscape professional as to the significance of the effect of a project on landscape and visual receptors.
PIG Trap Facility (PFT)	PIG traps allow PIGs to be inserted into and removed from a pipeline which is to undergo a "pigging" program and which is likely to be under pressure. The PFT forms part of the AGI and therefore the Gas Connection. It is located within the Gas Connection Opportunity Area.
Pipeline Inspection Gauge (PIG)	Means a device to perform various maintenance operations on a pipeline.
Pipeline	The new underground gas pipeline connection proposed as part of the Gas Connection which is located within the Gas Connection Opportunity Area.
Planning Act 2008 (PA 2008)	UK legislation which passes responsibility for examining Development Consent Order (DCO) Applications for NSIPs to the Planning Inspectorate, who will examine applications and make recommendations for a decision by the relevant Secretary of State (the Secretary of State for Energy and Climate Change in the case of energy NSIP applications).
Preliminary Environmental Information Report (PEIR)	The report that provides information referred to in Part 1 of Schedule 4 of the EIA Regulations (information for inclusion in Environmental Statements) which has been compiled by the Applicant; and is reasonably required to assess the environmental effects of the development (and of any associated development).
Power Generation Plant	A SCGT gas fired 'peaking' power generating plant capable of providing up to 299 MW comprising: the Generating Equipment; Access Road; and temporary Laydown Area. It will be located within the Power Generation Plant Site.
Project	The Power Generation Plant, Electrical Connection and Gas Connection located on the

	Project Site.
Project Site	The entire area covered by or required in order to deliver the Project.
public right of way (PROW)	A right of passage by the public over the surface of the land without impediment. Public Rights of Way include public footpaths, bridleways and byways open to all traffic as well as Restricted Byways.
receptor	A component of the natural, created or built environment such as a human being, water, air, a building, or a plant that has the potential to be affected by the Project.
Reciprocating Gas Engine (RGE)	An engine that employs the expansion of hot gases to push a piston within a cylinder, converting the linear movement of the piston into the rotating movement of a crankshaft to generate power.
residual effects	Those effects of a development that cannot be mitigated following implementation of mitigation proposals.
Restricted Byways	Rights of way along which it is legal to travel by any mode (including on foot, bicycle, horse-drawn carriage etc.) but excluding 'mechanically propelled vehicles'.
Rochdale Envelope	The Rochdale Envelope allows for a project to evolve over a number of years, within clearly defined parameters. The EIA takes account of the need for such evolution, within those parameters, and reflects the likely significant effects of such a flexible project in the ES.
ruderal	Plant species typical of the early stages of colonisation of disturbed ground, often short-lived species, or the community formed by a collection of such species in recently disturbed habitat.
Scheduled Monument	A building included in the Schedule of Monuments compiled under Section 1 of the Ancient Monuments, and Archaeological Area Act 1979. Scheduled Monuments have statutory protection under this Act (Section 2) and an application for Scheduled Monument Consent must be made to the Secretary of State for Culture, Media and Sport if work to a Scheduled Monument is proposed.
Scoping	An exercise undertaken pursuant to regulation 8 of the Infrastructure Planning (Environmental

	Impact Assessment) Regulations 2009 to determine the topics to be addressed within the Environmental Statement.
Screening	Consideration as to whether an environmental impact assessment is required for a project.
Secretary of State (SoS)	The decision maker for a NSIP application and head of a government department.
Simple Cycle Gas Turbine (SCGT)	Gas plant technology system comprising Gas Turbine(s) fuelled by natural gas. The hot exhaust gases are routed directly to the stack without passing through a secondary steam turbine. The generating technology used for the Power Generation Plant.
Site of Importance for Nature Conservation (SINC)	Sites of Importance for Nature Conservation are usually selected within a local authority area and support both locally and nationally threatened wildlife. Many sites will contain habitats and species that are priorities under the county or UK Biodiversity Action Plans (BAP).
Site of Special Scientific Interest (SSSI)	A site statutorily notified under the Wildlife and Countryside Act 1981 (as amended) as being of special nature conservation or geological interest. SSSIs include wildlife habitats, geological features and landforms.
Special Area of Conservation (SAC)	Areas of protected habitats and species as defined in the European Union's Habitats Directive (92/43/EEC).
Special Protection Area (SPA)	Sites classified in accordance with Article 4 of the EC Birds Directive (79/409/EEC) which came into force in April 1979. They are classified for rare and vulnerable birds (as listed on Annex 1 of the Directive), and for regularly occurring migratory species.
Special Purpose Vehicle	A legal entity created to fulfil the specific purpose of developing projects.
species	A group of interbreeding organisms that seldom or never interbreed with individuals in other such groups, under natural conditions; most species are made up of subspecies or populations.
stress event	A surge in demand for electricity associated with a particular event (e.g. where may people across the country boil kettles following the end of a popular television programme or where there is a sudden drop in power being generated from plants which are constantly operational (e.g. a

	sudden outage).
Sustainable Drainage System (SuDS)	Sustainable management practices designed to control the rate and quality of surface water runoff into receiving waters, for example the use of swales and wetlands as buffers, as opposed to conventional drainage practices.
topography	The natural or artificial features, level and surface form of the ground surface.
Transport Assessment (TA)	A quantitative assessment of transport effects of construction and operational phases of the Project.
United Kingdom	The territory of the United Kingdom
visual amenity	The value of a particular area or view in terms of what is seen.
visual effect	Change in the appearance of the landscape from available viewpoints as a result of development.
Watt Power Limited (WPL)	Watt Power Limited was established to develop flexible gas fired generation assets to support the UK Government drive to a low carbon economy. WPL has set up Abergelli Power Limited (APL), a Special Purpose Vehicle to develop the Project.
Zone of Theoretical Visibility (ZTV)	Areas from which a specified element of a development may be visible.

1 Introduction

1.1 Overview

1.1.1 This document is the Environmental Impact Assessment (EIA) Scoping Report for the Abergelli Power Project (hereafter referred to as the 'Project') which sets out the proposed scope and content of the EIA to support the Development Consent Order (DCO) Application and the method by which it is intended to be carried out. The report has been prepared by Orbis Energy Limited on behalf of Abergelli Power Limited (APL).

1.1.2 The Project as shown on Figure 1 would comprise:

- A new **Power Generation Plant** in the form of a Simple Cycle Gas Turbine (SCGT) gas fired peaking power generating station fuelled by natural gas and capable of providing an electrical capacity of up to 299 Megawatts (MW) comprising:
  - The **Generating Equipment** including the Gas Turbine Generators and Balance of Plant which are located on the **Generating Equipment Site**;
  - A new purpose built **Access Road** either from the Rhyd-y-pandy Road to the north (**Access Road – Option 1**) or the B4489 to the west (**Access Road – Option 2**) to the Generating Equipment Site; and
  - During construction a temporary construction compound (the **Laydown Area**).
- A new **Gas Connection** to bring natural gas to the Generating Equipment from either the National Transmission System (NTS) or the Local Transmission System (LTS), which is located within the **Gas Opportunity Area**; and
- A new **Electrical Connection** to export power from the Generating Equipment to the National Grid Electricity Transmission System (NETS) for distribution to homes and businesses which is located within the **Gas Connection Opportunity Area**.

1.1.3 The Generating Equipment, Access Road and Laydown Area are together known as the **Power Generation Plant**, and are located within the **Power Generation Plant Site**.

1.1.4 The Power Generation Plant, Gas Connection and Electrical Connection are all integral to the generation of electricity and together are referred to as the '**Project**'. The land upon which the Project would be developed, or which would be required in order to facilitate the development of the Project, is referred to as the '**Project Site'**.

1.1.5 The Project would be situated on farmland located north of Swansea in the City and County of Swansea, approximately 1 km southeast of Felindre, 760

m west of Llwyncelyn and 1.4 km north of Llangyfelach. The approximate centre of the Project Site lies at grid reference is 265284, 201431.

1.1.6 The Project is described in more detail in Section 3, including the options currently under consideration for the Access Road, Gas Connection and Electrical Connection.

1.2 Need for and Benefits of the Project

1.2.1 There is considerable national need for this type of development, acknowledged at all levels of Government policy. National planning policy supports the need for new electricity infrastructure due to the current ageing and inevitable closure of older coal fired power plants and the likely increase in demand for electricity over the coming decades.

1.2.2 The overarching National Policy Statement for Energy (NPS EN-1)[1] states that 'gas will continue to play an important role in the electricity sector – providing vital flexibility to support an increasing amount of low-carbon generation and to maintain security of supply' (paragraph 3.6.2).

1.2.3 Gas is a reliable fuel source. It is acknowledged by the Government as being essential to a low-carbon economy and to underpin the country's energy security. In addition, gas peaking plants such as the Project provide back-up to power generation from renewable sources, particularly wind power, which is an increasingly prevalent but intermittent energy source. Modern gas fired power plants are among the most efficient and cleanest forms of electricity power generation.

1.2.4 At present, thermal peaking capacity in the UK is relatively small due to the nature of the electricity generation mix on the NETS. There is therefore a clear and significant requirement for further capacity to meet the projected need for reactive/flexible generation. A dedicated gas fired peaking plant such as the Project could allow for the rapid provision of reserve capacity to the NETS, thus playing a role in meeting the energy requirements of the UK going forward.

1.3 The Applicant

1.3.1 The Project Applicant is Abergelli Power Limited (APL). APL is an energy development company established for the Project by Watt Power Limited (WPL).

1.3.2 WPL has been established to develop flexible gas fired generation assets to support the UK Government drive to a low carbon economy. Stag Energy provides the resources through a management services agreement with WPL. Stag Energy was founded in 2002 and the company draws on a depth of experience within a team that has created and delivered over 10,000 MW of power generation and related infrastructure projects across the globe, of which 2,500 MW was delivered in the UK.

[1] Department of Energy and Climate Change (July 2011) Overarching National Policy Statement for Energy (EN-1)

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Feeder 28

Llety-Thomas
Gelli-gron
Nant y Tarw
Felindre
Penfidy Isaf
Penfidy Uchaf
Brynheulog
Llety'r Bugail
Ford
Resr
Water Treatment
Waun y Garn-wen
Gellyfeddan
Abergelli Farm
Enclosure
Llety'r-scilp
Cefn-betingau
Brynawel
Fforest-fawyd
Llety Morfil Farm
Coed-cae-croes
Llety Morfil Plantation
Maes-eglwys
Waun Ffyrdd
Waun Ffyrdd Plantation
Maes-eglwys Plantation
Pontbren Llwyd
Brynwhilach
Gors-wen
Pant-lasau
64
65
66
139
142
118
105
104
74
73
72
106
91
Spr

Proposed Draft DCO Site Boundary
Access Road Option 1
Access Road Option 2
Power Generation Plant Site
Electrical Connection Area of Opportunity
Gas Connection Area of Opportunity
Existing 400kV Overhead Line
Existing NTS Pipeline
Existing LTS HP Pipeline
Existing Water Pipeline

Abergelli power

Figure 1:
Project Site Plan

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Kilometres
0 0.05 0.1 0.15 0.2
1:10,000

Geodetic Information
Projection: Transverse_ Mercator
Spheriod: Airy_1830
Datum: D_OSGB_1936

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Project Number: P1079

Produced by
Orbis Energy Limited

1.3.3 WPL currently has two other 299 MW projects being brought forward through the planning process. They are Progress Power Ltd at Eye Airfield in Suffolk (www.progresspower.co.uk) and Hirwaun Power Ltd at Hirwaun in South Wales (www.hirwaunpower.co.uk). Both projects are now in the pre-examination phase following acceptance of the DCO Applications by the Planning Inspectorate.

1.3.4 Similarly, Stag Energy provides resources to the Gateway Storage Company Ltd, which is developing an offshore salt cavern gas storage facility in the East Irish Sea. The project has been consented by the UK Government, the Marine Management Organisation and the local planning authority (Barrow-in-Furness Borough Council, Cumbria). Further information on the project is available at www.gatewaystorage.co.uk.

1.3.5 WPL is committed to the development of assets to support the UK Government's drive to a low carbon economy. APL recognises the need to balance commercial issues with the environmental benefits and concerns of energy projects and believes this can be responsibly delivered at a local level. The Project and supporting infrastructure will be designed and developed to high quality, safety and environmental standards.

1.3.6 Further information on the companies is provided at http://www.abergellipower.co.uk or http://www.wattpowerltd.co.uk.

1.4 The Consenting Regime and EIA Process

The Planning Act 2008

1.4.1 In England and Wales, an onshore electricity generating station is considered to be a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 (PA 2008) if its generating capacity is more than 50 MW. As the proposed Power Generation Plant would have a generating capacity of at least 50 MW, and up to 299 MW, it would be classified as a NSIP under Section 14(1)a and Section 15(2) of the PA 2008. Under Section 31 of the PA 2008, development consent is required for development that is or forms part of a NSIP and therefore a DCO Application will be made to the Secretary of State (SoS).

Requirement for an EIA and Notification under Regulation 6(1)(b)

1.4.2 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the EIA Regulations)[2] and regulation 5(2)(a) of The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009[3] impose procedural requirements, in particular, the carrying out of EIA in relation to DCO Applications. All development in Schedule 1 (Schedule 1 development) requires EIA to be carried out. Development in Schedule 2 (Schedule 2 development) requires an EIA to be carried out if the project is likely to have significant effects on the environment.

[2] The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 No. 2263
[3] The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 No. 2264

1.4.3 The Project has been identified as a Schedule 1 development and therefore the Applicant intends to carry out an EIA for the Project in accordance with the EIA Regulations. The findings of the EIA will be summarised in an Environmental Statement (ES) which along with the scoping opinion will be submitted alongside the DCO Application.

Consultation Strategy

1.4.4 A consultation strategy will be implemented in accordance with Sections 42, 47 and 48 of PA 2008 and its associated secondary legislation which will allow the local community, statutory consultees and interested parties, including persons with an interest in any land that is affected by the DCO Application, to comment on and input into the planning and development process. All representations made during the consultation process will be considered carefully and APL will have regard to all relevant responses prior to submission of the DCO Application. The outputs generated from the formal statutory consultation will be summarised in a consultation report, submitted alongside the DCO Application.

1.4.5 A Statement of Community Consultation (SoCC) will be agreed with the City and County of Swansea Council before being published. The SoCC will set out how APL intends to consult with the local community in accordance with Section 47 of the PA 2008 throughout the preparation of the DCO Application.

1.4.6 APL has already commenced some preliminary discussions with various departments of City and County of Swansea Council and, where relevant, the outcome of these consultations has informed this report.

1.5 Purpose of the Scoping Report

1.5.1 This Scoping Report represents APL's formal notification to the SoS under regulation 6(1)(b) of the EIA Regulations. The report sets out the proposed scope and content of the EIA to support the DCO Application and the method by which it is intended to be carried out.

1.5.2 On behalf of the SoS, the Planning Inspectorate (PINS) is requested to acknowledge the regulation 6 notification and confirm that the Project is an EIA development in accordance with regulation 4(2)(a) of the EIA Regulations. In addition, PINS is requested to provide a Scoping Opinion on the possible significant environmental effects of all elements of the Project, the proposed methodologies to assess the impacts, and the proposed structure of the Environmental Statement (ES) (as presented in Sections 4 and 5 of this report).

1.5.3 PINS and consultees are also invited to highlight any additional issues that they believe should be addressed within the EIA, and to identify any sources of information that may be of interest to APL and the EIA team.

1.6 Content of the Scoping Report

1.6.1 The Scoping Report is set out as follows:

- Chapter 1 introduces the Project and the Applicant and outlines the consenting regime, the need for and benefits of the Project, and the consultation strategy;
- Chapter 2 provides a brief description of the planning policy background and regulatory framework in which the Scoping Report has been prepared;
- Chapter 3 provides a more detailed description of the Project, Project Site and surrounding area;
- Chapter 4 provides a high level overview of the proposed scope of the EIA;
- Chapter 5 describes the content and assessment methodology of each of the impact sections in detail; and
- Chapter 6 provides a summary and conclusion of the report; and
- Appendix 1 provides the Preliminary Ecological Appraisal.

2 Regulatory and Policy Background

2.1 Introduction

2.1.1 This chapter summarises the main regulatory and policy framework that is relevant to the Project at international, national and local levels.

2.1.2 A comprehensive review of potentially relevant policy and evidence will be undertaken during the pre-application process. A detailed description of the planning policy background and its relevance to the Project will be provided in the Planning Statement, which will be produced as a separate document to support the DCO Application. A summary of the impacts of the Project on relevant and important planning policy will be discussed more fully within the Preliminary Environmental Information Report (PEIR), ES and other documents submitted for examination in support of the DCO Application.

2.2 European Union (EU)

2.2.1 The EU Directives of particular relevance to the Project with respect to environmental requirements are listed below:

- Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the EIA Directive)[4];
- Directive 2003/35/EC of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC (the Public Participation Directive)[5];
- Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (the Industrial Emissions Directive (IED))[6];
- Directive 1992/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive)[7];
- Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds (the Birds Directive)[8]; and
- Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe (the Ambient Air Quality Directive)[9].

[4] European Council Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the EIA Directive)
[5] European Council Directive 2003/35/EC of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC (the Public Participation Directive)
[6] European Council Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (the Industrial Emissions Directive (IED))
[7] Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive)
[8] Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive)
[9] Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe (the Ambient Air Quality Directive)

2.3 Overview of Decision Making under the Planning Act 2008 and Policy Context

2.3.1 The Project is categorised as a NSIP and will be examined by PINS with the decision on the DCO Application made by the SoS under the regime established by the PA 2008 as described in Chapter 1.

2.3.2 As set out in NPS EN-1 (Overarching National Policy Statement for Energy), 'this NPS, when combined with the relevant technology-specific energy NPS, provides the primary basis for decisions' (Paragraph 1.1.1). The decision-maker 'should start with a presumption in favour of granting consent to applications for energy NSIPs' (paragraph 4.1.2) and on the basis that the urgent national need for such projects is settled.

2.3.3 Decisions must also be taken by the SoS having regard to the local impact reports and any other matters which the SoS 'thinks are both important and relevant to its decision' (Section 104 of the PA 2008), which may include Planning Policy Wales, Development Plan Documents (DPDs) or other documents in the Local Development Framework (LDFs).

2.4 National Policy Statements

2.4.1 PA 2008 required new policy to inform decisions on NSIPs in England and Wales. Policy for such infrastructure is set out in National Policy Statements (NPS). Those that are potentially relevant to the consideration of the DCO Application are:

- The Overarching National Policy Statement for Energy (NPS EN-1);
- The National Policy Statement for Fossil Fuel Electricity Generating Infrastructure (NPS EN-2) [10];
- NPS EN-4 National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines[11]; and
- NPS EN-5 National Policy Statement for Electricity Networks Infrastructure[12].

2.5 Welsh Planning

Planning Policy Wales (Edition 6, February 2014) (PPW) and Associated Technical Advice Notes (TAN)[13]

2.5.1 'Planning Policy Wales' (PPW) sets out the land use planning policies of the Welsh Assembly Government (WAG) and is supplemented by 21 topic based Technical Advice Notes (TANs). TANs prescribe the government's

[10] Department of Energy and Climate Change (July 2011) National Policy Statement for Fossil Fuel Electricity Generating Infrastructure (EN-2)
[11] Department of Energy and Climate Change (July 2011) National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipeline (EN4)
[12] Department of Energy and Climate Change (July 2011) National Policy Statement for Electricity Networks Infrastructure
[13] Welsh Government (February 2014) Planning Policy Wales Edition 6

policies on various planning issues that shape the preparation of development plans. The principles and objectives of TANs prescribe the overarching national guidance for specific individual environmental topics. Both the PPW and TANs are material considerations in determining planning applications under the Town and County Planning Act 1990 regime. It may be determined that these policy documents are relevant and important under the PA 2008 regime.

2.5.2 Potentially relevant TANs to the Project are:

- TAN 5: Nature Conservation and Planning;
- TAN 6: Planning for Sustainable Rural Communities;
- TAN 11: Noise;
- TAN 12: Design;
- TAN 15: Development and Flood Risk; and
- TAN 18: Transport.

2.6 Local Planning Policy

The City and County of Swansea Unitary Development Plan (UDP)[14]

2.6.1 The City and County of Swansea Unitary Development Plan (UDP) was adopted on 10th November 2008. It is the most up to date Development Plan covering the administrative area within the City and County of Swansea and is used in the determination of planning applications. The UDP sets out a range of policies and proposals relating to future development, and deals with the use and conservation of land and buildings within the City and County up to 2016.

2.6.2 Its purpose is to promote sustainable development, protect the environment, facilitate regeneration and support community planning by ensuring that sufficient land is available for all development needs (for housing, industry etc.) and that the allocations are well located in terms of environmental, social and economic aspirations.

2.6.3 The UDP has allocated the land within the Project Site for coal (R2) as well as sand and aggregate resource management (R4).

Swansea Local Development Plan

2.6.4 The Unitary Development Plan (UDP) is to be replaced within the next few years by the Swansea Local Development Plan (LDP). The Preferred Strategy was published in July 2013[15] for consultation. The Local Development Preferred Strategy is a strategic level planning document that

[14] The City and County of Swansea (November 2008) The City and County of Swansea Unitary Development Plan adopted November 2008
[15] The City and County of Swansea (July 2013) Preferred Strategy

sets out the broad approach being taken to ensure the City and County of Swansea is developed in a sustainable manner over the period to 2025.

2.7 Other Relevant Policy and Guidance

2.7.1 The following are considered to be potentially relevant policy and guidance in considering the potential impact of the Project:

- The Electricity Market Reform (2012)[16];
- A Low Carbon Revolution: Wales' Energy Policy Statement (2010)[17];
- Environment Strategy for Wales (2006)[18];
- The UK Climate Change Risk Assessment (CCRA) (2012)[19];
- Gas Generation Strategy (2012)[20];
- National Infrastructure Plan (2013)[21];
- Annual Energy Statement (2013)[22]; and
- Energy Wales – A Low Carbon Transition[23].

[16] Department of Energy and Climate Change (May 2012) Electricity Market Reform: Policy Overview
[17] Welsh Assembly Government (March 2010) A Low Carbon Revolution – The Welsh Assembly Government Energy Policy Statement
[18] Welsh Assembly Government (May 2006) Environment Strategy for Wales
[19] Department for Environment, Food and Rural Affairs (January 2012) UK Climate Change Risk Assessment: Government Report
[20] Department of Energy and Climate Change (December 2012) Gas Generation Strategy
[21] HM Treasury (December 2013) National Infrastructure Plan 2013
[22] Department of Energy and Climate Change (October 2013) Annual Energy Statement 2013
[23] Welsh Government (March 2012) Energy Wales: A Low Carbon Transition

3 Project Description

3.1 Project Site

3.1.1 The Project Site would be situated on pastoral fields north of Swansea in the City and County of Swansea, approximately 1 km southeast of Felindre, 760 m west of Llwyncelyn and 1.4 km north of Llangyfelach. The farmland is currently used for sheep and horse grazing as well as horse training and breeding. The western extent of the Project Site encompasses National Grid's two 400kV electrical substations and Felindre Gas Compressor Station. In addition areas within the Project Site have in the past, been subject to a variety of permissions for mineral extraction, inert landfill and other commercial activities.

3.1.2 The Power Generation Plant Site would be located primarily within fields used for grazing bounded by a mixture of drainage ditches, fencing and defunct hedgerows with substantial gaps in them. There is an existing farm road at the northern end of Access Road – Option 1. The Generating Equipment Site and Laydown Area are divided into two areas by a soft surface horse training track known as 'the gallops' with a block of broadleaved woodland to the east classified as Ancient Woodland and a Site of Importance for Nature Conservation (SINC). There are also further blocks of woodland to the west where Access Road – Option 2 is located. The land within the Generating Equipment Site is at approximately 90 m above Ordnance Datum (AOD) and gently slopes down towards the south.

3.1.3 The Gas Connection would lie within the Opportunity Area identified on Figure 1 and would either be located to the north, northwest or south of the Generating Equipment Site crossing grazing fields bound by hedgerows and ditches as well as a public footpath. The fields are interspersed by small deciduous copses, some of which are classified as Ancient Woodland and SINCs to the north, northeast and northwest of the Generating Equipment Site, as identified on Figure 3.

3.1.4 The Electrical Connection would lie within the Opportunity Area identified in Figure 1 and would be located to the southwest of the Generating Equipment Site passing through grass fields and the Aber-gelli-fach plantation which is partially designated as a SINC.

3.1.5 The Project Site would be accessed from Junction 46 of the M4 either from: the north via the Rhyd-y-pandy Road; or from the west via the B4489 as shown on Figure 2.

Surrounding Area

3.1.6 The area surrounding the Project Site is rural with a substantial amount of utilities infrastructure in the area. A gas NTS Pipeline, and water pipelines cross the Project Site and there is also a network of electricity pylons which lead to and from National Grid's two 400kV electrical substations to the southwest of Abergelli Farm. Furthermore a Water Treatment Works is

located immediately to the northwest while the Cefn Betingau Solar Park is located to the east of Project Site.

3.1.7 The closest residential dwellings to the Project Site are:

- Abergelli Farm, located within the Project Site;
- Abergelli fawr, located within the Project Site;
- Cefn-betingau approximately 400 m to the west; and
- Maes-eglwys approximately 176 m to the southwest.

3.1.8 Within the Project Site there is a small landfill and the remains of Aber-gelli Colliery, both of which are located north of Abergelli Farm.

3.1.9 Other features of the area include a number of existing public footpaths, bridleways and tracks located in and around the Project Site, linking it to the wider area. In addition within the Project Site there are a number of springs with their associated streams and drainage ditches which discharge into the Afon Llan.

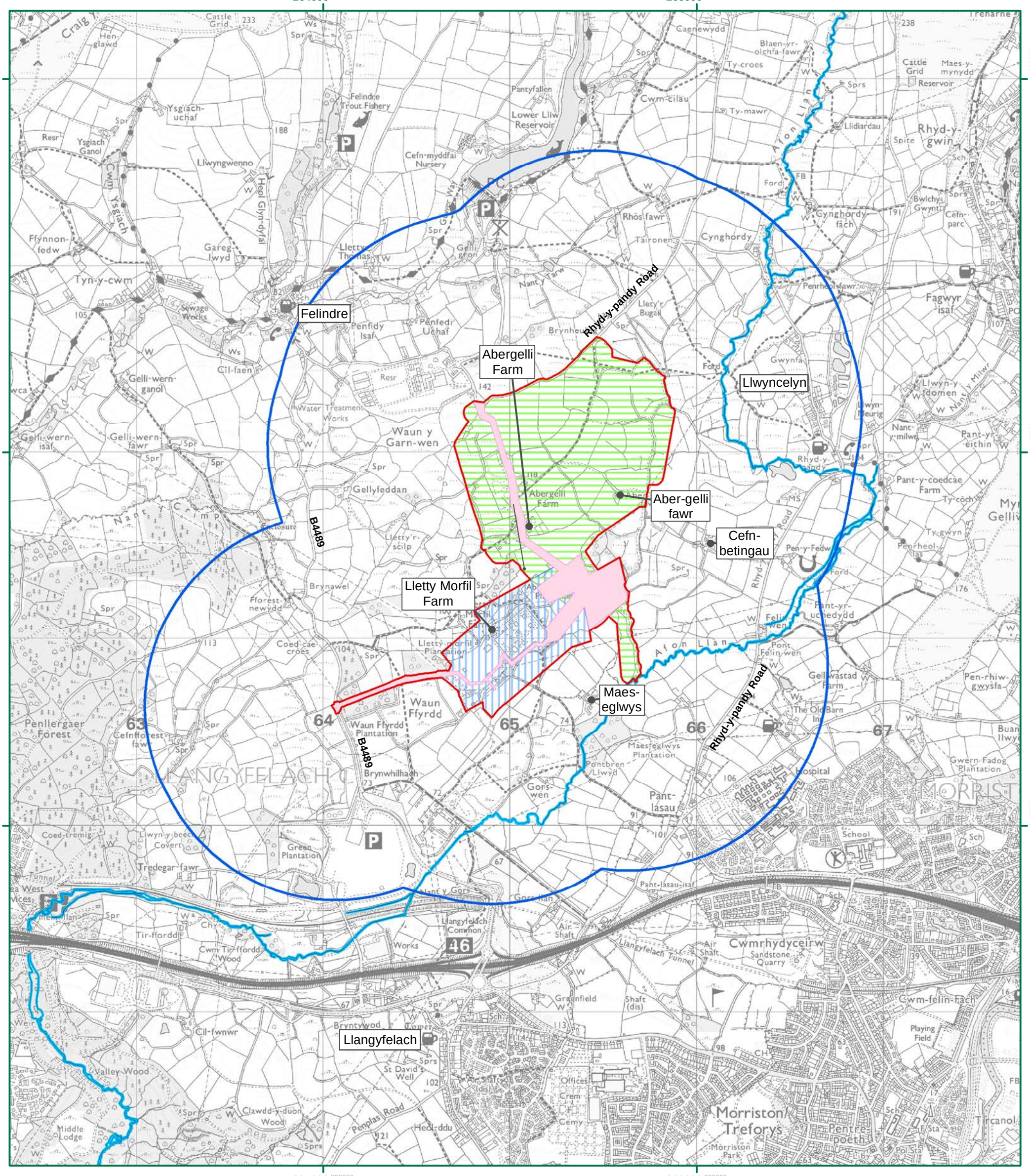
3.2 Description of the Project

3.2.1 The elements of the Project are described below. The description is based on a 'Rochdale Envelope' approach (i.e. a single project with a range of parameters). The scope of each of the technical assessments described in Chapter 5 has been based on the parameters provided below. Assessing a worst case realistic configuration from within the parameters enables an assessment of the 'worst case' likely significant environmental effects within each technical assessment. Each technical chapter within the PEIR and ES will identify which parameters represent the 'worst case' for that topic. It is acknowledged that the parameters may be refined during the design process for the Project and following consultation. If this occurs the modified parameters will be described and taken into account within the PEIR and ES as appropriate.

3.3 Power Generation Plant

3.3.1 The Power Generation Plant would be designed as a peaking plant fired by natural gas supplied by a new underground gas pipeline connecting the Power Generation Plant to the existing NTS. It would have a capacity of up to 299 MW (enough to power the equivalent of 400,000 homes).

3.3.2 As a peaking plant, the Generating Equipment would operate for up to 1,500 hours per year. Peaking plants are required to operate when there is a 'stress event'. This occurs when there is a surge in demand for electricity associated with a particular event (e.g. where many people across the country boil kettles following the end of a popular television programme) or where there is a sudden drop in power being generated from plants which are constantly operational (e.g. a sudden outage). Peaking plants also help to 'balance out' the grid at other times of peak electricity demand and help to support the grid at times when other technologies (e.g. renewable energy



Project Site

Power Generation Plant Site

Electrical Connection Opportunity Area

Gas Connection Opportunity Area

1km Study Area Around the Project Site

Features Of Interest

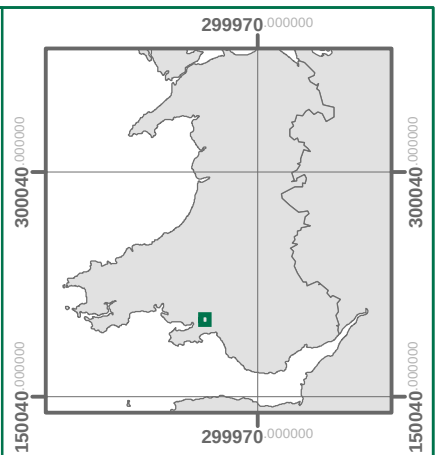
Water Resources

Afon Llan

Data Sources

Abergelli power

Figure 2:
Features of Interest



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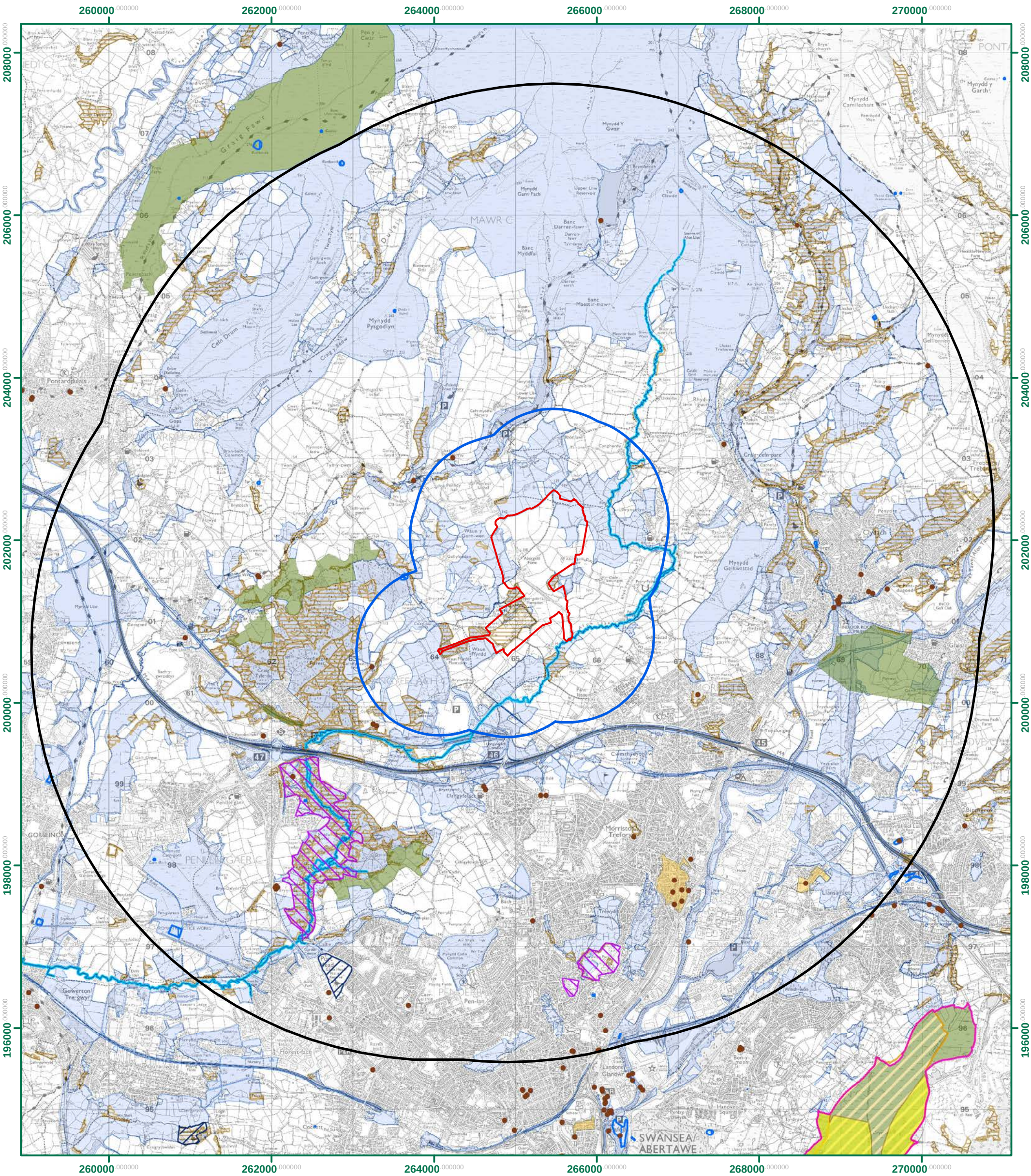


Project Site

1km Study Area Around the Project Site

5km Study Area Around the Project Site

Water Resources

Afon Llan

Ecology

Ramsar

Local Nature Reserve

Special Area of Conservation

National Nature Reserve

Site of Special Scientific Interest

Ancient Woodland

Site of Importance for Nature Conservation

Cultural Heritage

Listed Building

Scheduled Monument

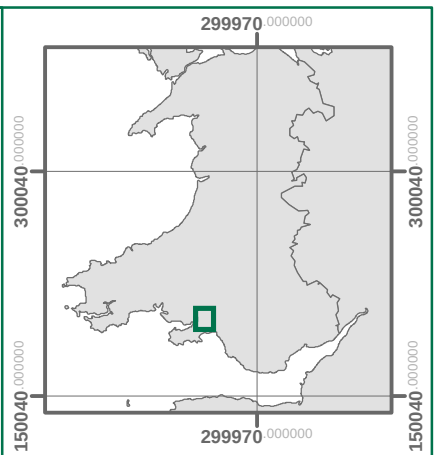
Registered Park or Garden

Conservation Area

Data Sources

Abergelli power

Figure 3: Indicative Environmentally Sensitive Receptors



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Project Number: P1079

Produced by Orbis Energy Limited

sources, such as wind and solar farms) cannot generate electricity due to their intermittent operation and reliance on weather conditions.

3.3.3 Given these parameters, it has been determined that a Simple Cycle Gas Turbine (SCGT) plant is the preferred and most appropriate technology choice for the Project.

SCGT Plant

3.3.4 There are several alternative types of SCGT plant available to generate up to 299 MW. SCGT plants often use aero-derivative gas turbines (i.e. turbines derived from aeronautical applications), primarily because of their suitability for frequent start-ups, flexibility, high efficiency and high-availability maintenance techniques. For the aero-derivative case, APL envisages using three, four or five individual aero-derivative turbine generators to achieve 299 MW.

3.3.5 However, 'industrial' type gas turbines can also be used which are typically larger and often more suited to longer operational hours. They offer similar efficiency but less fast loading flexibility. Industrial gas turbines differ from aeronautical designs in that the casings, rotors and blading are of heavier construction. For the industrial gas turbine case, it is anticipated that one or two individual industrial gas turbine generators will be used to achieve 299 MW.

3.3.6 The main equipment in a SCGT is a Gas Turbine Generator, comprising the following components:

- Inlet air filter;
- Air compressor;
- Combustion chamber;
- Power turbine(s); and
- Exhaust silencer.

3.3.7 Air on entering the gas turbines, would be compressed and natural gas injected into the air. The natural gas would then burn in the combustion chamber producing hot, high pressure gases. The gas would then expand across the blades of the gas turbine driving the electrical generators to produce electricity.

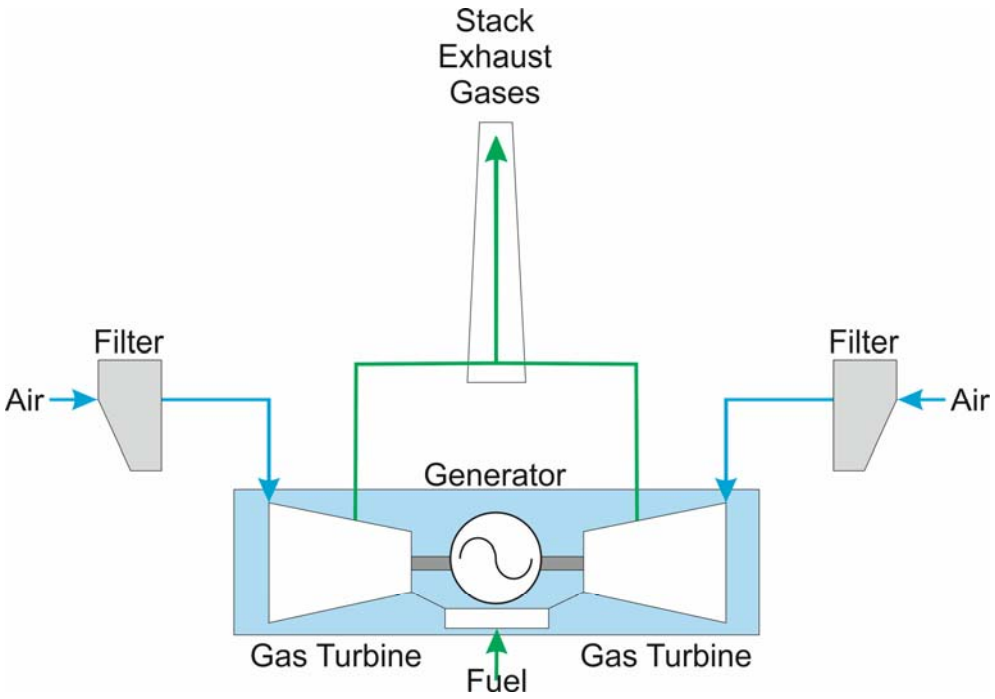
3.3.8 The waste gases and heat produced from this process would then be released to the atmosphere via between one and five stacks (chimneys). The stack(s) would contain equipment which will reduce emissions released to the atmosphere.

3.3.9 A stack height sensitivity study will be undertaken for the Project to determine the minimum stack height for the Gas Turbine Generators, required for adequate dispersion of emissions and to meet legislative air quality targets. This height would apply to all technology choices, as

discussed above, and would not be dependent on the number of units present at the Generating Equipment Site.

3.3.10 The DCO Application will therefore be flexible enough using the Rochdale Envelope approach to allow APL to achieve a 299 MW project by building between one to five Gas Turbine Generators, with up to five exhaust gas flue stacks. Figure 4 shows a simple schematic of SCGT operation.

Figure 4: Schematic of SCGT Operation



Laydown Area

3.3.11 A temporary laydown area for the storage of plant and equipment during construction would be provided adjacent to the Generating Equipment Site as shown in Figure 1. It is not proposed that land would be required for a permanent maintenance/laydown area during operation.

Access Road

3.3.12 A new purpose built Access Road would be constructed within the Power Generation Plant Site. Two options are being considered for access to the Generating Equipment Site from Junction 46 of the M4. Access Road - Option 1 is from the north via the Rhyd-y-pandy Road and the existing access road west of Brynheulog past Abergelli Farm which would need to be extended to the Generating Equipment Site, as shown on Figure 1.

3.3.13 Access Road - Option 2 is from the west via the B4489, along the access road to National Grid's two 400kV electrical substations and Felindre Gas Compressor Station and then along a purpose built Access Road to be constructed, across undeveloped land to the Generating Equipment Site as shown on Figure 1.

Dimensions

3.3.14 The maximum area for the Generating Equipment Site would be in the order of 6 ha. The Generating Equipment may be sited in a number of locations within the wider Generating Equipment Site depending on its final design. The Generating Equipment Site may also be reduced in size during the design process with any changes acknowledged in the PEIR and/or ES.

3.3.15 Table 3.1 provides indicative dimensions for the main plant items which would be present at the Generating Equipment Site.

Table 3.1: Indicative Dimensions of Main Plant Items

Plant Item	Indicative Dimensions (m)
Stacks (dimensions)	Up to 60 m (height) and up to 10 m (diameter)
Stack (number)	Up to 5 stacks
Gas Turbine Generators (plant dimensions)	Up to 90 m (length) x up to 150 m (width) x up to 20 m (height)
ACC/Cooling (plant dimensions)	Up to 60 m (width) x up to 60 m (width) x up to 10 m (height)
Demineralised water tank	Up to 23 m (diameter) x up to 16 m (height).
Raw/fire water tank	Up to 15 m (diameter) x up to 18 m (height).
Administration/ workshop/ control building	Up to 30 m (length) x up to 23 m (width) x up to 6m (height)
Gas Receiving Facility (GRF)	Up to 50 m (width) x up to 50 m (length) x up to 3 m (height)

Construction, Operational and Decommissioning Timescales

3.3.16 Construction and commissioning of the Project would take approximately 22 months. The main works associated with the construction phase would be the removal of hardstanding, excavation and site levelling for new foundations, potential piling (if required) and the laying of the Gas and Electrical Connections.

3.3.17 The Power Generation Plant would be designed to have an operational life of 25 years, after which time it would be decommissioned or re-powered depending on the nature of the electricity market and energy mix at the time. For the purposes of the EIA, it would be assumed that the Power Generation Plant would be decommissioned.

3.3.18 Decommissioning would comprise the removal of all Power Generation Plant items and restoration of the Project Site to a similar condition compared to before the construction of the Project. This process would also take approximately 22 months. It is likely that some underground structures, including the Gas and Electrical Connections (if an underground Electrical Connection is implemented) may be capped and left in situ to avoid any adverse environmental impacts associated with their removal. Due regard would be paid to all best practice guidelines and legislation on decommissioning of projects which are relevant at the time of the decommissioning activities. Where possible, items of plant would be recycled or reused.

Carbon Capture Readiness (CCR) and Carbon Capture and Storage (CCS)

3.3.19 At up to 299MW, the Project would be below the threshold set out in Directive 2009/31/EC[24] and National Policy Statement EN-1 and EN-2 for when operators of combustion plants are required to have assessed the feasibility of: a storage site, transport facilities and economic considerations of the capture of carbon dioxide (CO_2) produced as a result of the combustion process. Therefore it is not considered necessary to assess the viability of CO_2 capture or include it further in this report.

3.4 Gas Connection

3.4.1 The Gas Connection would be in the form of a new underground gas pipeline connection (the Pipeline) and above ground installation (AGI) and is required to connect the Generating Equipment to the existing high pressure NTS or the LTS HP Pipeline in order to provide a reliable supply of fuel.

Gas Connection Opportunity Area

3.4.2 A Gas Connection Feasibility Study was undertaken in March 2014 to define and evaluate the options available for connecting the Generating Equipment to a suitable source of fuel gas. This identified Feeder 28 of the NTS or a nearby LTS HP Pipeline as possible connection points. The location of these in relation to the Project Site is shown on Figure 1.

3.4.3 At present, investigations to identify specific route corridor options to the NTS or LTS HP Pipelines are still ongoing. It is anticipated that the Gas Connection would be situated within the Gas Connection Opportunity Area which extends north and south from the Generating Equipment Site as shown on Figure 1. The Gas Connection Opportunity Area comprises large pastoral fields bounded by hedgerows and ditches which slope down towards the south and are interspersed by areas of woodland (some of which are classified as Ancient Woodland and SINCs) and areas of wet grassland (some of which are designated as SINCs) as shown on Figure 3. There are also a group of springs to the north of Aber-gelli fawr which feed

[24] Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006

into Afon Llan close to the LTS HP Pipeline. The feeder for the NTS which feeds into and out of the Felindre Gas Compressor Station crosses through the Project Site between the Gas Compressor Station and Abergelli Farm.

3.4.4 Specific connection options will be explored and further refined to a single Gas Connection Route prior to submission of the DCO Application. Due regard will be paid to relevant factors including environmental, planning, safety, engineering and constructability. Further details of the options being considered will be provided to consultees when they are available and the selected option will be assessed in the PEIR and ES that will be submitted in support of the DCO Application.

Connection to the NTS or LTS HP Pipeline

3.4.5 Connection of the Pipeline to the NTS or LTS HP Pipeline would require two Above Ground Installations (AGIs) to be installed which will include: a Minimum Offtake Connection (MOC) facility, which would be owned by National Grid Company (NGC); and a PIG Trap Facility (PTF) which will be owned by APL.

3.4.6 The MOC (approximately 40 x 30 m) would contain:

- Remotely operable valve (ROV);
- Control and instrumentation kiosk; and
- Electrical supply kiosk.

3.4.7 The PTF (approximately 40 x 30 m) would contain:

- PIG launching facility;
- Emergency control valve (possible);
- Isolation valve;
- Control and instrumentation kiosk; and
- Electrical supply kiosk.

3.4.8 Termination of the Gas Connection would be at a PTF on the Generating Equipment Site. A further facility known as the Gas Receiving Facility (GRF) would be situated downstream of the PTF within the Generating Equipment Site. The PTF would contain the following equipment:

- PIG receiving facility;
- Emergency control valve (possible); and
- Isolation valves.

3.4.9 The GRF would contain the following equipment:

- Metering, heating, filtering, compression and pressure regulation equipment;
- Isolation valve;
- Electricity supply kiosk; and
- Control and instrumentation kiosks.

3.4.10 The PTF and GRF would be sited close to each other and if possible they will be joined on a single plot.

3.5 Electrical Connection

3.5.1 The Electrical Connection will comprise all the necessary elements to enable power to be exported from the Generating Equipment to the NETS such as new electrical circuits (either in the form of an underground cable or overhead line).

3.5.2 A grid connection assessment was undertaken for the Project Site in March 2014 in order to define and evaluate the options available for connecting the Generating Equipment to the NETS. The most suitable point of connection is currently anticipated to be a cable terminal chamber on the Gas Insulated Switchgear (GIS) circuit at the point where the underground cable or overhead line emerges to facilitate its connection into the NETS.

3.5.3 If the connection is via an underground export cable then a Sealing End Compound (SEC) would be required. It is possible that the SEC would be required off site from the Generating Equipment Site depending on the configuration of the Electrical Connection.

Electrical Connection Opportunity Area (Underground or Overhead)

3.5.4 Specific route corridor options for the Electrical Connection have not been identified at present, with options being investigated within an area referred to as the Electrical Connection Opportunity Area to the southwest of the Generating Equipment Site as shown on Figure 1.

3.5.5 The area comprises gently sloping pastoral land grazed by sheep and horses with areas of wet grassland to the east and scrub and deciduous woodland to the west. Some of these areas are designated as SINCs with areas of the woodland also classified as Ancient Woodland, as shown on Figure 3. The field boundaries are delineated by fences with defunct hedgerows and drainage ditches. The nearest residential properties to the Electrical Connection Opportunity Area are Lletty Morfil, Abergelli Farm and Maes-eglwys. There is one public right of way within the area which follows the boundary of the Felindre Gas Compression Station.

3.5.6 Two existing National Grid double circuit 400kV overhead lines are located on an approximate southwest-northeast alignment through the Project Site.

3.5.7 Specific connection options will be explored and further refined to a single Electrical Connection route prior to submission of the DCO Application. Due

regard will be paid to relevant factors including environmental, planning and feasibility. Further details of the options being considered will be provided to consultees when they are available and the selected option will be assessed in the PEIR and ES that will be submitted in support of the DCO Application.

3.6 Project Site Selection/Design Evolution

3.6.1 The choice of site for the Power Generation Plant has been carefully considered with various sites and a number of relevant factors looked at during this process in accordance with paragraph 4.4.1 of the NPS EN-1 and NPS EN-2. Key factors included in the selection of the Power Generation Plant Site are:

- It is in close proximity to a suitable Electrical Connection point;
- It is in close proximity to a suitable Gas Connection point;
- It is in a developed setting dominated by the Felindre Gas Compressor Station and National Grid's two 400kV electrical substations ; and
- It has a well-developed road network and access to the Project Site.

3.6.2 The final choice of the Gas and Electrical Connection routes would be selected following further consultation and a more thorough assessment of constraints and environmental impacts.

3.6.3 In terms of design evolution of the Project, the following technology options were originally considered for the 299 MW Power Generation Plant: SCGT plant; Combined Cycle Gas Turbine (CCGT) plant; and Reciprocating Gas Engines (RGE) plant.

3.6.4 SCGT is considered to be the most suitable technology choice for generating up to 299 MW as a peaking plant at the Project Site based on the following environmental, technical and feasibility considerations:

- Visual impact: SCGT plant require shorter stack(s) compared to CCGT plant and therefore are less visually intrusive in views from the surrounding environment;
- Water resources: the water requirement of a SCGT plant is significantly lower than for a CCGT plant;
- Noise and available space: noise levels from a SCGT plant would typically be lower than for an RGE plant. A larger number of RGE units would be required at the Generating Equipment Site to generate up to 299 MW. Spatially this may not be possible;
- Financial: based on the current electricity market, it is essential that the Power Generation Plant of the size proposed will be particularly cost effective, as it will be called upon to operate flexibly to balance out the National Grid and meet changing demands of customers. SCGT plants are better suited to this type of operational regime; and

- Start up times: SCGT plants are able to start up and shut down much quicker than similar sized CCGT plants and are, therefore, better suited to meeting variable demands.

3.6.5 The potential for using CHP opportunities with these technologies was also considered. However it is not technically or economically feasible with a SCGT peaking power station because the profile for the generation of electrical energy from the station cannot be guaranteed to coincide with the required heat demand profile of any potential customer.

3.6.6 A more detailed appraisal of the Project Site selection process and design evolution would be set out in the PEIR and ES.

4 Scope and Structure of the EIA

4.1 Introduction

4.1.1 This Chapter describes the proposed scope and structure for the EIA that will be undertaken to support the DCO Application in accordance with the EIA Regulations. The key output of the EIA process is ultimately the ES, which sets out the likely significant environmental effects of the Project. The ES will enable PINS, consultees and the SoS to understand the anticipated environmental impacts and effects of the Project.

4.1.2 To allow for a precautionary approach, the assessments in the ES will be based on a realistic worst case scenario specific to each topic based on the Rochdale Envelope parameters as described in Chapter 3.

4.2 Overall ES Structure

4.2.1 Table 4.1 sets out the proposed structure of the ES. A number of supporting documents will also be submitted to the SoS as part of the DCO Application. These are summarised in Table 4.2.

Table 4.1: Proposed ES Structure

Section	Description
Introduction	Providing: • A brief introduction to the Applicant; • A high level description of the Project; • A description of the consenting regime; and • A description of the purpose and structure of the ES.
Project Description	Detailed description of the Project and how the different aspects (i.e. Power Generation Plant, Electrical Connection and Gas Connection) are interconnected/ interrelated. Outline of the proposed construction methods and indicative programme, including working hours etc.
Site Description	Description of the current and future site settings and surroundings of the Project Site.
Project Development and Alternatives	To include an account of: • Project Site Selection; • Alternative technology options for the Power Generation Plant; • Alternative layout/design options for the Power Generation Plant; and

Section	Description
	• Assessment of alternatives for the Gas and Electrical Connection route corridors.
EIA Assessment Methodology	Detailing the assessment methodology that the EIA has followed.
ES – Main Impact Sections	The following chapters will present the results of the EIA that has been undertaken: • Air Quality; • Noise and Vibration; • Ecology; • Water Quality and Resources; • Geology, Ground Conditions and Agriculture; • Landscape and Visual; • Traffic, Transport and Access; • Cultural Heritage and Archaeology; and • Socio-Economics. The planning policy context and results of the indirect, secondary and cumulative impact assessment of the Project will be provided within each chapter listed above.
Conclusion	This chapter will present the conclusions of the residual effects of the Project as well as indirect, secondary and cumulative impact assessment of the Project.
ES Volume 2	Containing technical appendices
ES Volume 3	Containing all figures associated with the ES
Non-Technical Summary	Providing a summary of the main findings of the ES in easy to understand, non-technical language

Table 4.2: Supporting Environmental Documents to the DCO Application

Document Name	Description
Design and Access Statement	Providing details on the main access and egress routes to the Project Site and the design process and philosophy that have been followed in developing the Project.
Flood Consequences	Providing details on the risk to the Project Site from flooding and risks elsewhere that could be

Document Name	Description
Assessment	caused by the Project.
Planning Statement	Describing the planning policy background and demonstrating that the Project is in compliance with the relevant NPSs and other relevant and important considerations.
Consultation Report	Consolidating all consultations that have taken place throughout the Project, and how issues raised have been addressed.
No Significant Effects Report or Habitat Regulations Assessment	Depending on the potential for impacts on designated European sites, a Habitat Regulations Assessment or a No Significant Effects Report may be required subject to consultation with Natural Resources Wales (NRW), City and County of Swansea and PINS. This will draw on the Ecology chapter of the ES (described in Section 5.5 below).

4.3 Cumulative Assessment

4.3.1 In accordance with the EIA Regulations, the EIA will take into account other developments in the vicinity of the Project Site and will consider the cumulative impacts associated with these development in-conjunction with the Project. Developments considered within the cumulative assessment include those that are:

- In the process of being built;
- Permitted application(s) but not yet implemented;
- Submitted application(s) not yet determined;
- Projects on the National Infrastructure's programme of projects;
- Projects identified in the relevant development plan (and emerging development plants – with appropriate weight being given as they move closer to adoption) recognising that information on the relevant proposals will be limited; and
- Projects identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

4.3.2 At present, it is anticipated that the following developments will be considered as part of the cumulative assessment.

- Planning Application 2013/0795 – Installation of four 5 kW wind turbines 120.7 m to tip and associated infrastructure at Myle Coch Mawr;

- Planning Application 2013/0135 – Installation of ground mounted array of solar panels, inverter substations and 2.4 m high fencing on land at Abergelli Farm. This development would be located within the Gas Connection Opportunity Area on the Project Site.

- Planning Application 2013/1639 (Rhyd-y-pandy Solar Park) – Construction of 7 MW solar park consisting of installation of up to 28,250 photovoltaic panels and up to six inverter/transformer cabins, a single control building and provision of security fencing.

4.3.3 Further to these individual planning applications, proposed development within the Swansea Vale Development Area will also be considered for assessment of any significant cumulative impacts. Swansea Vale is situated approximately 5 km from the Project Site and extends to some 190 ha south of a railway line and the M4.

4.3.4 In addition during the EIA other developments may be identified if more information becomes publicly available.

4.3.5 Any views on the inclusion of any particular cumulative scheme will be welcome as part of the Scoping Opinion.

5 Detailed Description of ES Impact Sections

5.1 Introduction

5.1.1 This chapter provides a description of the proposed EIA. It addresses each proposed ES technical chapter and describes the current understanding of the baseline conditions and assessment methodology for each discipline that will determine the likely significant environmental effects of the Project. Potential mitigation measures have also been identified where appropriate, although these will be set out in detail in the ES. Consultees are invited to comment on the methodologies within their scoping responses.

5.1.2 Although the sections below deal with the Project as a whole, it is anticipated that the ES technical chapters will be sub-divided allowing the assessment of effects during the construction, operation and decommissioning phases, description of mitigation measures and residual effects to be addressed separately for the Power Generation Plant, Gas Connection and Electrical Connections as well as together for the overall Project. Cumulative effects will be assessed for the Project as a whole.

5.1.3 The sections described are set out in the following list:

- Air Quality (5.3);
- Noise and Vibration (5.4);
- Ecology (5.5);
- Water Quality and Resources (5.6);
- Geology, Ground Conditions and Agriculture (5.7);
- Landscape and Visual (5.8);
- Traffic, Transport and Access (5.9);
- Cultural Heritage and Archaeology (5.10); and
- Socio-Economics (5.11).

5.2 Significance Criteria

5.2.1 The significance of environmental effects resulting from the construction, operation and decommissioning of the Project will generally be categorised using a series of matrices. These will be developed to describe the sensitivity of receptors and resources which have the potential to be impacted by the Project and the magnitude of any impacts that are likely to arise. The sensitivity of receptors and resources and magnitude of impact will be cross-referenced to give an overall significance of effect for any potential impact. Where it is not possible to quantify impacts, qualitative assessments will be carried out, based on available knowledge and professional judgement.

5.2.2 In order to provide a consistent approach and enable comparison of effects upon different environmental components, the assessments will generally follow the structure and use the terminology outlined below in Tables 5.1 to 5.3. However for some sections, significance criteria may need to differ depending on the assessment methodology used. Each technical chapter of the ES will clearly identify and explain any specific criteria used as well as defining what constitutes a significant impact and/or effect.

5.2.3 Potential mitigation measures described in the ES will include embedded mitigation through design/standard control measures (which will be used to produce an initial assessment of impact) and any further specific mitigation required (which will be taken into account to produce an assessment of residual impacts).

Table 5.1: Determining Receptor Sensitivity

Sensitivity	Example
Very High	Internationally designated sites (e.g. Ramsar, Special Protection Area, World Heritage Site)
High	Nationally designated sites (e.g. Sites of Special Scientific Interest (SSSI), designated landscape, National Parks, Principal Aquifers).
Medium	Regionally designated ecology, heritage sites, secondary aquifers, minor watercourses
Low (or lower)	Locally designated ecology, heritage sites, areas of hardstanding, brownfield land, industrial site, low ecological value.
Negligible	No sensitivity to change

Table 5.2: Determining Magnitude of Impact

Magnitude		Example
Major	Adverse	A permanent or long term adverse impact on the integrity and value of an environmental attribute or receptor
	Beneficial	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality
Moderate	Adverse	An adverse impact on the integrity and/or value of an environmental attribute or receptor, but recovery is possible in the medium term and no permanent impacts are predicted
	Beneficial	Benefit to, or addition of, key characteristics, features, or elements or improvement of

Magnitude		Example
		attribute quality
Minor	Adverse	An adverse impact on the value of an environmental attribute or receptor, but recovery is expected in the short term and there would be no impact on its integrity
	Beneficial	Minor benefit to, or addition of key characteristics, features or elements; some beneficial impact on attribute or a reduction in the risk of a negative impact occurring
Negligible	Adverse	Very minor loss
	Beneficial	Very minor benefit
No change		No change would be perceptible, either positive or negative

Table 5.3: Determining Significance of Effect

		Magnitude of Impact				
		No Change	Negligible	Minor	Moderate	Major
Receptor Sensitivity	Very High	Neutral	Slight	Moderate	Large	Very Large
	High	Neutral	Slight	Moderate	Large	Large
	Medium	Neutral	Slight	Slight	Moderate	Large
	Low	Neutral	Slight	Slight	Slight	Moderate
	Negligible	Neutral	Neutral	Neutral	Neutral	Neutral

5.3 Air Quality

Introduction

5.3.1 The air quality assessment will consider potentially significant air quality impacts and effects caused by the construction, operation and decommissioning of the Project on sensitive human and ecological receptors in and around the vicinity of the Project Site. Potential effects could include those that result from dust during construction and decommissioning and stack emissions during operation of the Gas Turbine Generators.

Baseline

5.3.2 Existing ambient air quality and baseline conditions will be reviewed using available air quality monitoring data and the most recent local authority publications published in accordance with their duties under the Environment Act 1995[25]. The assessment will include particular consideration of: designated Air Quality Management Areas (AQMAs); any relevant previous studies undertaken in the area; the location of sensitive receptors (including designated ecological sites and Morriston Hospital); and other significant sources of emissions.

5.3.3 The nearest AQMA is Swansea Air Quality Management Area 2010 which is in the Lower Swansea Valley encompassing the areas of Hafod, Sketty and Fforestfach[26]. It is approximately 4.5 km from the Project Site and has been declared primarily on the basis of traffic related NO_2.

5.3.4 Felindre Gas Compressor Station is present within the Project Site and occasionally flares and therefore the emissions will be considered as part of the baseline conditions. Further consultation will be sought with The City and County of Swansea Council and National Resources Wales (NRW) to determine a definitive list of significant emission sources to consider as part of the air quality assessment.

5.3.5 The existing air quality concentrations at sensitive ecologically designated sites will be obtained from DEFRA[27]. The existing acid and nutrient nitrogen deposition rates will be obtained from the UK Air Pollution Information System (UK APIS).[28]

5.3.6 Statutory ecologically designated sites within 10 km of the Project Site include:

- Caeau Afon Gwili Site of Special Scientific Interest (SSSI);
- Cefn Gwrhyd, Rhydyfro SSSI;
- Coed Cwm Du, Cilmaengwyn SSSI;
- Burry Inlet Ramsar Site and Special Protection Area (SPA);
- Burry Inlet and Loughor Estuary SSSI;
- Carmarthen Bay and Estuaries Special Area of Conservation (SAC);
- Crymlyn Bog Ramsar, SAC and SSSI;
- Crymlyn Bog and Pant y sais National Nature Reserve (NNR);
- Crymlyn Burrows SSSI;

[25] Environment Act 1995
[26] www.swansea.gov.uk
[27] http://uk-air.defra.gov.uk/
[28] http://www.apis.ac.uk/

- Earlswood Road Cutting and Ferryboat Inn Quarries SSSI;
- Fairwood, Pengwern and Welshmoor Commons SSSI;
- Blackpill, Swansea SSSI;
- Cilybebyll SSSI;
- Gwrhyd Meadows SSSI;
- Caeau Nant Garenig SSSI;
- Fforest Goch Bog SSSI;
- Frondeg SSSI;
- Graig Fawr, Potnardulais SSSI;
- Hafod Wennol Grasslands SSSI;
- Nant y Crimp SSSI;
- Pant-y-sais SSSI;
- Penplas Grasslands SSSI;
- Rhosydd Castell-du and Plas-y-bettws SSSI.

5.3.7 Non-statutory ecological sites within 2 km of the Project Site include:

- Waun Garn Wen SINC;
- Llety-Morfil SINC;
- Llangefelach Common SINC;
- Felindre Grasslands SINC;
- Pant Lasau SINC;
- Rhyd-Y-Pandy Valley and Grassland SINC;
- Rhos Fawr SINC;
- Cilfaen SINC;
- Cefn Forest Stream SINC;
- Middle Llan SINC;
- Llangyfelach Golf Course and Surrounds SINC;
- Mynydd Gelli-wasted SINC;
- Lower Lliw Resivoir SINC;

- Middle Lliw SINC;
- Penllergaer Forest SINC;
- Penllergaer to Llangefelch Tunnel railway line SINC;
- Mynydd Bach Common SINC;
- M4 Corridor SINC;
- Cwm Rhydyceirw to Birchgrove Railway SINC;
- Cwm Clydach SINC;
- Lougher to Penllegaer Railway Line SINC; and
- Banc Darren Fawr SINC; and
- Cwm Nant-Ddu SINC.

5.3.8 Residential receptors within 1 km of the Project Site include those within the nearby settlements of Morriston, Pant-lasau, Llwyncelyn and Felindre. In addition there are also isolated dwellings and farmsteads outside of the settlements including but not exclusive to:

- Aber gelli fawr;
- Abergelli Farm;
- Cefn-betingau;
- Maes-eglwys;
- Lletty Morfil Farm;
- Felin-wen;
- Pont Felin-wen;
- Pontbren Llwyd;
- Gors-wen;
- Llety'r Bugall;
- Brynheulog;
- Taironen;
- Penfedi Uchaf;
- Penidy Isaf;
- Gellyfedden;
- Rhos fawr;

- Brynawel;
- Brynwhilhach; and
- Lletty'r-scil.

Assessment

5.3.9 The assessment methodology will be agreed in consultation with the Environmental Health Officer (EHO) at City and County of Swansea Council and NRW.

5.3.10 The emissions of dust during the construction and decommissioning phases of the Project will be assessed in accordance with 'Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance' (IAQM, 2012)[29] and the Department for Transport 'Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3, Part 1: Air Quality' and the associated DMRB Screening Method, developed by the Highways Agency[30]. The significance of the potential impacts identified will be determined based on the sensitivity of the identified receptors within the potential zones of influence outlined in the IAQM Guidance.

5.3.11 The air quality assessment for the operational phase will follow the Environment Agency documents 'Horizontal Guidance Note H1 – Annex (f): Air Emissions'[31] and the Environment Agency Air Quality Modelling and Assessment Unit (AQMAU) 'Air dispersion modelling report requirements (for detailed air dispersion modelling)'[32]. The conversion of NO_x to NO_2, as applicable for the protection of human health under the UK Air Quality Standards Regulations 2010[33], will adopt the approach outlined in the AQMAU Guidance Note 'Conversion Ratios for NO_x and NO_2' (2006)[34].

5.3.12 As a peaking plant, the operation of the Generating Equipment will be limited through the permitting regime to 1500 hours per annum. The assessment will, therefore, be based on the operation of the Generating Equipment, at full load, for 1500 hours per annum.

5.3.13 The atmospheric emissions from the operation of the Generating Equipment will be quantified by obtaining information from relevant plant suppliers. Where two or more suppliers are being considered, a realistic worst case scenario will be used to ensure flexibility. However, only plant that meet national emissions limits will be considered.

5.3.14 The atmospheric dispersion modelling will be performed using the Cambridge Environmental Research Consultants (CERC) Air Dispersion

[29] IAQM (2012)Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance
[30] Highways Agency (various dates) Design Manual for Roads and Bridges (DMRB) Volume 11.
[31] Environment Agency (December 2011) Horizontal Guidance Note H1 – Annex (f): Air Emissions
[32] Environment Agency Air Quality Modelling and Assessment Unit (undated) Air dispersion modelling report requirements (for detailed air dispersion modelling)
[33] The Air Quality Standards Regulations 2010
[34] Environment Agency Air Quality Modelling and Assessment Unit (2006) Guidance Note 'Conversion Ratios for NO_x and NO_2'

Modelling Software (ADMS 5.0). An air dispersion model will be set up that considers the effects of terrain and buildings (as appropriate to the location of the Generating Equipment), together with the most recent available meteorological data covering a consecutive five year period (e.g. 2009 to 2014, inclusive) in accordance with current guidance.

5.3.15 The modelling assessment will estimate the mass concentration of NO_x and CO at sensitive receptors using the emission limits as specified in Part 2 of Annex V to the IED. Initial screening runs will be undertaken to determine an acceptable stack height suitable for adequate dispersion based on predicted maximum short term and long term ground level concentrations. Detailed atmospheric dispersion modelling will then be undertaken on the basis of the selected stack height.

5.3.16 The results of the detailed dispersion modelling will be presented as isopleths, and compared with background levels and relevant standards and guidelines (i.e. the Air Quality Standards Regulations 2010). Direct comparison will be made between the long-term and short-term process contributions from the Generating Equipment, the predicted environmental concentrations of relevant substances (i.e. process contribution plus background levels) and the limits and objectives within the relevant Air Quality Standards Regulations 2010. Where appropriate, the significance of the potential impact will be determined using the criteria set out in the 'Development Control: Planning for Air Quality' (EPUK, 2010) in conjunction with the Environment Agency Horizontal Guidance Note H1 – Annex (f).

5.3.17 The abatement of emissions will be discussed in relation to application of Best Available Techniques (BAT), in accordance with the Environment Agency Sector Guidance Note for Combustion Activities (EPR 1.01)[35] and the UK's position with regards to the on-going review of the EU IPPC Reference Document on BAT for Large Combustion Plants[36]. Should additional mitigation prove to be necessary, the severity of impact, frequency of emissions and the resultant environmental risk associated with any residual impact will be examined.

5.3.18 Changes in air quality levels for NO_x will be assessed with respect to ecology for the European and nationally designated habitat sites within 10 km of the Project Site (including, but not necessarily limited to, those identified above). The non-statutory habitat sites within 2 km of the Project Site will also be considered. An assessment of the increased deposition of both nutrient nitrogen and acid due to nitrogen will also be carried out at the statutory (both EU and UK) designated sites in accordance with the methodologies described in the Environment Agency AQMAU 'AQTAG06 Technical Guidance on detailed modelling approach for an appropriate assessment for emissions to air'[37].

[35] Environment Agency (March 2009) How to comply with your environment permit. Additional guidance for Combustion Activities (EPR 1.01)
[36] European Commission (July 2006) Integrated Pollution Prevention and Control, Reference Document on Best Available Techniques for Large Combustion Plants
[37] Environment Agency AQMAU (October 2011) AQTAG06 Technical guidance on detailed modelling approach for an appropriate assessment for emissions to air

5.3.19 It is considered that there would not be any noticeable odours associated with the operation of the Generating Equipment at or beyond the boundary of the Generating Equipment Site and therefore it is not considered necessary to undertake a detailed assessment of odour.

5.3.20 The operation of the Gas and Electrical Connections would not produce any significant emissions and therefore these elements of the assessment during operation have been scoped out.

Potential Mitigation Measures

5.3.21 An outline Construction Environmental Management Plan (CEMP) will be drafted and appended to the ES which will set out best practice methods of limiting dust on site during construction and decommissioning.

5.3.22 During operation, the Generating Equipment would operate as a peaking plant, with operations limited to 1,500 hours per year. This operating limit will be set out in the site permit and will not be exceeded. In addition, embedded mitigation measures will include: incorporating stack(s) of sufficient height to achieve adequate dispersal of pollutants; and using flue gas cleaning equipment if required to ensure that all emissions are within concentrations permitted by legislation and guidance.

5.3.23 The need or otherwise for further, project specific mitigation measures will be addressed within the ES chapter.

5.4 Noise and Vibration

Introduction

5.4.1 In accordance with Section 5.11 of NPS EN-1, a noise and vibration assessment will consider potentially significant noise and vibration impacts and effects caused by the construction, operation and decommissioning of the Project on Noise Sensitive Receptors (NSRs) in and around the vicinity of the Project Site

Baseline

5.4.2 The Project Site would be sited within pastoral fields interspersed by scrub and deciduous woodland in a rural area with the National Grid's two 400kV electrical substations and Felindre Gas Compressor Station in the western extent of the Project Site. There are currently no sources of significant noise or vibration within close proximity to the Project Site other than that associated with nearby agricultural activities, Team Force Swansea Paintball Centre and a skip hire business as well as the M4 motorway approximately 1.5 km to the south. National Grid's two 400kV electrical substations and Felindre Gas Compressor Station are assumed to operate within agreed thresholds.

5.4.3 The closest NSRs within 1 km of the Project Site include those within the nearby settlements of Morriston, Pant-lasau, Llwyncelyn and Felindre. In

addition there are also isolated dwellings and farmsteads outside of the settlements including but not exclusive to:

- Aber gelli fawr;
- Abergelli Farm;
- Cefn-betingau;
- Maes-eglwys;
- Lletty Morfil Farm;
- Felin-wen;
- Pont Felin-wen;
- Pontbren Llwyd;
- Gors-wen;
- Llety'r Bugall;
- Brynheulog;
- Taironen;
- Penfedi Uchaf;
- Penidy Isaf;
- Gellyfedden;
- Rhos fawr;
- Brynawel;
- Brynwhilhach; and
- Lletty'r-scil.

Assessment

5.4.4 The assessment methodology will be agreed with the EHO at the City and County of Swansea Council.

5.4.5 Construction and decommissioning noise and vibration assessments of the Project will be undertaken following the guidance in British Standard (BS) 5228[38]. The assessment will be undertaken as a desk study and shall involve:

- Identification of construction and decommissioning activities that produce significant noise and vibration;

[38] British Standards Institute (2009) BS 5228-1: Code of practice for noise and vibration control on construction and open sites

- Identification of NSRs within 100 m of construction and decommissioning activities; and
- Prediction of noise and vibration using the methodology contained within BS5228.

5.4.6 The exact construction and decommissioning methodologies are unlikely to be defined until the construction contractor is appointed, which is likely to be after the submission of the DCO Application. However, in the absence of this information, an outline construction programme will be developed based on knowledge and experience of other similar developments. Additionally, the typical make up of construction equipment at each stage of the project programme will be ascertained in the same way. For ground improvement works (e.g. piling) the noise and vibration assessment will pay due regard to the ground conditions at the Generating Equipment Site. Where uncertainties exist, realistic worst case assumptions will be used.

5.4.7 The quantification of impacts shall be undertaken by comparison with agreed project criteria or limits either from previous schemes and relevant guidance and standards such as BS5228, BS6472[39] and BS7385[40], or local legislative requirements. The desk study shall outline suitable measures for the mitigation of construction and decommissioning impacts, and an assessment of residual impacts and effects.

5.4.8 Operational noise will be assessed using the methodology from a combination of: BS4142[41]; BS8233[42]; and WHO Guidelines for Community Noise[43]. The likelihood of complaints about noise from industrial developments will be predicted using the following criteria from BS4142:

- When subtracting the background level from the rating level, the greater the difference, the greater the likelihood of complaints;
- A difference of around +10 dB or more indicates that complaints are likely;
- A difference of around +5 dB is of marginal significance; and
- If the rating level is more than 10 dB below the measured background noise level then this is a positive indication that complaints are unlikely.

5.4.9 The guidance contained in BS8233 will also be used to assess the effects on indoor ambient noise levels in living rooms and bedrooms of NSRs when they are unoccupied.

[39] British Standards Institute (2008) BS 6472: Part 1 Guide to human exposure to vibration in buildings
[40] British Standards Institute (1993) BS 7385: Part 2 Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration
[41] British Standards Institute (1997) BS 4142: 1997 Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas
[42] British Standards Institute (2014) BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings
[43] World Health Organisation (1999) Guidelines for Community Noise

5.4.10 The WHO 'Guidelines for Community Noise' provides health-based guidance on suitable noise levels intended to avoid or minimise community annoyance by noise. The guidance provides guideline noise levels for both indoor and outdoor areas.

5.4.11 It is proposed that the study area for the noise assessment of operational effects shall be defined as the region within 1 km of the Project Site. All sensitive receptors, such as residential properties, hospitals, schools, etc. within the study area shall be identified in the assessment.

5.4.12 A baseline noise survey will then be undertaken in the vicinity of the Project Site to establish the current baseline noise levels. The locations for the baseline noise survey (i.e. locations of the nearest NSRs) will be agreed in advance with the EHO.

5.4.13 Following baseline noise measurements, a noise model will be produced using Cadna software (3-dimensional noise propagation software) which will model the measured baseline levels at NSRs, together with sound power levels of proposed plant (obtained from relevant suppliers). Where sound power levels for proposed plant are not available, suitable data will be substituted, although a realistic worst case scenario would always be considered. The noise model will highlight the main noise sources and the associated noise levels at the NSR locations. Contour plots will also be produced clearly showing noise levels at the Project Site, NSRs and surrounding areas.

5.4.14 If the model shows that there is potential for a significant effect to be generated by noise from any of the NSRs, the level of required noise mitigation would be specified, and measures that could be used to achieve this level of mitigation will be incorporated into the model, to provide a 'with mitigation' scenario.

5.4.15 The ES section will be compiled using the Institute of Acoustics (IoA) / Institute for Environmental Management (IEMA) draft document 'Guidelines for Noise Impact Assessment'[44].

5.4.16 The operation of the Gas Connection is not anticipated to cause any significant increase in background noise or vibration and therefore this element has been scoped out of the assessment.

5.4.17 Operational noise from the Electrical Connection has been scoped out as there would be no significant effects associated with the potential for a low level electrical hum emanating from an overhead line option, if one is required. In addition if a SEC is required, any low level electrical hum associated with the infrastructure will not be perceptible at the NSRs and therefore this has also been scoped out of the assessment.

[44] IEMA/IOA Working Party (2002) Consultation Draft Guidelines for Noise Impact Assessment

Potential Mitigation Measures

5.4.18 An outline CEMP will be drafted and appended to the ES which will set out best practice methods of limiting noise and vibration on site during construction and decommissioning.

5.4.19 During operation, mitigation measures could include the use of silencers on the loudest plant items within the Generating Equipment.

5.5 Ecology

Introduction

5.5.1 An ecology assessment will consider potentially significant impacts and effects caused by the construction, operation and decommissioning of the Project on ecological resources and receptors in and around the vicinity of the Project Site.

Baseline

5.5.2 The Project Site is predominantly on pastoral farmland, mostly agriculturally improved but with significant areas of marshy grassland and interspersed by woodland and scrub. Some of the marshy grassland qualifies as a Section 42 habitat 'purple moor-grass and rush pastures' (under the Natural Environment and Rural Communities Act 2006 (NERC)[45]) and is designated as SINCs. Furthermore areas of the woodland qualify as Section 42 habitat 'lowland mixed deciduous woodland', some of which is also classified as Ancient Woodland and SINCs. The Ancient Woodland and SINCs are shown on Figure 3.

5.5.3 The fields are grazed by horses and sheep and are largely bounded by fences running along the line of defunct hedgerows with large gaps. There are numerous watercourses on site, mostly in the form of ditches or streams along field boundaries. There is a potential for bats, great crested newts, dormice, otters, water voles, reptiles, badger, woodland and farmland bird species and terrestrial and aquatic invertebrates to be located within these habitats. Full details of the habitats located within the Project Site and the potential for protected species and species of conservation importance are provided in Appendix A.

5.5.4 A desk based assessment (DBA) and Extended Phase 1 Habitat Survey was undertaken at the Project Site during Spring 2014 (see Appendix A). The purpose of the assessment and survey were to:

- Identify the main habitats present at the Project Site;
- Identify the sensitive ecological receptors (e.g. statutory designated sites) in the vicinity of the Project Site;

[45] Natural Environment and Rural Communities Act 2006

- Assess the potential of the Project Site to support protected species; and
- Provide recommendations for further assessment works (e.g. Phase 2 Protected Species Surveys).

5.5.5 The following European Sites are within 10 km of the Project Site:

- Burry Inlet Ramsar Site and SPA;
- Carmarthen Bay and Estuaries SAC; and
- Crymlyn Bog Ramsar Site and SAC.

5.5.6 The following statutory protected SSSIs (for nature conservation) and LNRs are located within a 5 km radius of the Project Site as shown on Figure 3:

- Nant y crimp SSSI;
- Penplas grasslands SSSI; and
- Cadle Heath LNR.

5.5.7 The following SINCs are located within 2 km radius of the Project Site as shown on Figure 3:

- Waun Garn Wen SINC;
- Llety-Morfil SINC;
- Llangefelach Common SINC;
- Felindre Grasslands SINC;
- Pant Lasau SINC;
- Rhyd-Y-Pandy Valley and Grassland SINC;
- Rhos Fawr SINC;
- Cilfaen SINC;
- Cefn Forest Stream SINC;
- Middle Llan SINC;
- Llangyfelach Golf Course and Surrounds SINC;
- Mynydd Gelli-wasted SINC;
- Lower Lliw Resivoir SINC;
- Middle Lliw SINC;
- Penllergaer Forest SINC;

- Penllergaer to Llangefelch Tunnel railway line SINC;
- Mynydd Bach Common SINC;
- M4 Corridor SINC;
- Cwm Rhydyceirw to Birchgrove Railway SINC;
- Cwm Clydach SINC;
- Lougher to Penllegaer Railway Line SINC; and
- Banc Darren Fawr SINC; and
- Cwm Nant-Ddu SINC.

5.5.8 Appendix A provides the full records of the protected species and species of conservation concern within 1 km of the Project Site. The main ecological value of the Project Site lies with the marshy grassland or 'purple moor-grass and rush pastures', 'ponds' and the 'Lowland mixed deciduous woodland' which are all Section 42 habitats under the NERC Act and are located within SINCs.

Assessment

5.5.9 In accordance with NPS EN-1 (paragraph 5.3.3) the Ecological Impact Assessment (EcIA) will provide an assessment of any potentially significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity. Furthermore opportunities will be taken, where practicable, to conserve and enhance biodiversity and geological conservation interests. NPS EN-1 also requires that lighting effects will be considered on sensitive ecological receptors.

5.5.10 Based on the results of the extended Phase 1 Habitat Survey, the following Phase 2 protected species surveys are currently being carried out on and surrounding the Project Site.

Bats

5.5.11 A roped-access tree survey is being carried out for trees to be removed or modified that have been identified as having potential to support roosting bats. Where the potential for bats to roost in a surveyed tree is confirmed then emergence/re-entry (at dusk and/or dawn) survey will be carried out to confirm the likely use of the tree by roosting bats, and the status of any roost present.

5.5.12 In addition bat activity surveys are being carried out across the Project Site in accordance with the guidance provided by Hundt (2012)[46] which involves walked transect routes carried out monthly between April and October and

[46] Hundt, L. (2012) Bat Surveys: Good Practice Guidelines. 2nd Edition. Bat Conservation Trust, London

an automated survey using static bat detectors. These surveys will determine the species of bats present on the Project Site as well as the spatial distribution and relative activity levels of these species.

Great Crested Newts

5.5.13 Preliminary pond surveys (Habitat Suitability Assessment) indicated that there are a number of ponds within 250 m of the Project Site which are potentially suitable for great crested newts. An additional four to six surveys are being undertaken between mid-March to mid-June to establish presence or absence and to estimate population size if great crested newts are found during the surveys. More detail on the methodology is provided in Appendix A.

Dormouse

5.5.14 A dormouse survey is being undertaken following a methodology based on those prescribed in best practice guidance (Bright et al, 2006)[47]. The surveys involve the use of dormouse boxes in areas of woodland and nest tubes in cluttered environments where boxes cannot be used. The survey is designed to detect the presence or absence of dormice.

Otter and Water Vole

5.5.15 A survey for water voles and otters along the banks of the water courses is being carried out in accordance with best practice guidelines (Chanin (2003)[48] and Strachan et al., (2011)[49] respectively). Signs that water voles may be present will be indicated by the presence of feeding remains, characteristic grass lawns, burrows, runs, footprints, latrines and droppings. Signs that otters may be present will be indicated by the presence of spraints and footprints.

Reptiles

5.5.16 A reptile survey is being carried out on the Project Site to establish the presence/absence of reptiles, the species present and the approximate population size. The survey uses artificial refuges (e.g. roofing felt and tin) to aid in the detection of reptiles and assessment of their distribution and abundance, following good practice guidance, including that set out in the Herpetofauna Worker's Manual (Gent & Gibson, 2003[50]) and Reptile Survey Guidance (Froglife, 1999[51]).

[47] Bright, P. W, Morris, P. A and Mitchell-Jones, A (2006) Dormouse Conservation Handbook, 2nd Edition. English Nature, Peterborough.
[48] Chanin P (2003) Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.
[49] Strachan, R., Moorhouse, T, and Gelling, M. (2011). The Water Vole Conservation Handbook. WILDCRU, Abingdon.
[50] Gent, A.H. & Gibson, S.D. (2003). Herpetofauna Workers' Manual. JNCC, Peterborough.
[51] Froglife (1999). Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesowen.

Badgers

5.5.17 All potential habitats within and surrounding the Project Site are being surveyed to search for and record characteristic signs of badger activity, including: setts, latrine pits, foraging holes, badger hair and paw prints following best practice guidance (Neal and Cheesman, 1996[52]). Potential habitat includes areas of woodland, scrub and hedgerows. If the Gas Connection Route Corridor, once chosen, potentially requires the closure of any badger setts then a badger bait marking survey will be carried out between early September and mid-October.

Breeding birds

5.5.18 The breeding bird survey focuses on the farmland birds (occurring both within the Project Site and a buffer of up to 50 m). Their territories are being mapped using surveys based on the British Trust for Ornithology's Common Bird Census (CBC) methodology with an initial site visit carried out in mid-April, followed by additional visits in May and June.

Terrestrial and Aquatic Invertebrates

5.5.19 The block of marshy grassland to the west of Abergelli Farm, will be surveyed for marsh fritillary butterflies following standard methods[53] for walking transects during late May/June looking for adults and larval webs during mid-August to mid-September.

5.5.20 A survey of Lepidoptera (notably moths) will be undertaken in the woodland within the Project Site in late spring and mid-summer. The survey will involve two night-time moth surveys using Skinner or Robinson moth traps fitted with mercury vapour bulbs. Any species hard to identify from external markings alone, and those requiring further confirmation, will be retained and dissected if necessary to ascertain their identity with the use of a stereoscopic microscope.

5.5.21 Beetle assemblages in the woodland within the Project Site will be sampled using a method following the Natural England (ISIS) protocol (Drake et al, 2007)[54] via hand searches, sweep netting and pitfall trapping. Subsequent laboratory identification will be required for many of the specimens collected.

5.5.22 In order to determine the assemblage of aquatic invertebrates present on Project Site, the flowing ditches and ponds will be surveyed if a Water Framework Directive Report is required (refer to Section 5.6).

5.5.23 Kick-sampling for aquatic invertebrates will be undertaken at selected locations along ditches or streams. Furthermore the water chemistry status will be determined for watercourses by extracting a single water sample at three locations within as well as upstream and downstream of the Project

[52] Neal, E and Cheeseman, C (1996) Badgers. T & AD Poyser Natural History Ltd. London.
[53] http://www.ukbms.org/Downloads/UKBMS%20Ng2%20-%20Marsh%20Frit%20Webs%20guidance%20notes.pdf
[54] Drake, C.M., Lott, D.A., Alexander, K.N.A. and Webb K (2007) Surveying terrestrial and freshwater invertebrates for conservation evaluation. Natural England Research Report NERR005. Natural England, Peterborough.

Site. Samples will be dispatched to a UKAS accredited laboratory for subsequent analysis.

5.5.24 The national pond monitoring survey protocol will be adhered to for surveying ponds which involves timed netting and searches for invertebrates in summer (but may also cover spring and autumn).

Invasive Species

5.5.25 A walkover survey of the Project Site will be carried out to map all locations where Japanese knotweed and Himalayan balsam are growing. This will be done within the period June - July when both species are most in evidence.

Assessment

5.5.26 Following the completion of the surveys, reports will be produced, detailing the extent to which the species are present, the likely impacts that the elements of the Project would have on the species and habitats and the potential mitigation measures that could be employed to reduce impacts to an acceptable level.

5.5.27 The EcIA will be undertaken in accordance with the relevant guidance including the Guidelines for Ecological Impact Assessment (Institute of Ecology and Environmental Management (IEEM), 2006)[55]. The potential effects will also be assessed against and informed by national and local planning guidance including the PPW and TANs as well as National and Local Biodiversity Action Plans. Consultation will be undertaken with NRW and City and County of Swansea Council to identify any particular issues of concern.

Habitats Regulation Assessment

5.5.28 The Conservation of Habitats and Species Regulations 2010 (as amended) [56] require an assessment to be made as to whether the Project, either alone or in combination with other plans or projects could have a likely significant effect on European sites including SPAs, SACs and Ramsar Sites. Within 10 km of the Project Site lie Burry Inlet Ramsar Site and SPA; Carmarthen Bay and Estuaries SAC and Crymlyn Bog Ramsar Site and SAC.

5.5.29 Consultation with the City and County of Swansea Council will determine the requirement for a screening exercise, in accordance with the Conservation of Habitats and Species Regulations 2010 (as amended). The screening exercise will identify any likely impacts of the Project upon the above European Sites, either alone or in combination with other plans and projects, and consider whether the impacts are likely to be significant.

5.5.30 If screening concludes there may be likely significant effects on the special features for which the European Sites are classified or designated then a report will be provided with the DCO Application showing the European Sites

[55] Institute of Ecology and Environmental Management (IEEM) (June 2006) Guidelines for Ecological Impact Assessment in the United Kingdom
[56] Conservation of Habitats and Species Regulations 2010 (as amended)

that may be affected together with sufficient information to enable the decision maker to make an appropriate assessment, if required. If screening concludes there is no likely significant effect on a European Site sufficient information will be provided with the DCO Application in the form of a 'No Significant Effects Report' to allow the Competent Authority to assess and review the information and make its own determination that there are no likely significant effects and be satisfied there is no significant residual effect.

Potential Mitigation Measures

5.5.31 An outline CEMP will be drafted and appended to the ES which will set out best practice methods of limiting effects on ecology and biodiversity during construction and decommissioning. If necessary, further, specific mitigation measures will include the consideration for provision of new habitat to suitably replace any habitat areas which would be permanently lost through development of the Project.

5.6 Water Quality and Resources

Introduction

5.6.1 An assessment on the effects on water quality and resources will consider all of the potentially significant impacts and effects caused by the construction, operation and decommissioning of the Project.

5.6.2 The chapter will also provide a summary of the main issues and risks posed to and from flooding identified during the Flood Consequences Assessment (FCA) which will be submitted as a separate document as part of the DCO Application. The FCA will take the form of a qualitative assessment based on existing NRW data and consultation with the NRW and Lead Local Flood Authority (LLFA). Additionally, potential impacts on hydrogeology will be assessed as part of the chapter describing geology, ground conditions and agriculture (outlined in Section 5.7 of this Scoping Report).

Baseline

5.6.3 The main watercourse that traverses the area is Afon Llan which flows in a south-westerly direction to the west and south of the Project Site, through Swansea into Swansea Bay. In addition, there are a number of ordinary watercourses in the form of springs, streams and drainage ditches within the Project Site that ultimately flow into Afon Llan. The location of Afon Llan is shown on Figure 2.

5.6.4 The streams, ponds and ditches within the Gas and Electrical Connection Opportunity Areas will be carefully considered during the process of identifying the Gas and Electrical Connection Route Corridors. The design process will aim to minimise crossings or interactions with water bodies where practical.

5.6.5 Historical and current maps will be studied to identify abstraction points and licences in the area as well as the course of any former watercourses which may have been underground or culverted in the past.

Assessment

5.6.6 In accordance with NPS EN-1 the assessment will account for the existing status of, and impacts of the Project on water quality, water resources and physical characteristics of the water environment including any potential eutrophication impacts. The assessment will be undertaken using a risk based approach to determine the level of potential impacts by using a Source-Pathway-Receptor model to identify which receptors could realistically be impacted by a given action. This will include any sources of pollution that have the potential to impact on surface water bodies.

5.6.7 All aspects of supply, demand and disposal of water and process effluents will be addressed for the construction, operational and decommissioning phases. Furthermore the disposal of surface water drainage and the process effluents will be discussed with a view to maximising the opportunities for water recovery and re-use as far as is practicable.

5.6.8 Potential discharge locations for site surface waters and process waste waters will be identified and a site drainage plan, which may incorporate a sustainable drainage system (SuDS) will be discussed at a high level.

5.6.9 There are not anticipated to be any significant impacts on key water bodies resulting from the Project through physical works to them. It is also not anticipated that water will be directly abstracted or discharged to or from any of these sources during construction, operation or decommissioning of the Power Generation Plant.

5.6.10 Where projects are away from, or unlikely to interact with any water courses, it is likely that a Water Framework Directive (WFD) Report will be scoped out. However, if NRW does require the inclusion of a WFD Report, it would form an Appendix to the ES.

5.6.11 During construction of the Gas Connection and the Electrical Connection (if in the form of an underground cable), best working methods will be utilised at all water crossings to ensure that there are no adverse impacts on flow or drainage and that no contamination is allowed to enter the water bodies. Effects during operation and decommissioning are unlikely to occur or be significant and therefore have been scoped out.

5.6.12 If an overhead line is used for the Electrical Connection, there will be no need for any permanent water crossings or interaction with water bodies of any kind. However any temporary water crossings required during construction will be assessed.

Potential Mitigation Measures

5.6.13 Mitigation measures will be designed in accordance with BS6031[57], BS8004[58], as well as CIRIA C649[59] and C648[60]. An outline CEMP will be drafted and appended to the ES which will set out best practice methods of limiting impacts on water quality and resources during construction and decommissioning. Measures would include: siting stockpiles a minimum distance from watercourses to avoid pollution runoff; and adhering to best practice working guidelines to avoid spillages near watercourses.

5.6.14 Where the Gas Connection and Electrical Connection (in the form of an underground cable or construction vehicles during installation of overhead lines) would cross a water body, various crossing techniques would be considered. These may include trenchless techniques such as horizontal directional drilling, particularly for larger water bodies, or temporary bunding and over-pumping where flows are lower.

5.6.15 Additionally, during construction, operation and decommissioning, silt traps and oil interceptors would be placed in drains on site. No untreated surface or waste waters would be allowed to drain into water bodies during construction, operation or decommissioning. SuDS would be used if found to be required.

5.6.16 During all phases of the Project all aqueous process effluents would be discharged via the plant drainage systems in accordance with NRW limits. The use of biocides would be optimised to ensure that the least amount possible is required.

5.6.17 All oil and chemical storage tanks and areas where drums are stored would be surrounded by an impermeable bund sized to contain 110% of capacity. In addition multiple tanks or drums would be within bunds sized to contain the greater of 110% of the capacity of the largest tank or 25% of the total tank's contents.

5.6.18 During operation, NRW would set limits on the quality of water that is discharged from the Power Generation Plant under an Environmental Permit. The need, or otherwise for further, specific mitigation measures will be determined through the EIA process.

5.7 Geology, Ground Conditions and Agriculture

Introduction

5.7.1 An assessment on the effects of geology, ground conditions and agriculture will consider potentially significant impacts and effects caused by the construction, operation and decommissioning of the Project. It will also detail the baseline conditions in terms of ground and groundwater contamination

[57] British Standard Institute (2009) BS 6031:2009 Code of Practice for Earthworks
[58] British Standard Institute (1986) BS 8004: 1986 Code of Practice for Foundations
[59] CIRIA (2006) C649 Control of water pollution from linear construction projects Site Guide
[60] CIRIA (2006) C648 Control of water pollution from linear construction projects Technical Guidance

and the risks posed to human health particularly in relation to future site users.

Baseline

5.7.2 The Project Site is located in an area where the geology is characterised by boulder clay and the underlying Grovesend Beds, Upper Carboniferous sandstones and thin coals[61]. These are overlain by glacial sand and gravel, alluvium and some peat. Overlying this geology are raw gley and brown soils. There are no aquifers or groundwater protection zones in the vicinity of the Project Site.

5.7.3 The agricultural land classification for the land within and surrounding the Project Site is grade 4 (poor quality agricultural land)[62] and is dominated by improved grassland fields used for grazing sheep and horses. In addition within the Project Site, are located a disused coal mine, a landfill as well as small areas of marshy grassland and woodland copses interspersing the improved grassland to the north and east.

Assessment

5.7.4 The assessment will be underpinned by the DEFRA/EA publication Contaminated Land Report 11, 2004, 'Model Procedures for the Management of Land Contamination'[63] and associated subsequent guidance.

5.7.5 The assessment approach will be undertaken with a clear understanding of the following:

- Previous land uses – through a review of historical maps;
- Underlying ground conditions – thorough review of BGS maps, a review of previous site investigations (where available) and by undertaking geotechnical investigations where deemed necessary; and
- Existing physical baseline conditions through a site walkover survey and review of a Landmark Envirocheck Report.

5.7.6 The Landmark Envirocheck Report (or equivalent) will identify groundwater vulnerability, sites designated for geological importance, details of any previous pollution events, details of landfills, waste management sites and Control of Major Accident Hazards (COMAH) sites within the Project Site and surrounding area.

5.7.7 A conceptual site model approach will be used to assess the risks posed by contaminants to sensitive receptors using a Source-Pathway-Receptor model, based on the following:

[61] http://www.ccw.gov.uk/landmap
[62] Department for Environment Food and Rural Affairs (1988) Agricultural Land Classification of England. Archive.defra.gov.uk
[63] Department for Environment Food and Rural Affairs and Environment Agency (2004) Contaminated Land Report 11, 2004, Model Procedures for the Management of Land Contamination

- Source – potential source of contamination;
- Pathway – means by which contamination can reach and impact upon a receptor; and
- Receptor – that which may be adversely affected by the presence of contamination.

5.7.8 Desk studies will identify potential environmental and geotechnical liabilities associated with the Project, including an assessment of potential impacts of previous uses of the Project Site and surrounding area. This will enable the identification of any potential environmental and geotechnical risks, and the design of a focussed and cost efficient intrusive investigation (if required).

5.7.9 In undertaking the desk studies, all available information on the Project Site and surrounding area will be reviewed to establish local ground conditions and the environmental settings. Furthermore, consultation will be held with the City and County of Swansea Council and the NRW to obtain any other environmental records available for the Project Site, and to further refine the assessment methodology.

5.7.10 A site walkover will be undertaken of the Project Site and immediate surrounding areas. This will help ensure all potential source, pathway and receptor linkages for potential contamination issues have been identified.

5.7.11 Based on the findings of the desk studies, site walkovers and preliminary risk assessment, recommendations will be provided for any further intrusive investigation work required to satisfy current standards and guidance and fill any data gaps identified to fully inform the assessments of environmental and geotechnical risks or liabilities.

5.7.12 Using the information obtained, suitable remediation strategies will be developed to render the Project Site ready for development. These will include estimates of the types and volumes of waste material that will need to be removed from the Project Site prior to development.

5.7.13 Additionally, an assessment will be made of the amount of agricultural land, if any, that may become sterilised by the Gas and Electrical Connections. Should an overhead Electrical Connection be considered, the same methodology will be used, although it is considered likely that the potential impact on geology, ground conditions and agriculture would be significantly less than for a buried connection.

Potential Mitigation Measures

5.7.14 An outline CEMP will be drafted and appended to the ES which will set out best practice methods of limiting impacts during construction and decommissioning. Embedded mitigation measures would include adherence to good practice guidelines and could potentially involve the following:

- Any additional soil materials that are to be imported to the Project Site would be required to have certification of their chemical

concentrations to ensure that contaminative materials are not being introduced to the area;

- In order to further limit disturbance, the site access tracks would be constructed first to allow movement of vehicles around the Project Site on areas of soft-standing;
- Any vegetation, topsoil and subsoil would be removed to expose a suitable sub-grade. Any soils, sub-soils or aggregate suitable for reuse would be stockpiled on impermeable liners;
- Soils which are to be reused onsite would be tested for contamination and geotechnical suitability. This would form part of a site waste management strategy which would be drafted prior to construction and would focus on the re-use, recycling and reduction of waste spoil;
- Surface water, perched waters or groundwater from dewatering operations would not be discharged to surface water bodies, foul or surface water drains without the appropriate consents from the local water or sewage company and / or NRW. The disposal of this effluent would be the responsibility of the principal construction contractor. If necessary, this water would be tanked off-site for disposal at a suitable facility;
- All foundations would be appropriately specified to resist chemical attack from soils or groundwater; and
- Foundations would also be designed so as not to present a preferential pathway for contaminant migration, if present at the Project Site.

5.8 Landscape and Visual Impact

Introduction

5.8.1 A landscape and visual impact assessment will consider potentially significant impacts and effects caused by construction, operation and decommissioning of the Project. The assessment will establish:

- A clear understanding of the Project Site and its wider landscape setting, identifying the landscape character, resources, value and sensitivity to the development;
- An assessment of the composition, character and aesthetic value of views from visual receptors including occupiers of residential properties and people using amenity landscapes, and the sensitivity of views;
- The nature of the different development scenarios and mitigation measures; and

- The likely significant direct and indirect effects of the Project on the landscape resource (i.e. landscape elements and character) and on visual receptors.

Baseline

5.8.2 The Project Site is located within an area of lowland rolling farmland known locally as the 'Welsh Gower'. It is within an essentially rural landscape, criss-crossed by networks of minor roads, overhead wires on steel pylons and other utilities infrastructure.

5.8.3 The Welsh Gower was historically part of the Lordship of Gower, but is now separated physically and perceptibly from the historic area. It consists largely of moorland, with any settlements of size - Craig Cefn Parc and Pontarddulais - on the southern fringes. Economic activity is confined largely to upland farming and forestry, although there is a commercial fishery and two large reservoirs to the north of the Project Site. The area also contains extensive evidence of human exploitation and occupation over millennia, with a proliferation of cairns and earthworks, evidence of a Roman fort and marching camps.

5.8.4 The area around the Project Site is rural in character, although there is a large amount of utilities infrastructure in the area due to its close proximity to Swansea. Gas and water pipelines cross the Project Site and there is also a network of electricity pylons southwest of Abergelli Farm, which lead to and from Felindre Gas Compressor Station and National Grid's two 400kV electrical substations. Furthermore a Water Treatment Works is located immediately to the northwest while Cefn Betingau Solar Park is operational to the east of the Project Site.

5.8.5 Amongst this wider landscape, the Project Site is located within open gently sloping grass fields used for grazing sheep and horses interspersed by woodland copses, some of which are classified as Ancient Woodland as shown on Figure 3.

5.8.6 Residential receptors within 1 km of the Project Site include those within the nearby settlements of Morriston, Pant-lasau and Llwyncelyn, Felindre. In addition there are also isolated dwellings and farmsteads outside of the settlements including but not exclusive to:

- Aber gelli fawr;
- Abergelli Farm;
- Cefn-betingau;
- Maes-eglwys;
- Lletty Morfil Farm;
- Felin-wen;
- Pont Felin-wen;

- Pontbren Llwyd;
- Gors-wen;
- Llety'r Bugall;
- Brynheulog;
- Taironen;
- Penfedi Uchaf;
- Penidy Isaf;
- Gellyfedden;
- Rhos fawr;
- Brynawel;
- Brynwhilhach; and
- Lletty'r-scil.

Assessment

5.8.7 The assessment will be carried out in accordance to NPS EN-1 using the methodology set out in the Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management and Assessment, 3rd Edition, 2013)[64] and Countryside Council for Wales / CADW (2007) 'Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process'[65]. It will include:

- A desk review of all relevant documents and landscape planning policy and guidance;
- A field survey to assess baseline landscape character and visual amenity;
- A description of the key features associated with the Project that have the potential to alter the characteristics of the landscape and visual baseline;
- Appropriate generic and site specific mitigation that is reasonable and possible;
- Assessment of the predicted significance of residual effects on the landscape resource / character and visual amenity and compliance with landscape policy; and

[64] Landscape Institute and Institute of Environmental Management and Assessment, (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition
[65] Countryside Council for Wales/Cadw (2007) Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process

- An assessment of cumulative impacts arising from the Project, in combination with other proposed large scale industrial developments in the locality.

5.8.8 Initially, a Zone of Theoretical Visibility (ZTV) plan will be generated for the Power Generation Plant using specialist software. The ZTV will show a maximum theoretical visibility of the Power Generation Plant and any overhead line towers, should an overhead Electrical Connection by pursued across the surrounding area. The ZTV will be based solely on topography and the proposed height of the plant envelope, and any overhead line towers. No allowance will be made for intervening screening vegetation or buildings, although in practice this tends to have a substantial mitigating effect.

5.8.9 A review of all relevant landscape planning policy and LANDMAP (the national information system, devised by CCW (now NRW), for taking landscape into account in decision-making) will be undertaken. Particular attention will be paid to AONBs, popular tourist spots and viewpoints, and Public Rights of Way. The nearest AONB is the Gower which is remote from the Project Site and visually separated from the Project Site by intervening topography and therefore has been scoped out of the assessment.

5.8.10 The Project will be discussed in detail including dimensions of the larger buildings, the stack heights, and any other ancillary infrastructure that may have an impact on the landscape character or visual amenity.

5.8.11 To assist in the impact assessment, a site visit will be made by a qualified Chartered Landscape Architect, who will assess the study area in detail. Additionally, and following consultation with relevant stakeholders, a selection of photomontages will be taken from key sensitive viewpoints (e.g. residential receptors, designated ecological sites, cultural heritage assets and key rights of way). Suggested viewpoint locations of photomontages for consultation are:

- View north east from the Public Right of Way to the west of Maes-eglwys;
- View south from the Public Right of Way junction south of Brynheulog;
- View east from the Public Right of Way junction north of Lletty Morfil Farm;
- View northeast from B4489 at the junction with the Public Right of Way close to Brynwhilhach;
- View north from the road and Public Right of Way junction at Pant-lasau;
- View south from the Gower Way at Lower Lliw Reservoir;
- View north from Kilvey Hill in Swansea; and

- View north from the A48 to the south of the M4.

5.8.12 Photomontages will be produced with reference to 'Photography and photomontage in landscape and visual impact assessment Landscape Institute Advice Note 01/11'[66]. The photomontages will show a representation of how the Project would be viewed within the landscape and will be used to illustrate the potential impact of the Project.

5.8.13 Given that the majority of the Gas Connection would be underground, the landscape and visual impact assessment for this element will focus solely on the impact of the AGI and the impacts and effects that will result from the construction phase.

5.8.14 As for the Gas Connection, if the underground Electrical Connection is carried forward, then the LVIA for this element of the work will focus solely on the impacts resulting from the presence of a SEC, if required, and the impacts and effects that will result from the construction phase.

5.8.15 If an overhead line is taken forward, the assessment will follow the standard LVIA methodology as described above, but will make reference to the Holford Rules where appropriate.

Potential Mitigation Measures

5.8.16 An outline CEMP will be drafted and appended to the ES which will set out best practice methods of limiting impacts during construction and decommissioning. Embedded mitigation measures would include the careful consideration of siting stockpiles and cranes to avoid detrimental impacts on the visual amenity of closest receptors.

5.8.17 During operation, the main embedded mitigation measures would be the careful siting and arrangement of the: Power Generation Plant; AGI for the Gas Connection; and SEC for the Electrical Connection, if required. The final architectural design of the buildings and upstanding structures would be carefully considered to provide a high standard of visual amenity, given practical and economic constraints.

5.8.18 Further, detailed mitigation measures could include the consideration for onsite or off-site screen planting to screen views of the Power Generation Plant.

5.8.19 Due regard will be paid to NPS EN-1, EN-2, and EN-5 and the guidance they provide on 'good design' in relation to the Gas and Electrical Connections and include (to the extent relevant in the case of an underground connection for Gas and Electrical Connection):

- Avoid altogether, if possible, the major areas of highest amenity value, by planning the general route of the line in the first place, even if total mileage is somewhat increased in consequence;

[66] Landscape Institute (2011) Photography and photomontage in landscape and visual impact assessment Landscape Institute Advice Note 01/11

- Avoid smaller areas of high amenity value or scientific interest by deviation, provided this can be done without using too many angle towers, i.e. the bigger structures which are used when lines change direction;
- Other things being equal, choose the most direct line, with no sharp changes of direction and thus with fewer angle towers;
- Choose tree and hill backgrounds in preference to sky backgrounds wherever possible. Where a line has to cross a ridge, secure this opaque background as long as possible, cross obliquely when a dip in the ridge provides an opportunity. Where it does not, cross directly, preferably between belts of trees;
- Prefer moderately open valleys with woods where the apparent height of towers will be reduced, and views of the line will be broken by trees;
- Where country is flat and sparsely planted, keep the high voltage lines as far as possible independent of smaller lines, converging routes, distribution poles and other masts, wires and cables, so as to avoid a concentration of lines or 'wirescape'; and
- Approach urban areas through industrial zones, where they exist; and when pleasant residential and recreational land intervenes between the approach line, National Grid's two 400kV electrical substations and Felindre Gas Compressor Station carefully assess the comparative costs of undergrounding.

5.9 Traffic, Transport and Access

Introduction

5.9.1 An assessment on traffic, transport and access effects will consider potentially significant impacts and effects caused by the construction, operation and decommissioning of the Project.

5.9.2 The main impacts of the Project on traffic, transport and access would occur during construction and decommissioning resulting from the movement of vehicles for the transport of construction or decommissioning personnel, equipment and materials to and from the Project Site. The transport of abnormal loads, which may lead to delays and cause inconvenience to other road users, would be timed following consultation with the relevant authorities to minimise disruption to the other road users.

5.9.3 Normal activities during operation would result in fewer traffic movements and would be associated with personnel required for operation and maintenance of the Project. As such, during operation no significant increase in traffic in the area of the Project Site is expected, and no effect on local traffic patterns and infrastructure would therefore be anticipated.

Baseline

5.9.4 There are two options being considered in regards to accessing the Project Site from Junction 46 of the M4. Access Road – Option 1 would be via the Rhyd-y-pandy Road and the access road west of Brynheulog past Abergelli Farm. Access Road – Option 2 is via the B4489, along the access road to the National Grid's two 400kV electrical substations and Felindre Gas Compressor Station and then along an access road to be constructed as part of the Project, across undeveloped land to the Generating Equipment Site. Both options are shown on Figure 1.

Assessment

5.9.5 The assessment will be undertaken in accordance with the 'Welsh Transport Planning and Appraisal Guidance WeITAG[67] and the Institute of Environmental Assessment's (IEA) 'Guidelines for the Environmental Assessment of Road Traffic' (1993)[68] in order to assess the likely significant impacts of the Project on the local road network.

5.9.6 Comparisons between existing traffic flows and estimates of likely traffic flows on potentially affected roads will be made to help establish whether significant effects are likely. This will take into account: the sensitivity of receptors and resources likely to be affected; any potential for disruption to local routes; and any changes in the composition of traffic. If considered necessary, traffic surveys will be undertaken which will further quantify the number of vehicle movements on the existing road network in the vicinity of the Project Site.

5.9.7 The majority of the proposed access routes are 'main roads' that do not have pavements for pedestrian use. Nonetheless, the traffic assessment will also take full account of the potential impact on pedestrians, and will ensure that pedestrians and other road users (cyclists and equestrians) are not cut off from amenity areas as a result of the works.

5.9.8 The assessment will consider the following: access and construction routes and the types of vehicles used; local highway and rail networks; existing traffic flows; current traffic generation; road traffic accident information; predicted traffic trends; local highway improvements and planned works; and, potential receptors. The full appraisal will be presented (if appropriate) in a Transport Assessment which will be accompanied by a draft Construction Traffic Management Plan.

5.9.9 Discussions will be held with the Highways Agency and the City and County of Swansea Council to identify any existing issues relating to traffic in the area. Information will also be sought on future development projects in the area that could give rise to a significant cumulative impact when considered in conjunction with the Project.

[67] Welsh Assembly (June 2008) Welsh Transport Planning and Appraisal Guidance
[68] Institute of Environmental Assessment (IEA) (1993) Guidelines for the Environmental Assessment of Road Traffic

Potential Mitigation Measures

5.9.10 An outline CEMP will be drafted and appended to the ES which will set out best practice methods of limiting impacts during construction and decommissioning. Opportunities for reducing traffic movements will be explored, such as car share schemes or shift working (i.e. not all construction traffic arriving at site at once).

5.9.11 Details of the proposed measures to improve access by public transport, walking and cycling will be provided for the operational phase.

5.10 Cultural Heritage and Archaeology

Introduction

5.10.1 An assessment of the effects on cultural heritage and archaeological assets will consider potentially significant impacts and effects caused by the construction, operation and decommissioning of the Project.

Baseline

5.10.2 The Project Site is within an area of pastoral farmland which has evolved as a result of gradual enclosure of the uplands and foothills in the area. There is some evidence for enclosure in the pre-Norman period, and the process has continued through time into the second half of the 19th century. In addition there are some areas of unenclosed land and woodland (some which is classified as Ancient Woodland) remaining as shown on Figure 3.

5.10.3 Also within the area there has been some industrial activity in the form of mining and tinplate works which took place in the 19th century. In the areas where industrial activity has taken place associated ribbon development occurs. In the rest of the area the settlement pattern is mainly dispersed with isolated dwellings.

5.10.4 The following cultural heritage assets are located within 5 km of the Project Site:

- Clydach Upper Forge Scheduled Monument;
- Landore New Quay Scheduled Monument;
- Gwernllwynchwyth Engine House Scheduled Monument;
- Garn Goch Round Barrow Scheduled Monument;
- Llangyfelach Cross Base Scheduled Monument;
- Morris Castle Scheduled Monument;
- Mynydd Pysgodlyn Round Barrow Scheduled Monument;
- Ring Cairn on Craig Fawr Scheduled Monument;
- Pant-y-Ffa Round Cairn Schedule Monument;

- Remains of Astronomical Observatory at Penllergaer Scheduled Monument;
- Cae Castell (Rhyndwyclydach Medieval Earthwork) Scheduled Monument;
- Ring Cairn on Tor Clawdd Scheduled Monument;
- Scott's Pit Engine House and Traces of Ancillary Buildings Scheduled Monument;
- Mynydd Carn-Goch Roman Earthworks Scheduled Monument;
- Earthwork 1,080 m NNW of Fforest Newydd Scheduled Monument;
- Penllergaer Orchideous House Scheduled Monument;
- Townshend's Great Leat & Waggonway Scheduled Monument;
- Capel Tabernacl, Woodfield Street (East side) Grade I Listed Building;
- The Water Mill / Melin Felindre Grade II* Listed Building;
- New Siloh (Seilo Newydd) Congregational Chapel including gates and railings Grade II* Listed Building;
- Capel Gellionnen (Gellionnen and Graig Unitarian Church) Grade II* Listed Building;
- Church of St David and St Cyfelach Grade II* Listed Building;
- Tower of Church of St David and St Cyfelach Grade II* Listed Building;
- The Equatorial Observatory, Penllergare Grade II* Listed Building;
- Scott's Pit Engine House Grade II* Listed Building;
- Penllergaer Grade II Historic Park and Garden;
- Cwmgelli Cemetery Grade II Historic Park and Garden;
- Parc Llewelyn Grade II Historic Park and Garden;
- Morriston Conservation Area; and
- LLansamlet Conservation Area.

5.10.5 In addition there are 47 Grade II Listed Buildings and also records of undesignated cultural heritage assets within 5 km of the Project Site. These include standing buildings, earthworks, areas of ancient woodland, sites of structures known only from documentary sources, sub-surface archaeological remains, sites recorded only as cropmarks and isolated findspots.

Assessment

5.10.6 In accordance with NPS EN-1, the objectives of this assessment are to:

- Describe the survival and extent of any archaeological features that may be disturbed by the construction, operation and decommissioning of the Project;
- Provide an assessment of the importance of these assets;
- Assess the likely scale of any impacts on the cultural heritage and archaeological resource posed by the construction, operation and decommissioning of the Project;
- Outline suitable mitigation measures to prevent, reduce and where possible offset any significant adverse effects; and
- Provide an assessment of any residual effects remaining after mitigation.

5.10.7 Initially, a Desk Based Assessment (DBA) will be undertaken, and will include the following detailed searches:

- The Royal Commission on Ancient and Historical Monuments Wales which is the investigative body and national archive for the historic environment of Wales and hosts an online search facility (Coflein);
- Swansea Historic Environment Record (HER) (which includes records of any previous archaeological interventions within the Scheme Area). The HER will also include details of Registered Parks and Gardens, Listed Buildings and Registered Battlefields;
- Historic Mapping; and
- Conservation Areas and Historic Landscape Characterisation.

5.10.8 The DBA will be undertaken in accordance with 'Standard and Guidance for Archaeological Assessments' (Institute for Archaeologists, 2011)[69].

5.10.9 It is proposed that initially, searches are limited to 1 km from the Project Site for HER entries for archaeology as the Project will potential impact archaeology within the development footprint and the immediate surroundings. The 1 km Study Area provides the opportunity to better understand the context of any archaeology present within the development footprint.

5.10.10 As part of the DBA, a site inspection will be undertaken of the Project Site to identify any previously unknown archaeological features and their condition. During the site inspection a detailed photographic record will be maintained and an assessment of the setting of the cultural heritage assets will be undertaken.

[69] Institute for Archaeologists (2011) Standard and Guidance for Archaeological Assessments

5.10.11 In order to gather baseline cultural heritage setting data, and to undertake an assessment of the potential impacts that the Project Site may have on the setting of any above ground remains, selected cultural heritage assets will be visited. This will follow an initial study making reference to the results of desk-based research, and the ZTV including searches of the records listed above. Assets will be visited where this initial study indicates potential for significant impacts. Both the asset and its surrounding area will be visited to identify locations that might be relevant to the asset's setting.

5.10.12 For the purposes of the setting study, the following cultural heritage assets will be considered:

- Scheduled Monuments;
- Listed Buildings;
- Registered Parks and Gardens;
- Registered Battlefields;
- World Heritage Sites; and
- Any other non-scheduled building which is considered to be important in terms of cultural heritage and archaeological significance.

5.10.13 It is proposed that the search area for these cultural heritage assets will be limited to 5 km from the Project Site, as significant impacts on setting are unlikely to occur beyond 5 km. However, should significant impacts be identified at 5 km, then the search area will be expanded accordingly.

5.10.14 The following factors are also considered to be relevant when assessing impacts upon setting:

- Visual dominance;
- Scale;
- Intervisibility;
- Vistas and sight lines;
- Movement and light; and
- Unaltered settings.

5.10.15 The DBA will form the baseline data for the cultural heritage and archaeology section of the ES. The ES will discuss the nature and location of all cultural heritage and archaeological sites within the study area. Further to this, the ES will provide an assessment of the significance of any impacts to the cultural heritage and archaeology sites.

5.10.16 At this stage, no intrusive investigations are proposed for cultural heritage or archaeological purposes, although this will be confirmed (or otherwise) based on the findings of the DBA, and in consultation with the City and

County of Swansea Planning Archaeologist and representative of Cadw. Should intrusive investigations be necessary, their scope will be agreed with the Planning Archaeologist through a Written Scheme of Investigation (WSI).

Potential Mitigation Measures

5.10.17 Prior to construction, the nature and extent of archaeology present at the Project Site and surrounding areas will be established. However, should any archaeological remains be found during construction, work will be halted and advice sought from the Planning Archaeologist. Where necessary, recommendations will be made for a mitigation strategy to preserve in-situ or if not practicable to preserve by record any significant archaeological assets. The ES will also include a mitigation strategy for any significant impacts to listed buildings and other above ground assets.

5.10.18 During operation, there may be an opportunity to provide screen planting, should the Project give rise to any adverse impacts on above ground heritage assets.

5.11 Socio-Economics

Introduction

5.11.1 An assessment on the effects on socio-economics resulting from the Project will be undertaken and reported in the ES. This will consider potentially significant impacts and effects caused by the construction, operation and decommissioning of the Project on socio-economic resources and receptors in and around the vicinity of the Project Site.

5.11.2 At its peak, the construction and decommissioning workforces are expected to employ between 150 and 250 personnel. Subject to procurement rules it is anticipated that as many as possible of these workforces would be recruited locally.

5.11.3 Operation of the Generating Equipment would require up to 15 full time staff over the lifetime of the Project working in shifts which means that less than 15 people will be on site at any one time during normal operations. In addition there would be further indirect jobs for contracted engineering staff during regular maintenance shutdowns and maintenance of the Gas and Electrical Connections.

5.11.4 The total capital cost of the Project is anticipated to be of the order of £200 million. Up to approximately 35% of this will be construction, civils and fabrication work which would be open to tender from companies in the area.

5.11.5 During construction and decommissioning, those workers from outside of the local area would require places to stay, and regular sustenance, delivering knock on benefits to local businesses and services. In addition the Project would also represent an additional income source to the local economy during the operational phase in terms of local employment and the use of local services and suppliers.

Baseline

5.11.6 The area surrounding the Project Site has a long history of both mining and agriculture.

5.11.7 The Project Site lies within the City and County of Swansea. It is located within the region of South West Wales. South West Wales has a resident population of approximately 685,000 and supports some 280,000 jobs in around 20,000 businesses, making it a major driver of the Welsh economy. It is a large and diverse region that contains a wide range of urban and rural places, with distinctive, though inter-connected, economies and communities. Within the region, Swansea forms the second largest City in Wales and the regional centre for South West Wales. The population of the City and County of Swansea is approximately 239,023[70] which has been increasing steadily for nearly a decade. The County has a diverse character, covering an area of approximately 380 km^2, and can be broadly divided into:

- The sparsely populated open moorlands of the north;
- The Gower Penisula and its hinterlands in the west;
- The urban settlements and communities that are generally spread along the main transport corridors into the City where the main populations reside; and
- The conurbation of Swansea City Centre and the urban waterfront.

5.11.8 In 2011, 102,793 or 43% of residents aged between 16 to 74 were in employment which is comparable to 44.5% of the population of Wales[71]. The key sources of employment in the City and County of Swansea in 2011 were:

- Wholesale and Retail Trade; Repair of Motor Vehicles and Motor Cycles at 17%;
- Human health and social work activities at 15%;
- Education at 11%;
- Manufacturing at 7%; and
- Construction at 7%.

5.11.9 Swansea Bay is a popular tourist destination due to the sandy beaches of Gower, the Victorian seaside village of Mumbles and Wales' Waterfront City with its Blue Flag marina. The nearest tourist destination to the Project Site is the Team Force Swansea Paintball Centre approximately 50 m south of the Project Site.

[70] Office for National Statistics (2011) Neighbourhood Statistics, Population Density, 2011 (QS102EW)
[71] Office for National Statistics (2011) Neighbourhood Statistics, Industry 2011 (QS605EW)

Assessment Methodology

5.11.10 In accordance with NPS EN-1 paragraph 5.12.3 the assessment will consider all relevant socio-economic impacts such as tourism, influxes of workers, and cumulative impacts.

5.11.11 There is currently no established EIA methodology for the assessment of socio-economic impacts. To assess the socio-economic impacts the 'Guidelines and Principles for Social Impact Assessment' (May 1994) produced by the Interorganizational Committee on Guidelines and Principles for Social Impact Assessment[72], HM Treasury's Green Book[73] and the English Partnerships(EP) Additionally Guide[74] will be used.

5.11.12 The study area will extend to cover the immediate area of City and County of Swansea and the wider area of South West Wales, in order to assess the likely effects that may be experienced within the local community.

5.11.13 The methodology for the socio-economic impact assessment will be based on the collection of a wide range of data and information from published materials, plus consultation with the local authority and key stakeholders. Key sources of information will include:

- Population characteristics (population dynamics);
- Community and institutional structures (employment, training, skills and qualifications, economic investment, business development and equal opportunities);
- Individual and family changes (perceptions of risk, attitudes towards the Project, social well-being); and
- Community resources (security, access to local amenities including Public Rights of Way (PRoWs)).

Potential Project Enhancements

5.11.14 During construction, operation and decommissioning, an effort will be made to use local goods and services, wherever possible.

[72] Interorganizational Committee on Guidelines and Principles for Social Impact Assessment (May 1994) Guidelines and Principles for Social Impact Assessment

[73] http://www.hm-treasury.gov.uk/d/green_book_complete.pdf

[74] Homes and Communities Agency (2014) Additionality Guide Fourth Edition.

6 Summary and Conclusions

6.1.1 This report sets out the proposed scope and content of the EIA to support the DCO Application for the development of a Power Generation Plant with a capacity of up to 299 MW with its associated Gas and Electrical Connections in the City and County of Swansea. It has been prepared in order to support a request for a Scoping Opinion from the SoS under regulation 8 of the EIA Regulations.

6.1.2 The following topics have been scoped into the assessment:

- Air Quality;
- Noise and Vibration;
- Ecology;
- Water Quality and Resources;
- Geology, Ground Conditions and Agriculture;
- Landscape and Visual;
- Traffic, Transport and Access;
- Cultural Heritage and Archaeology; and
- Socio-Economics.

6.1.3 In view of the above, and on behalf of the SoS, PINS is requested to provide a Scoping Opinion on the possible significant environmental effects of all elements of the Project, the proposed methodologies to assess the impacts, and the proposed structure of the ES.

6.1.4 PINS and other consultees are also invited to highlight any additional issues that they believe should be addressed within the EIA, and to identify any sources of information that may be of interest to APL and the EIA team.

Appendix 1: Ecological Appraisal

BSG | ecology

Abergelli

Abergelli Power Project

Preliminary Ecological Appraisal

BSG | ecology

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Client	Stag Energy
Job	Abergelli Power Project
Report title	Preliminary Ecological Appraisal
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	Name	**Position**	**Date**
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Any recommendation, opinion or finding stated in this report is based on circumstances and facts as they existed at the time that BSG Ecology performed the work.

Nothing in this report constitutes legal opinion. If legal opinion is required the advice of a qualified legal professional should be secured.

Contents

1 Summary

1.1 Abergelli Power Limited (APL) is promoting a new Power Generation Plant on agricultural land within Abergelli Farm north of Swansea in the City and County of Swansea (approximately at National Grid Reference 265284, 201431).

1.2 The Power Generation Plant would operate as a Simple Cycle Gas Turbine (SCGT) peaking plant and would be designed to provide an electrical capacity of up to 299 Megawatts (MW). It would be fuelled by natural gas, supplied by a new underground gas pipeline connecting the Power Generation Plant to the existing National Grid Gas (NGG) National Transmission System (NTS).

1.3 BSG Ecology has been appointed as the ecological consultant to undertake a preliminary ecological appraisal, which includes a desk study and Extended Phase 1 Habitat Survey. This preliminary survey will inform the subsequent need for further, targeted surveys of protected and otherwise notable species and habitats.

1.4 The preliminary ecological survey has identified two European designated sites within 10km, five statutory designated sites for ecology (four Sites of Special Scientific Interest (SSSIs) and one Local Nature Reserve (LNR)) within 5km, and twenty-three non-statutory designated Sites of Importance for Nature Conservation (SINC) within 2km of the Survey Site boundary. Three of the SINCs are partially within the Survey Site boundary, and a further two are adjacent. Much of the woodland on the Survey Site is also designated as Ancient Woodland. Direct impacts on SINCs and Ancient Woodland within and close to the Survey Site boundary could occur, depending on the final layout of the Power Generation Plant.

1.5 Three Section 42[1] habitats ('lowland mixed deciduous woodland', 'purple moor-grass and rush pasture' and 'ponds') are present within the Survey Site.

1.6 There is habitat in the Survey Site that has the potential to support European Protected Species (EPS) including bats, great crested newts *Triturus cristatus*, dormouse *Muscardinus avellanarius* and otter *Lutra lutra*. There are also habitats suitable for nationally protected species such as reptiles and water voles *Arvicola amphibius*. Information on badgers is contained in a confidential version of this report.

1.7 The following surveys are recommended to inform the ecology baseline chapter of the Environmental Statement and full details are provided in Section 5:

- Extended Phase 1 habitat survey of inaccessible land at the south-west end of the Survey Site and new land that has been identified since the survey was carried out – an access route to the west of the site.
- A National Vegetation Classification (NVC) botanical survey of marshy grassland and woodland that may be affected within the Survey Site as well as any areas identified as SINCs within or adjacent to the site;
- A survey of invasive plant species within the Survey Site;
- Roped access survey of trees identified as having potential to support bat roosts and internal and external building inspections, where trees/buildings may be affected directly or indirectly by the Project. Inspection surveys should include surveys for barn owls. Subsequent dusk emergence / dawn return to roost surveys should be undertaken if roosting potential or evidence of roosting is found;
- Bat activity surveys including walked transects and automated bat detector surveys;
- A survey for otter and water vole along water courses within the Survey Site;
- Dormouse surveys in areas of woodland and scrub within the Survey Site;

[1] Species referred to within The Natural Environment and Rural Communities Act 2006 (NERC 2006) as species of principal importance for the conservation of biodiversity in Wales which are listed on the Natural Resources Wales website. The Welsh Assembly Government must take steps to "further the conservation" of these species under Section 42 of the NERC ACT 2006.

- Great-crested newt surveys of all accessible ponds up to 250m from the Survey Site;
- Reptile surveys on suitable habitat across the Survey Site;
- A walkover breeding bird survey of all of the Survey Site plus a 50m buffer;
- Invertebrate surveys of woodland and marshy grassland for *Lepidoptera* (notably moths and marsh fritillary butterfly *Euphydryas aurinia*) and *Coleoptera* (beetles) within the Survey Site; and
- Invertebrate surveys of freshwater habitats (ponds and watercourses) may be needed where these habitats are to be affected within the Survey Site.

2 Introduction

Site Description

2.1 The Phase 1 Habitat Survey Site (hereafter referred to as the 'Survey Site'), in which the Project would be located, consists of approximately 150 ha of pastoral farmland primarily grazed by horses. The Survey Site is contained within the red line boundary shown in Figure 1 and is centred at National Grid Reference 265284, 201431. The nearest town is Felindre, which is located approximately 2 km to the north of the Survey Site, with Swansea approximately 5 km to the south.

2.2 The Survey Site is largely agriculturally improved pasture with several areas of marshy grassland, particularly in the north, south and north-western ends of the Survey Site. The fields are bounded by fences, running along the line of defunct hedgerows, and often accompanied by ditches. There is a block of broadleaved woodland on the eastern boundary of the Survey Site and areas around the marshy grassland to the west of the Survey Site, and around Felindre Gas Compressor Station and the two National Grid 400kV electrical substations that lie at the south-west end of the Survey Site. The habitats in the surrounding landscape are similar to those within the Survey Site boundary – a mixture of improved and marshy grassland interspersed with occasional patches of woodland.

2.3 The Survey Site boundary is shown on Figures 1a, 1b, 2a and 2b (photographs of the Survey Site are found in Appendix 2).

Description of Project

2.4 APL is promoting a new Power Generation Plant within Abergelli Farm. The Power Generation Plant would operate as a Simple Cycle Gas Turbine (SCGT) peaking plant and would be designed to provide an electrical capacity of up to 299 Megawatts (MW). It would be fuelled by natural gas, supplied by a new underground gas pipeline connecting the thermal generating station to the existing National Grid Gas (NGG) National Transmission System (NTS).

2.5 BSG Ecology has been appointed as the ecological consultant to undertake a preliminary ecology survey, which includes a desk study and Extended Phase 1 Habitat Survey. This preliminary ecological survey will inform the subsequent need for further, targeted surveys of protected and otherwise notable species and habitats. These baseline surveys will be included in an appendix to an ecology chapter of an Environmental Statement, which is presently intended for submission, as an integral part of the Development Consent Order (DCO) Application.

Aims of Study

2.6 BSG Ecology was commissioned to undertake a preliminary ecological appraisal of the Survey Site within which the Project would be located. The main aims of this report are to:

- present the findings of the desk study and site surveys;
- assess the potential for the Survey Site to support protected or otherwise notable species;
- set out the legislative and/or policy protection afforded to any habitats present or any species potentially associated with the Survey Site; and
- provide recommendations for any further surveys necessary to inform a subsequent ecology chapter for an Environmental Statement for the site.

3 Methods

Desk Study

3.1 Existing ecological information for the Survey Site and its surrounding area was requested from the South East Wales Biodiversity Records Centre (SEWBReC). Information on European designated sites was requested from within 10 km with information on national statutory designated sites was requested covering the Survey Site and land up to 5 km from the Survey Site boundary and information regarding non-statutory designated sites and records of protected[2] or notable species (particularly those identified as priority or Section 42 species and/or of local conservation importance or LBAP[3] species) was requested covering the Survey Site and land up to 2 km from the Survey Site boundary. Information on locally designated Sites of Importance for Nature Conservation (SINC) within 2 km of the Survey Site boundary was requested from the Swansea Council Ecologist. In addition, on-line resources including the Multi Agency Geographic Information for the Countryside (MAGIC, www.magic.gov.uk) website and aerial photography of the area were also reviewed.

Field Survey

Phase 1 Habitat Survey

3.2 The initial field survey was undertaken by Anna Gundrey MCIEEM and Matthew Hobbs MCIEEM on 24 February 2014. The Project Site boundary and therefore the Survey Site was subsequently extended after a design review, and a second field survey was carried out by Stephanie Boocock MCIEEM on 14 April 2014 of the additional area. Habitats within the Survey Site, and up to at least 50m from the Survey Site boundary, were identified and described following standard JNCC Phase 1 Habitat Survey methodology as detailed in the Phase 1 Habitat Survey Handbook (JNCC, 2010). This uses a system of codes to describe different habitat types based on the dominant vegetation present, which are recorded by means of habitat maps and target notes. All plant names in this report follow The New Flora of British Isles (Stace, 2010).

3.3 The survey was extended to give particular consideration to the potential of the habitats present to support protected species or species of local conservation importance; recorded as incidental information as part of the target notes.

3.4 It should be noted that species lists derived from the target notes are not necessarily an exhaustive inventory of all species occurring at a site. They are intended to illustrate the character of habitats present, general species richness of a particular area, and draw attention to any species that may be considered uncommon or unusual.

3.5 Weather conditions during both surveys were clear and largely dry.

Habitat Suitability Index

3.6 During the February field survey a Habitat Suitability Index (HSI) assessment (Oldham *et al*., 2000) of all ponds/water bodies within a 500m radius of the Survey Site (where access was possible) was undertaken. In the case of this survey, a wider buffer than 250m was used because of the high number of ponds within 250 and 500m of the Survey Site. The additional information collected is useful to provide context of how ponds within or in proximity to the Survey Site may connect with habitat available for newts in the surrounding landscape, and also to give greater confidence to the assessment carried out on each pond.

3.7 Information on the physical features and characteristics of each pond were collected in order to allow a great crested newt Habitat Suitability Index (HSI) score to be derived for each pond by applying the scoring system developed by the Herpetological Conservation Trust (HCT, 2008). The suitability index is calculated by allocating scores to features associated with each pond; these

[2] Wildlife and Countryside Act 1981 Schedules 1, 5 & 8; Conservation of Habitats and Species Regulations 2010; Protection of Badgers Act.
[3] Those listed under Local Biodiversity Action Plans for Swansea.

include features such as size, quality of surrounding habitat and presence of fish. These scores are then used to calculate the overall HSI for each pond as a number between 0 and 1, with 0 being the least suitable and 1 being the most suitable. The HSI score allows each pond to be placed in one of five categories defining its suitability for great crested newts as follows:

- <0.5 = poor
- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- >0.8 = excellent

Tree Assessment

3.8 All the trees on site were examined for their potential to support roosting bats, graded according to the scale provided in the Bat Conservation Trust survey guidelines (Hundt, 2012), and summarised in Table 1 below. Those that were rated Category 2 and above were described and their locations recorded on a GPS.

Table 1: Bat tree survey categories

Category	Description
1*	Tree with multiple highly suitable features for bats. Potential to support large numbers of bats.
1	Tree with some definite suitable features and potential to support low numbers of bats.
2	No obvious potential although tree is of a size and age that elevated surveys may reveal suitable cracks and crevices. Or, tree supports some limited features for bats.
3	No potential

Limitations to Methods

3.9 Although records secured through the desk study and supplied by third parties provide useful background information for initial ecological assessment, they often comprise individual records supplied by members of the public or are the result of ad hoc surveys. The data trawl information can therefore help to inform the likelihood of a particular species being present in the area, but should not be relied upon to definitively determine presence or absence of individual species.

3.10 The first site visit was undertaken at a sub-optimal time of year (February) for a survey of this type, being outside the main growing season, when the greatest variety of plants is in evidence. However the habitats on site are readily identifiable to an experienced botanist, and those that require further survey work in order to confirm their quality have been identified. In addition, a robust assessment of the Survey Site's potential to support protected species could also be made. Therefore, it is considered that the timing of the survey in this instance is not a significant constraint with regard to the findings of this assessment. The second survey on the 14th April was undertaken at a time when most plant species are evident and was less constrained in this respect.

3.11 Most parts of the Survey Site were accessed and surveyed. Some of the ponds outside of the Survey Site could not be accessed (see Figures 2a and 2b) as they were located on private land and access was denied to a number of them. Ponds within 250-500m of the Survey Site, where accessible, were inspected to gather contextual information and enough have been inspected to allow suitable additional background information to be gathered.

3.12 The extreme south-west end of the Survey Site could not be surveyed as the land here is in a separate ownership and access had not been granted by land owners at the time of survey. The route of the access track (that leads west to the B4489) was added to the Survey Site boundary after the April Phase 1 visit, so this was also not included in the survey. A recommendation has been made below to survey the remainder of the Survey Site as soon as access has been granted.

4 Results and Interpretation

4.1 In this section the results of the desk study and fieldwork are brought together. The implications of these results are then considered.

4.2 Figures 1a (the northern part of the site) and 1b (the southern part of the site) illustrate the results of the extended Phase 1 habitat survey. Numbers on the map and in the text below can be cross-referenced with Target Notes (TN) in Appendix 1. Photographs of the site can be found in Appendix 2. Figures 2a (the northern part of the site) and 2b (the southern part of the site) illustrate areas of the site that support, or have the potential to support, protected species.

Designated Sites

Statutory

4.3 There are two Special Areas of Conservation (SAC)[4] designated under the EC Habitats Directive within 10km. One of these, Camarthen Bay and Estuaries SAC, has has been afforded multiple designations and is referred to under the umbrella term European Marine Site (EMS)[5] which comprises the SAC, and is also split into two Special Protection Areas (SPA)[6] and two Ramsar Wetlands of International Importance (Ramsar)[7] the details of each designation are provided below. There are also four statutory protected Sites of Special Scientific Interest (SSSI) and one Local Nature Reserve (LNR) within 5km of the Survey Site. These are described in Table 2 below.

Table 2: Statutory designated sites within 5km of the Survey Site and European sites within 10 km.

Site name	Grid ref.	Distance and direction from site	Reason for Designation
Carmarthen Bay and Estuaries SAC	SS357991	7.2km W	Annex I habitats (primary reason for selection) – 'Sandbanks which are slightly covered by sea water all the time', 'Estuaries', 'Mudflats and sandflats not covered by water at low tide', 'Large shallow inlets and bays', '*Salicornia* and other annuals colonising mud and sand', 'Atlantic salt meadows. Annex II species (primary reason for selection) – twaite shad *Allosa fallax*. Annex II species (qualifying feature) – sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alos alosa* and otter.
Burry Inlet SPA and Ramsar (within the boundary of the SAC above)		9.7km WSW	This area is designated as a SPA and Ramsar site due to its internationally important assemblage of wintering birds with qualifying populations of wintering oystercatcher *Haematopus ostralegus*,and northern pintail *Anas acuta* (SPA) and additionally of common redshank *Tringa totanus*, and red knot *Calidris canuta* (Ramsar).
Crymlyn Bog SAC and Ramsar (contiguous boundaries)	SS694947	7.3 km SE	Annex I habitats (primary reason for selection) – 'Transition mires and quaking bogs', 'Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*' ', Annex I habitats (qualifying feature) – Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*,*Alnion incanae*, *Salicion albae*). The site is selected as Ramsar as it supports a substantial population of the nationally-rare slender cotton-grass *Eriophorum gracile*, and

[4] Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended).

[5] The term 'European Marine Site' (EMS) (as defined by the Habitats Regulations) refers to those marine areas that area both Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). For management advice see http://www.severnestuary.net/asera/docs/Regulation%2033%20Advice.pdf

[6] Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the EC Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species.

[7] Ramsar sites are wetlands of international importance designated under the Ramsar Convention.

			a rich invertebrate fauna including many rare and highly localised species. The site also suports 199 vascular plant species including 17 regionally-uncommon and one nationally rare species.
Glais Moraine SSSI	SN696005	4 km E	Designated for its geological interest.
Nant Y Crimp SSSI	SN623015	2.5 km W	Designated for its wet pastures, species-rich neutral grasslands and semi-natural woodland, which are host to several uncommon plant species. In addition, there is a colony of marsh fritillary butterfly on site.
Penllergaer Railway Cutting SSSI	SS622998	2.8 km NW	Designated for its geological interest.
Penplas Grasslands SSSI	SS634979	3.2 km NW	Designated for the eight different grassland types that have been identified on the site, including three types of purple moor-grass pasture, two of rush pasture, fen meadow, acid grassland and damp heath. Notable plant species recorded at Penplas include petty whin *Genista anglica* and royal fern *Osmunda regalis.*
Cadle Heath LNR	SS627966	4.5 km NW	Designated for wet heath, species-rich grassland, ponds, scrub and woodland. There is also a significant colony of wood bitter vetch.

4.4 Glais Moraine SSSI and Penllergaer Railway Cutting SSSI are both designated for their geological interest, which is unlikely to be impacted upon by the Project and will therefore not be considered further in this report.

Non-statutory

4.5 There are 23 Sites of Interest for Nature Conservation (SINC) within 2 km of the Survey Site. These are described in Table 3 below and their locations are shown on Figure 3. Three SINCs lie partially within the Survey Site boundary. Rhyd-Y-Pandy Valley Grasslands is a large SINC, which includes three fields that lie within the north-east corner of the Survey Site. Warn Garn Wen is also an extensive SINC which includes the marshy grassland that lies within the western boundary of the Survey Site. Llety Morfil SINC is a collection of three areas of ancient woodland with some areas of marshy grassland, that includes the woodland on the eastern boundary of the site and at the south-west end of the Survey Site.

4.6 There are two SINCs located adjacent to the boundary. Rhos Fawr SINC is a block of land immediately to the north of the Site boundary, and Felindre Grasslands SINC lies adjacent to the southern tip of the proposed access route.

4.7 Most of the woodland within the Survey Site is also designated as Ancient Woodland (See Figure 3).

Table 3: Non-statutory sites within 2km of the Survey Site. Citations for some of the SINC sites are not yet available and will be added when they are.

Site name	Grid ref.	Distance and direction from site	Site Description
Waun Garn Wen	SN645012	Onsite	Purple moor grass and rush pasture, wet woodland, scrub and watercourse habitats. Section 42 invertebrates and birds recorded.
Llety –Morfil	SN644006	Onsite	Wet and ancient semi-natural woodland, purple moor grass and rush pasture, and scrub habitats. Section 42 invertebrate species recorded.

Rhyd-Y-Pandy Valley and Grasslands	SN661022	Onsite	Wet woodland and woodland with assemblage of ancient woodland indicator species, scrub, purple moor grass and rush pasture, lowland meadow, neutral grassland, scrub, reed bed and water course habitats. Section 42 bird species recorded.
Rhos Fawr	SN652029	Adjacent N	Woodland containing assemblage of ancient woodland indicator species, scrub, purple moor grass and rush pasture, neutral grassland habitats. Section 42 bird species recorded.
Felindre Grasslands	SS638998	Adjacent SW	Wet woodland and lowland mixed deciduous woodland, purple moor grass and rush pasture and scrub habitats. Section 42 birds and invertebrates recorded.
Llangefelach Common SINC	SS648994	1.3 km SW	Common cotton grass *Eriophorum angustifolium*, ragged-robin *Lychnis flos-cuculi* , western gorse *Ulex gallii*, various orchid species, tormentil *Potentilla erecta* and whorled caraway *Carum verticillatum* are present along with adder, common lizard and slow worm.
Lower and Upper Lliw Reservoirs SINC	SN653035	1 km N	The lower and upper Lliw reservoirs are surrounded by a mosaic of habitats including bracken, scrub, broadleaved woodland and lowland acid grassland.
Cwm Nant-Ddu		2 km NW	Data not yet received
Middle Lliw		1 km NW & W	Data not yet received
Cilfaen	SN641021	0.5 km W	Wet woodland and woodland containing ancient woodland assemblage, and purple moor grass and rush pasture habitat.
Cefn Forest Stream	SS635997	1 km SW	Range of woodland types. Lowland meadow, heath and fen. Purple moor grass and rush pasture, ponds and watercourses.
Penllegaer Forest	SS627005	1 km SW	Range of woodland types. Purple moor grass and rush pasture, reedbeds watercourses. Section 42 birds and invertebrates recorded.
Penllegaer to Llangefelch Tunnel and Railway Line	SS632996	1 km S	Range of woodland types. Purple moor grass and rush pasture, scrub and watercourses. Section 42 birds recorded.
M4 Corridor		1.5 km S	Data not yet received
Mynydd Bach Common	SS652978	2km S	Woodland scrub and purple moor grass and rush pasture habitats.
Pant Lasau	SN652004	0.25 km S	Woodland, scrub, purple moor grass and rush pasture, and water course habitats
Middle Llan	SN659009	0.5 km S	Watercourse habitat
Cwm Rhydceinw to Birchgrove Railway		1.5 km SE	Data not yet received

Mynydd Gelli-wasted	SN677016	1.5 km E	Woodland, scrub, heath, purple moor grass and rush pasture habitats.
Ynysforgan Wood	SN677002	2 km SE	Ancient woodland habitat.
Lougher to Penllegaer Railway Line		2 km SW	Data not yet received
Banc Darren Fawr		2 km N	Data not yet received
Cwm Clydach		2 km NE	Data not yet received

Habitats

4.8 The Survey Site is roughly an 'L' shape, with the majority of the Survey Site running approximately north-south and the foot of the 'L' branching off to the south-west around either side of Felindre Gas Compressor Station and the two National Grid 400kV electrical substations. The topography drains the land to the south with the highest elevation in the Survey Site along the northern boundary (approximately 140m above ordnance datum (aod). The land slopes away to the south and the lowest elevation is around the Felindre Gas Compressor Station and the two National Grid 400kV electrical substations (approximately 80m aod). The land is predominantly pastoral farmland, mostly agriculturally improved but with significant areas of marshy grassland. The fields are grazed by horses and sheep and are largely bounded by fences with occasional trees, scrub and one defunct hedgerow. There are numerous water courses on site, mostly in the form of ditches along field boundaries, but also four streams; one which runs along the eastern boundary of the Survey Site; another that runs north-west from the woodland in the eastern part of the site; a stream that runs through the marshy grassland to the west; and another around Felindre Gas Compressor Station and the two National Grid 400kV electrical substations. There is a small woodland on the eastern boundary of the Survey Site and the land around Felindre Gas Compressor Station and the two National Grid 400kV electrical substations is also largely wooded. There are also copses and stands of mature trees around the edges of the marshy grassland in the north-western part of the site, as well as along field boundaries in the northern part of the site.

Improved grassland

4.9 The majority of the land on site is agriculturally improved grassland (Photo 1, 2a). This was all grazed short when surveyed, and consists of abundant perennial rye-grass *Lolium perenne*, and varying quantities of common grassland herbs such as white clover *Trifolium repens,* common mouse ear *Cerastium fontanum*, and dandelion *Taraxacum fontanum* agg.

Marshy grassland

4.10 There are marshy grassland fields at TN3, TN3a, TN4a, TN5, TN9a, TN13a and TN21a and a block of marshy grassland at the southern end of the Survey Site. Although all fit within the same Phase 1 category, the habitats in these fields vary across the Survey Site. The field at TN3 (Photo 2) had a short, close-grazed sward when surveyed. It has numerous tussocks of soft rush *Juncus effusus* and frequent sedge species. These include common sedge *Carex.nigra* and glaucous sedge *C. flacca*. Other species noted include creeping bent *Agrostis stolonifera*, a cinquefoil *Potentilla* sp., creeping buttercup *Ranunculus repens* and sharp-flowered and/or jointed rush *Juncus actutiflorus* / *J. articulatus*.

4.11 The field at TN5 (Photo 3) was also grazed extremely short, when surveyed, to the point where individual species are difficult to distinguish. Soft rush is frequent, along with purple-moor grass *Molinia caerulea,* sheep's fescue *Festuca ovina* and a sedge species (not possible to identify to

species level). Heather *Calluna vulgaris* and bilberry *Vaccinium myrtillus* plants are occasional and there are patches of sphagnum moss *Sphagnum* sp. present.

4.12 The fields marked TN3a, TN4a and TN13a, are wet semi-improved grassland, with marshy species such as lesser spearwort *Ranunculus flammula*, sedges, soft rush and water figwort *Scrophularia aquatica*.

4.13 The fields marked TN20 all have over 25% soft rush which places them in the 'marshy grassland' category, but the intervening grassland is agriculturally improved, with abundant perennial rye-grass and frequent white clover. The fields marked TN21 and TN22 (Photo 4) have a much higher cover of soft rush - approximately 75% in TN21 and 100% in TN22 and intervening species are more typical of wet grassland, such as creeping bent *Agrostis stolonifera*, creeping buttercup and Yorkshire fog *Holcus lanatus*.

4.14 Areas of purple-moor grass dominated vegetation, which also falls into the 'marshy grassland' category are present at TN14 (Photo 5), TN9a and TN21a where the purple moor grass is dominant with very occasional cross-leaved heath *Erica tetralix* and heather plants in evidence and scattered willow *Salix* sp. scrub. At TN9a additional species recorded include soft rush, bracken, common haircap moss *Polytrichum commune*, unidentified sphagnum moss, heather, cross-leaved heath and bilberry along the margins with some birch and willow regeneration in small scattered copses. TN21a (Photo 4a) is a large field which is superficially similar to that at TN9a but appears to have been managed. Purple moor-grass is not as dominant with numerous patches of bare earth and young ling and cross-leaved heath plants. In addition hare's-tail cotton grass *Eriphorum vaginatum*, (Photo 1a) deergrass *Trichophorum germanicum* and lousewort *Pedicularis* sp. are common.

Semi-improved Grassland

4.15 The field to the south of the woodland at TN10 appears to be slightly less agriculturally improved, having a lower cover of perennial rye-grass, and a wider range of grasses such as Yorkshire fog, crested dog's tail *Cynosurus cristatus* and creeping and common bent *Agrostis capillaris*. The field is nevertheless species-poor. There are also two species-poor semi-improved fields in the north-east corner of the site (TN3a, TN13a, Photo 3a).

Woodland and scrub

4.16 There is a block of broadleaved woodland along the eastern boundary of the Survey Site at TN10. The western end is on a hill, and is dry with widely-spaced trees and a grazed grassland ground flora including species such as Yorkshire fog, common mouse-ear and creeping buttercup. The trees here are small to medium-stemmed with very little understory, and include birch *Betula pendula*, crab-apple *Malus sylvestris*, holly *Ilex aquifolium* and pedunculate oak *Quercus robur*. The hill slopes down steeply to the east, where a stream delineates a lower, wetter area of woodland. Here the tree species composition is similar but the understorey is much thicker with bramble predominating. On wetter areas, where the bramble thins out, carpets of opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium* are present. There are also extensive areas of purple moor-grass dominated ground flora with sphagnum moss species also present.

4.17 To the north of this woodland there is a thin strip of deciduous woodland running along the banks of a stream running north to south at TN42. The species composition includes occasional birch, willow, ash and holly. There is an understory made up largely of gorse with bramble scrub and soft rush grading into improved grassland to the east.

4.18 Another relatively extensive area of broad-leaved woodland is present at the south-west end of the Survey Site around Felindre Gas Compressor Station and the two National Grid 400kV electrical substations. This forms a strip to the south and a more continuous block to the north of Felindre Gas Compressor Station and the two National Grid 400kV electrical substations. The woodland is generally quite wet, with alder *Alnus glutinous* and willow species frequent along with pedunculate oak, birch and holly. The trees are growing close together and are generally small-stemmed and straggly. The understorey is dense bramble and ground flora was largely absent when surveyed, although where the woodland opens out, for example around the margins of Felindre Gas Compressor Station and the two National Grid 400kV electrical substations, soft-rush dominated marshy grassland is present.

4.19 There are also patches of deciduous woodland around the edges of the marshy grassland on the block of land to the west of the road that runs through the Survey Site. At TN6a there is a small wooded spur with tree species including oak, birch, holly, hawthorn and an understorey dominated by brambles and including ivy *Hedera helix*, creeping bent, Yorkshire fog, soft rush, hard fern *Blechnum spicant*, scaly male fern *Dryopteris affinis*, and bracken *Pteridium aquilinum*. AtTN23a there is a wooded copse comprised of young birch and willow with an understorey of bramble scrub. The ground flora incudes nettle, lady fern *Athyrium filix-femina,* scaly male fern *Dryopteris affinis* and wood false brome *Brachypodium sylvaticum*. A continuous area of scrub is present to the south of the woodland at TN10 and around the pond at TN15. These areas are quite wet and include willow species (including grey and goat willow *Salix cinerea, S. caprea*), alder and bramble. At TN15 the scrub merges into stands of purple moor grass that are present around the pond. There are also blocks of scrub to the south of Abergelli Farm, along the stream that runs along the eastern boundary, at the northernmost point of the Survey Site, and within the marshy grassland to the west. Scattered scrub (mostly common gorse *Ulex europaeus*) is present along some fence lines, and there is a bramble scrub-covered bund at TN4.

4.20 Many of the trees within the Survey Site are along site boundaries and are remnant hedgerow stools, as described in the section below.

Boundary features

4.21 All boundaries on site are fences, except one length of species-poor hedgerow running north of Abergelli Farm. The fences often run along the line of defunct hedges (Photo 1). These generally take the form of a degraded stone-faced hedge banks, with occasional small sections of overgrown hedge. The overgrown hedges include mature standard trees, large coppice stools and clumps of bramble and gorse scrub. Species present include pedunculate oak, holly, birch, ash *Fraxinus excelsior,* hazel *Corylus avellana* and hawthorn *Crataegus monogyna*.

4.22 Some of the fields on site have overgrown margins where the vegetation is less trampled and grazed along the fence line. For example the northern boundary of the improved field to the north of the field marked TN3 has a ditch lined with purple moor-grass and gorse, and further east along this boundary fence bracken is frequent. The western boundary of the field marked TN22 has purple moor-grass and heather growing along the fence.

Water Courses

4.23 There are numerous small water courses within the Survey Site. These are mostly ditches along field boundaries (TN22a, Photo 5a), but there is also some larger streams. The block of marshy grassland to the west is criss-crossed by numerous ditches, which were largely dry or with marshy bases when visited in April. There is also a stream that runs through this block of land – this is shaded by flanking woodland, with a stone bed and shallow banks. Another stream (Photos 8, 9 and 6a) runs south-east through the Survey Site and splits into smaller tributaries through the woodland at TN10. There are also small watercourses present around the margin of Felindre Gas Compressor Station and the two National Grid 400kV electrical substations. All features that were visited in February had flowing water, reflecting a period of prolonged wet weather preceding the survey. Aquatic vegetation is not apparent in any of the water courses, but marginal vegetation includes frequent soft rush, occasional purple moor-grass and scattered gorse and bramble.

Water Bodies

4.24 There are four water bodies within the Survey Site. The pond at TN15 (Pond17 – see 4.39) is approximately 10m in diameter, shallow, and completely covered in an unidentified sedge species. It has a small tree-covered island in the centre. The pond is ringed by small willow and alder trees. The surrounding vegetation is dominated by purple moor-grass with occasional heather and cross-leaved heath plants, with densely growing small trees and scrub (grey willow, bramble and alder). A small pond immediately to the south is shown on OS maps. This was not apparent amongst the scrub, but there were small patches of standing water (including wheel ruts) within purple moor grass in this area.

4.25 A small pond is present at TN19 (P18 – see 4.39) adjacent to an electricity pylon. The pond is approximately circular and 5m in diameter. It is in woodland and completely surrounded by small saplings. There was no evidence of marginal or emergent aquatic vegetation when surveyed.

4.26 Two ponds are also present immediately to the west of TN30a (Ponds 11 and 12). Pond 12 is approximately 10m in diameter, open and unshaded with both aquatic and marginal vegetation present. It appears to be an extension of two field drains that meet at this point. Pond 11 is a small wet depression containing no vegetation.

Invasive Species

4.27 Japanese knotweed *Fallopia japonica* was noted on at least two locations on the block of land to the west of the road that runs through the site. At Target Note 15a several stands of the species were noted on an embankment to a large raised area. At Target Note 18a a stand of the species was noted on a bend in the stream. There are also several stands of this species growing on the edge of the road that leads into Abergelli Farm from the west. These extend just beyond the western site boundary and into the Survey Site.

4.28 Himalayan balsam *Impatiens glandulifera* was also noted in two areas. Abundant seedlings of the species were noted in the wooded copse at Target Note 23a and on an area of deciduous woodland at Target Note 28a.

Protected Species and Species of Conservation Importance

4.29 This section presents the protected species records provided by SEWBReC along with any evidence of the species, or potential for it to be present gathered during the field survey. Where relevant it also evaluates the potential for the Survey Site to support Section 42 species identified within the desk study area. The legislation and policy relevant to each species or species group is described in Appendix 6.

Bats

4.30 There were 126 bat records provided by SEWBREC from the 2 km radius search area. Of these the majority were recorded during bat transects carried out to inform a separate unrelated development proposal, named 'Felindre development site in the records' approximately 1 km to the south west of the Survey Site boundary.

4.31 The bat species recorded from the desk study include brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, Natterer's bat *Myotis nattereri*, noctule *Nyctalus noctula*, and whiskered bat *Myotis mystacinus*. There were also unidentified *Pipistrellus* sp. and records where the bat species was not specified.

4.32 There are four bat roosts amongst the records provided. The closest of these is a record of 50 unspecified bat species 1.8 km to the south-east of the Survey Site at Ynystawe, Swansea from 1992. The next closest is a night / feeding roost of an unspecified species 1.9 km south west of the Survey Site boundary in Tredegar-Fawr farm buildings from 1998. A record of a roost of 87 whiskered bats also comes from approximately 1.9 km to the north west of the Survey Site boundary in Felindre, Swansea from 1993. The fourth record is a roost of 70 bats of unspecified species, 2.5 km to the south east of the Survey Site in Ynysforgan, Swansea from 1993.

4.33 There are a number of buildings associated with Abergelli Farm that fall within the Survey Site. These are all situated along the road that runs between the Water Treatment Works to the north of the Survey Site and Felindre Gas Compressor Station and the two National Grid 400kV electrical substations to the south. Abergelli Farm consists of a rendered brick-built building (Photo 26) with a tiled pitched roof. It has overhanging eaves with wooden soffits. The associated stable block (Photo 27) is of the same construction with an 'L'-shaped footprint. Opportunities for roosting bats are fairly limited as the buildings appear to be in good condition, although gaps in the woodwork around the eaves would allow entry into the soffits.

4.34 At TN4 is a small concrete bunker (Photo 31) within an area of waste land. It is formed of 2 m high brick walls with a flat roof formed from concrete sleepers. There is an open doorway on the south elevation and a 30 cm x 30 cm hole at the top of the west-facing wall. This has some potential to support roosting bats.

4.35 Immediately to the north (Photo 29) and south (Photo 28) of Abergelli Farm are large barns constructed of corrugated metal and asbestos. Potential for roosting bats in these buildings is low.

There are also two brick-built sheds with corrugated metal/asbestos pitched roofs (Photo 30) adjacent to the northern barn which may have greater potential to support bats, having some gaps in the brickwork that could allow entry in to the buildings.

4.36 Further south, to the south of TN25a, is a pair of houses set within plots of hard-standing and amenity grassland. These are newly built and in good condition with no opportunities for roosting bats.

4.37 There are 21 trees on or within 50 m of the Survey Site that have the potential to support roosting bats. Of these two have been classed as Category 1 (with definite suitable features that may support larger roosts of bats – see Table 1), and the remainder are Category 2 (with some limited roost features – see Table 1). The locations of the trees (T1-21) are illustrated in Figures 2a and 2b and full details of the trees are provided in Appendix 3.

4.38 The northern end of the Survey Site offers limited foraging and commuting potential for bats. The boundaries are fences and short sections of remnant hedgerows and the fields are closely grazed. The block of marshy grassland, woodland and scrub to the west of the road that runs through the Survey Site, and the wooded stream that runs along the eastern boundary offer more potential, and both areas have good wooded connections with a network of hedgerows, tree-lines and marshy pastures off-site. The damp wooded area around Felindre Gas Compressor Station and the two National Grid 400kV electrical substations at the south-west end of the Survey Site also offers foraging potential and connects to off-site blocks of woodland to the north and south that may be good habitat for bats.

4.39 It is concluded that the Survey Site is likely to have moderate value for bats. There are a few potential roosting opportunities, and some areas (woodland and marshy grassland) of the Survey Site which offer foraging opportunities, but the Survey Site as a whole does not have good linear commuting features and the majority of the habitats (tightly grazed improved grassland) are of low foraging value.

Great crested newt

4.40 There were no records for great crested newts provided by SEWBREC within 2 km of the Survey Site.

4.41 Nineteen ponds have been identified within 500 m of the Survey Site boundary with the aid of aerial photographs and OS maps. Of these, two were identified within the Survey Site boundary (Pond 17 turned out to be a single pond when surveyed) and eight within 250 m of the Survey Site. An additional two on-site ponds (Ponds 11 and 12) were found during a reptile survey on 21 May 2014 in the marshy grassland in the north-west of the Survey Site that had not previously been seen during any other survey, as well as one within 100 m of the Survey Site boundary during the first February Phase 1 survey (Pond 18). An HSI assessment was carried out on the seven ponds that were accessible within 500 m of the Survey Site boundary during the first Phase 1 survey visit. This included the two on-site ponds (P17 and P18); one pond within 100 m of the Survey Site boundary (P16); and the remainder are those ponds within 500 m of the Survey Site boundary for which access was possible (P07, P08, P09 and P10). Figures 2a and 2b shows which ponds were surveyed and which were inaccessible, either on private land or not accessible given the presence of horses[8].

4.42 Table 4 below summarises the results of the HSI, and Appendix 4 gives more detailed results.

[8] The landowner requested that we do not access fields with horses in for our own safety.

Table 4: HSI Results

Pond	HSI	Value for great crested newts
P07	0.67	Average
P08	0.77	Good
P09	0.47	Poor
P10	0.64	Average
P16	0.66	Average
P17 on site	0.61	Average
P18 on site	0.53	Below average

4.43 The Survey Site lies in a part of the country where the distribution of great crested nested newts is patchy, with the species largely absent to the west of the Survey Site. Whilst this might reduce the probability that great crested newts would be present on site, it does not rule out their presence. There are a number of ponds in and around the Survey Site, and suitable habitat for newts in their terrestrial phase, including old hedge banks, marshy grassland and woodland within the Survey Site. Those ponds surveyed, whilst most did not have a 'good' or 'excellent' HSI score, do have potential to provide breeding habitat for great crested newts and the possible presence of the species on site should be considered further. In addition the cluster of inaccessible ponds within the grounds of the water treatment works (to the north-west of the Survey Site) are likely to be of similar 'good' quality as Pond 08 (which was visible through the gate).

Dormouse

4.44 SEWBReC did not provide any records of dormouse *Muscardinus avellanarius*. The woodland areas on the eastern boundary, at the south-west end and within the marshy grassland in the north-west of the Survey Site do not provide optimum dormouse habitat although they are suitable for the species. Most of the woodland consists of relatively immature trees with little hazel understorey, limited foraging opportunities for this species and a lack of connectivity in the canopy. However, these areas of woodland have good connections to a complex of woodland and thick hedgerows to the west, south and east, and consequently could potentially form part of a wider network of dormouse-supporting habitat. There are a number of recent examples of dormouse occurring in sub-optimal habitat, such as coniferous plantation and species-poor hedges, in south and mid-Wales and their presence should not be ruled out if the habitat is sub-optimal but still has clear potential to support the species, as in this case.

4.45 Figures 2a and 2b illustrate which areas of the Survey Site have the highest potential to support dormouse.

Otter

4.46 There are a number of water courses on site, most of which are ditches, but also a small stream running from north-west to south-east along the centre and eastern flank of the Survey Site and through the woodland in the centre of the Survey Site. SEWBReC provided 32 records of otter within the 2 km search radius, all recorded between 1991 and 2013. The closest record to the Survey Site is 0.5 km to the south west from the River Llan. At its closest point the River Llan is approximately 0.3 km south of the southern Survey Site boundary, and it links to the Survey Site via the stream running through the woodland in the centre of the Survey Site. None of the water courses on site are likely to provide good foraging opportunities because of their size, but they may offer lying up sites for otter, and it is possible that individuals might use the water courses to commute along from time to time.

Water Vole

4.47 No evidence of water voles was noted along the water courses on site when surveyed in February and April, although February is a time of low activity for the species, when field signs may not be evident. The water courses that were visited in February all had flowing water in them when

surveyed, following a prolonged period of extremely wet weather during the winter. It is likely that many of these are usually dry or hold only a small amount of water and this was confirmed during the April survey. As such they do not provide good habitat for water voles. The stream that runs along the eastern boundary of the site; however, does provide suitable habitat for water vole, particularly at TN41-43. At TN43, a number of vole tunnels and holes were seen along the western side of the bank in long tussocks of grass, although it was not possible to ascertain which species had made them.

4.48 Water voles have been present in the vicinity: SEWBReC provided three records of water vole from the River Llan approximately 1.9 km from the Survey Site boundary, all from 1996. This River is hydrologically linked to the Survey Site (see otter section above), so it is possible, if any of the water courses retain water, particularly those linked to the River Llan, that water voles could be present on site.

Reptiles

4.49 There were 12 records of reptiles provided by SEWBReC, between 1998 and 2010. These included records of all the common reptile species: adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara,* and slow worm *Anguis fragilis*. The closest record is of a common lizard, approximately 0.8 km to the west of the Survey Site boundary. Most records are from the south-west side of tinplate workings near to Bryn Whilach Farm, approximately 1 km to the southwest of the Survey Site boundary.

4.50 There are several areas of the Survey Site that provide suitable habitat for common reptile species (see Figures 2a and 2b). This includes areas of marshy grassland to the south of the Survey Site, mounds of wood to the south of the woodland at TN10 (Photo 11), scrubby woodland fringes (Photo 12) and overgrown field margins either along remnant hedge banks or ditch banks. In addition a common lizard was seen during the April Phase 1 survey in the marshy grassland area in the north-west of the site and this area is particularly suitable for reptiles providing high quality habitat for foraging, sheltering and basking.

Badger

4.51 Information on badgers is provided in a confidential version of this report.

Birds

4.52 During the Phase 1 survey a number of common woodland and farmland bird species were recorded and these are listed in Appendix 5. The trees and woodland on site may provide nesting habitat for a range of common bird species. The marshy grassland on site could also provide nesting habitat for ground-nesting bird species. The Survey Site does not appear to be of particular importance for wintering birds with no notable aggregations of common species or any rarer species recorded during the walkover survey, except for a red kite *Milvus milvus* seen in flight over the Survey Site (see below) in both February and April.

4.53 SEWBReC provided a number of records of ground nesting birds in the search area. These included records for Eurasian curlew *Numenius arquata*, northern lapwing *Vanellus vanellus* and skylark *Alauda arvensis*. The closest of these records are located at the tinplate workings site near to Bryn Whilach Farm, approximately 1 km to the southwest of the Survey Site boundary. There was one record of curlew, located at the Lliw reservoir, 1 km north of the Survey Site boundary.

Schedule 1 Birds

4.54 SEWBReC provided 21 records of barn owl *Tyto alba*. The closest of these records is 0.7 km to the west of the Survey Site boundary from 1997, with the nearest breeding record 3 km to the south west near Penllergaer Woods in 2000. It is possible that some of the farm buildings within the Survey Site may support breeding barn owl, although no trees were found that appear, from a ground level inspection, to have sufficiently large cavities to support nesting barn owls. The marshy fields at the southern end of the Survey Site, although probably sub-optimal, could provide habitat for field vole *Microtus agrestis* (a preferred prey species) given the thick, tussocky structure of some parts of the sward. The marshy grassland in the north-west of the Survey Site provides

optimal foraging habitat for barn owls due to its extensive areas of tussocky grassland that may support breeding field voles *Microtus agrestis*, their preferred prey species.

4.55 A red kite was noted circling above the field at TN3 and also over Abergelli Farm. Red kites generally breed in valley woodlands of which there is extensive habitat to 2-3 km to the east and west of the Survey Site. It is considered likely that the Survey Site is part of a much wider area of potential foraging habitat for the species. SEWBReC provided 54 records for red kite between 1999 and 2013.

Terrestrial Invertebrates

4.1 SEWBReC provided 40 records of Section 42 terrestrial invertebrate species. The species recorded are marsh fritillary, dingy skipper *Erynnis tages*, narrow-bordered bee hawk-moth *Hemaris tityus*, and small pearl-bordered fritillary *Boloria selene*. Twenty-nine of the records are of marsh fritillary; the closest of these is located approximately 0.7 km west of the Survey Site boundary in 2009. This location also contains the closest of the four dingy skipper records, as well as the closest of the five small pearl-bordered fritillary records and the only narrow-bordered bee hawk-moth record.

4.2 The marshy grassland to the west provides suitable habitat for marsh fritillaries, although the food plant devil's-bit scabious *Succisa pratensis* was not noted in any quantity during the April survey. Of the other Section 42 species recorded from the desk study, suitable habitat is present for narrow-bordered bee hawk-moth *Hemaris tityus*, which largely relies on devil's bit scabious, like marsh fritillary. For dingy skipper, there are few areas of bare ground, where this species prefers to bask and no areas where its usual food plant, bird's foot trefoil *Lotus corniculatus*, is found in any quantity. Small pearl-bordered fritillary is reliant on violets (*Viola* spp.) as its foodplant and violets have not been recorded during either Phase 1 survey (the April survey was well timed to record them in flower). It is unlikely that either of these latter two species is present.

4.3 Other habitats that may be suitable for diverse assemblages of terrestrial invertebrates include the areas of broad-leaved ancient woodland at Target Note 10, for example, which represents a fairly extensive area of semi-natural habitat that may be important for terrestrial invertebrates, particularly *Lepidoptera* (notably moths) and beetles (*Coleoptera*); which are both strongly represented in wooded habitats.

Aquatic Invertebrates

4.4 No records of Section 42 aquatic invertebrate species were provided by SEWBReC, and it is unlikely that any of the ponds on or close to the site support unusual or diverse assemblages of aquatic invertebrates.

5 Recommendations

5.1 For the purposes of this report it has been assumed at this stage that direct impacts will potentially occur across the Survey Site, and that indirect impacts will need to be considered beyond this, within the 'zone of influence' that will vary dependent on the receptor (habitat, protected species, designated site) concerned. The recommendations presented below are based on preliminary assumptions of the potential impacts and the corresponding requirement to confirm presence / absence, and where present the distribution and abundance of protected and otherwise notable species or habitats that may occur within the Survey Site and a zone of influence surrounding it.

Statutory Designated Sites

5.2 Nant Y Crimp SSSI, Penplas Grasslands SSSI and Cadle Heath LNR are located within 5 km of the Survey Site boundary. These sites are designated for their habitat interest and as all are over 2 km from the Survey Site, direct impacts resulting from the development are considered unlikely. Nant Y Crimp SSSI also has a colony of marsh fritillary butterflies. The larval food plant (devil's-bit scabious) for this species was found in small patches in the western area of marshy grassland during the Phase 1 survey, so this species may be present. However this assessment will need to be reviewed once a botanical survey (see below) of the western block of marshy grassland has been carried out.

Habitat Regulations Assessment

5.3 Consultation with the Planning Authority, Natural Resources Wales and PINS will determine the requirement for a screening exercise (under the Habitat Regulations) that considers the proximity of potentially sensitive ecological receptors (notably European protected sites, but potentially extended to SSSIs) within a search area that may extend to or beyond a 5 km radius of the Survey Site (for example, Camarthen Bay and Estuary SAC, Crymlyn Bog SAC, SPA and Ramsar, and Burry Inlet SPA and Ramsar all lie within 10 km of the Survey Site), and whether these could be affected by CO, NO_X and NO_2 emissions as well as nitrogen and acid deposition.

5.4 The requirement for further surveys or desk based investigation will be determined following review of the scoping opinion (and consultation) on this matter.

Non-statutory Designated Sites

5.5 Three SINCs lie partially within the site boundary and could therefore be directly affected by the proposed development. Indirect impacts could also potentially occur on those sites lying adjacent or close to the boundary.

5.6 The woodland on site that falls within Llety-Morfil SINC and the southern part of Waun Garn Wen SINC is also designated as Ancient Woodland and as such is irreplaceable. Direct impacts on this resource may therefore also occur as a result of the proposals.

Habitats

5.7 The marshy grasslands within the Survey Site potentially qualify as a Section 42 habitat 'purple moor-grass and rush pastures'. The area to the west of Abergelli Farm is also a SINC. These habitats require a NVC botanical survey at an appropriate time of year (June/July) to establish their ecological value and inform the level of mitigation required to compensate if they are to be lost or modified as a consequence of the Project. The marshy grassland in the north-west of the site is potentially of high ecological value, and this needs to be confirmed through botanical and other Phase 2 survey work. The semi-improved grasslands in the north-east corner of the site, whilst not having obvious high botanical value, are included within a larger SINC. As such it is recommended that a botanical survey is carried out on these areas to establish their value in the wider context of the SINC, and therefore the likely mitigation that would be required for their loss.

5.8 'Lowland mixed deciduous woodland' is also a Section 42 habitat. The woodland on site all falls into this category and the majority of the resource also falls within a SINC and is designated as

Ancient Woodland. A botanical survey of these areas in spring/early summer when the ground flora is in evidence would allow an evaluation of their ecological value to be made.

5.9 There are no other habitats on site of high intrinsic ecological value. The improved grassland habitat is common and widespread in south Wales and of minimal ecological value. In addition, all (bar one species poor example) of the hedgerows on the Survey Site are defunct.

Invasive species

5.10 Japanese knotweed and Himalayan balsam have both been noted on the Survey Site. It is recommended that a walkover survey of the Survey Site is carried out once access is available to all areas, including the proposed access route to map all locations where these species are growing. This should be done within the period June - July when both species are most in evidence.

5.11 If work is to take place in any areas where these species are present, a Management Plan will need to be drawn up detailing the methods that will be used to remove these species under controlled conditions as detailed by the Environment Agency (The Knotweed Code of Practice 2003 and guidance on Environment Agency website).

Protected Species and Species of Conservation Importance

Bats

Trees and Buildings

5.12 Twenty one trees within the Survey Site have been identified as having potential to support roosting bats. If these trees are to be removed or modified, it is recommended that a roped-access tree survey is carried out in order to confirm whether any of the features initially identified support roosting bats or have the potential to do so. Where the potential for bats to roost in the tree is confirmed then emergence/re-entry (at dusk and/or dawn) survey may need to be carried out to confirm the likely use of the tree by roosting bats, and the status of any roost present. If a bat roost is confirmed, either through emergence/re-entry survey or through roped-access survey a European Protected Species (EPS) Licence is likely to be required before the tree can be felled.

5.13 It is recommended that all buildings to be directly or indirectly affected by the Project (if any) should be inspected for signs of roosting bats and features with the potential to support roosting bats, where access allows.

5.14 If signs of roosting bats or features with the potential to be used by roosting bats are identified during these inspection surveys, further survey in the form of dusk emergence/ dawn re-entry surveys may be required. The level of survey effort required will depend on the potential that the building or tree has been assigned in these initial inspection surveys. These further surveys (if required) should be undertaken in accordance with current best practice guidance (Hundt, 2012) at a time of year when breeding roosts may be present (i.e. between mid-May and mid-August).

Activity Survey

5.15 The areas of marshy grassland, woodland and streams on site potentially provide good foraging habitat for bats. It is recommended that bat activity surveys are carried out in order to inform an assessment of the Survey Site's value for bats and to guide the evolution of the Project and mitigation accordingly. Following the guidance provided in Hundt (2012), this would involve two walked transect routes (given the size of the Survey Site) carried out monthly between April and October, as specified in the guidelines. An automated survey using four static bat detectors (two per transect route) recording for at least three nights would also be carried out. Rather than deploying detectors at four locations every month, it is recommended that surveys are carried out at four locations for three months and another four locations for the other four months so that half the locations would be surveyed in April, June, August and October and the other four in May, July and September. This would increase the spatial coverage of the Survey Site but ensure that sampling was undertaken at each location in spring, summer and autumn to allow a robust seasonal comparison to be made.

Great Crested Newt

5.16 The presence of four ponds on site with several more in the vicinity of the Survey Site, and the occurrence of suitable terrestrial habitat on site indicate that great crested newts could potentially be using the Survey Site. This should be established through further targeted survey work.

5.17 Section 5.4 of the GCN Mitigation Guidelines (English Nature, 2001) recommends that:

"*For a common situation, where a plot of land containing a pond is proposed for development, the pond itself should be surveyed, and other ponds up to 500m away should also be checked, if it is thought likely that great crested newt populations centred on these ponds would be affected by changes to the plot*."

5.18 Natural England guidance(2001) is further developed in the GCN Method Statement which states that:

'*The decision on whether to survey depends primarily on how likely it is that the development would affect newts using those ponds. For developments resulting in permanent or temporary habitat loss at distances over 250m from the nearest pond, carefully consider whether a survey is appropriate….. normally appropriate only when all of the following conditions are met*:

1. maps, aerial photos, walk-over surveys or other data indicate that the pond(s) has potential to support a large great crested newt population,

2. the footprint contains particularly favourable habitat, especially if it constitutes the majority available locally,

3. the development would have a substantial negative effect on that habitat, and

4. there is an absence of dispersal barriers.'

5.19 The second piece of guidance, which supersedes the first, specifies that all four conditions should be met for surveys to be required of ponds beyond 250m of the Survey Site boundary. In this case, condition 1. is not met as there is no indication from desk study data or the HSI assessment that any of the ponds is likely to support a large population of GCN or that they provide particularly suitable habitat (condition 2.) with no ponds within 250m of the Survey Site recording better than an 'average' score on the HSI assessment.

5.20 As a consequence, it is recommended that all ponds within 250m (not 250-500m) would need to be further surveyed. This would initially involve four surveys within the period mid-March to mid-June to establish presence/absence (with at least two surveys during mid-April to mid-May), with an additional two surveys (six in total) required to estimate population size if newts are found during the first four surveys.

Dormouse

5.21 If the woodland on the Survey Site is to be removed, damaged or significantly modified, it is recommended that dormouse surveys are carried out with the aim of establishing whether the species is present on site, and therefore whether a EPS Licence will be required before woodland can be cleared or significantly modified. It is recommended undertaking a dormouse survey, following methods based on those prescribed in best practice guidance (Bright *et al*. 2006). The surveys will involve the use of dormouse boxes in areas of woodland and nest tubes in cluttered environments where boxes cannot be used. The survey will be designed to detect the presence or absence of dormice rather than to provide an abundance estimate or monitor a population of the species. Surveys would be carried out monthly during April-November.

Otter and Water Vole

5.22 Otter usage of the Survey Site is likely to be occasional although there are suitable resting/lying up places present along the eastern stream corridor within the Survey Site. Mitigation measures to avoid potential killing or injury to individuals during the construction and decommissioning phases should be considered, for example covering open workings overnight.

5.23 A survey for water voles along the banks of the water courses on site should be carried out as a precautionary measure to establish whether the species is likely to be present on site and to design mitigation accordingly. This would involve one visit and should be carried out ideally in spring when field signs are likely to be most in evidence but the vegetation has not grown up to obscure them. It will also be possible to carry out additional checks for signs of otter at the same time as the water vole survey, for completeness. The survey would be carried out in accordance with best practice guidelines (Chanin (2003) and Strachan *et al*., (2011), respectively).

Reptiles

5.24 A reptile survey should be carried out on the Survey Site to establish the presence/absence of reptiles, the species present and the approximate population size. The survey will be conducted using artificial refuges (e.g. roofing felt and tin) to aid in the detection of reptiles and assessment of their distribution and abundance, following good practice guidance, including that set out in the Herpetofauna Worker's Manual (Gent & Gibson, 2003) and Reptile Survey Guidance (Froglife, 1999). This requires a minimum of seven visits conducted at an appropriate time of year (either spring/early summer and/or late summer/early autumn) during suitable weather conditions.

Badger

5.25 Information on badgers is provided in a confidential version of this report.

Breeding Birds

5.26 Breeding bird surveys of the Survey Site should be carried out with the aim of establishing the ecological value of the breeding bird population and to inform mitigation measures. Farmland birds (occurring both within the Survey Site and a buffer of up to 50m) would be the main target of the survey. Territory mapping surveys based on the British Trust for Ornithology's Common Bird Census (CBC) methodology will be undertaken. These would be conducted on three occasions during the breeding season. It is recommended that an initial visit is carried out in mid-April, followed by additional visits in May and June.

5.27 The Phase 1 survey was partly conducted in winter with an experienced ornithologist (Matt Hobbs) part of the survey team. As there was no evidence of notable aggregations of common species or habitat that may support rarer species it is considered that there is no justification for carrying out targeted wintering bird surveys.

Barn owls

5.28 It is recommended that all buildings and mature trees on site to be directly or indirectly affected by the Project (if any) should be inspected for signs of roosting or nesting. Signs to be searched for include: nest debris, barn owl pellets, white splashes from barn owl droppings and live or dead barn owls themselves (Barn Owl Trust, 2012). Barn owl roost inspections can be conducted all year round.

Terrestrial Invertebrates

5.29 The block of marshy grassland to the west, provides potential habitat for marsh fritillary butterflies due to the presence of their food plant, devil's-bit scabious. As such a survey of adults during late May/June and also the larval webs should be carried out in mid-August to mid-September. Both surveys would involve walking transects over the marshy grassland, the former noting adult marsh fritillary butterflies and the latter checking all patches of the food plant for larval webs and larvae and following standard methods[9].

5.30 The woodland at Target Note 10, for example represents a fairly extensive area of semi-natural habitat that may be important for terrestrial invertebrates; which are both strongly represented in wooded habitats. If the woodland at TN10 is to be affected by the Project it is proposed that further survey will be appropriate that targets both *Lepidoptera* (notably moths) and beetles (*Coleoptera*).

[9] http://www.ukbms.org/Downloads/UKBMS%20Ng2%20-%20Marsh%20Frit%20Webs%20guidance%20notes.pdf

A moth survey should also be undertaken of the marshy grassland area in the north-west of the site.

5.31 Survey of *Lepidoptera* should involve two night-time moth surveys to be undertaken in late spring and mid-summer. Trapping using Skinner or Robinson moth traps fitted with mercury vapour bulbs is most suitable in terms of attracting an extensive and variable moth fauna. Lights should be switched on at dusk and remain lit until dawn the following day. The traps should be checked periodically throughout the night to log any new arrivals. Any species hard to identify from external markings alone, and those requiring further confirmation, should be retained and dissected if necessary to ascertain their identity with the use of a stereoscopic microscope.

5.32 For beetles, a method should be developed that follows Natural England (ISIS) protocol (Drake et al., 2007) to sample beetle assemblages directed at woodland habitats, via hand searches, sweep netting and pitfall trapping. To align with the *Lepidoptera* surveys, this can be undertaken in late spring/early summer and mid/late summer/early autumn. Subsequent laboratory identification will be required for many of the specimens collected.

5.33 Analysis of the results should use the ISIS protocol to determine whether any broad or specialist assemblage types of *Lepidoptera* and / or *Coleoptera* are present. Consideration should also be given to any rare, scarce or nationally threatened species present, including Section 42 species.

Aquatic Invertebrates

5.34 On the assumption that watercourses will be affected by the Project, it may be appropriate to undertake an assessment of water quality, compliant with the Water Framework Directive (WFD). A main aim of the WFD is to prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters. The requirement for such an assessment would be driven in consultation with Natural Resources Wales. Should such an assessment be required it may be appropriate to assess the ecological quality and surface water chemistry of watercourses to be affected.

5.35 To determine ecological quality kick-sampling for aquatic invertebrates should be undertaken at selected locations along the ditch / stream, and the Biological Monitoring Working Party (BMWP) score applied to inform an assessment of water quality and species present. This survey is best undertaken in spring or autumn in swift flowing waters, or in summer in stationary ditches or those with a slow flow. All macro-invertebrates should be identified to species level in order to determine the presence of any scarce or nationally notable species.

5.36 To determine water chemistry status a single water sample should be extracted at three locations; within the Survey Site and upstream and downstream of this. Samples should be dispatched to a UKAS accredited laboratory for subsequent analysis, to cover a standard range of parameters including: Biological Dissolved Oxygen, Total Suspended Solids, nutrient composition (e.g. nitrite as nitrogen, total oxidised nitrogen, total ammoniacal nitrogen, total phosphorus), hardness, calcium, alkalinity, conductivity and pH.

5.37 The condition of the watercourse can subsequently be analysed by recording and comparing the aggregated number of taxa, and average score per taxon from the sampling points along the watercourse within, upstream and downstream from the Survey Site. The statistical model (RICT) developed for WFD classification would be used to calculate the Ecological Quality Ratio (EQR) that compares observed with expected results for a watercourse of the same type. The EQR is then used to identify the Biological Status of the watercourse which is separated into five bands (Bad to High) required by the WFD.

5.38 It may also be necessary to undertake invertebrate surveys of any ponds that are likely to be affected by the development proposals. These are likely to involve surveys of aquatic beetles in June and August

Un-surveyed Land

5.39 There are a number of small parcels of land that have not yet been surveyed in the southern part of the site. These are indicated on Figure 1b and will be surveyed once access has been arranged. The Phase 1 report will be updated once these surveys are complete.

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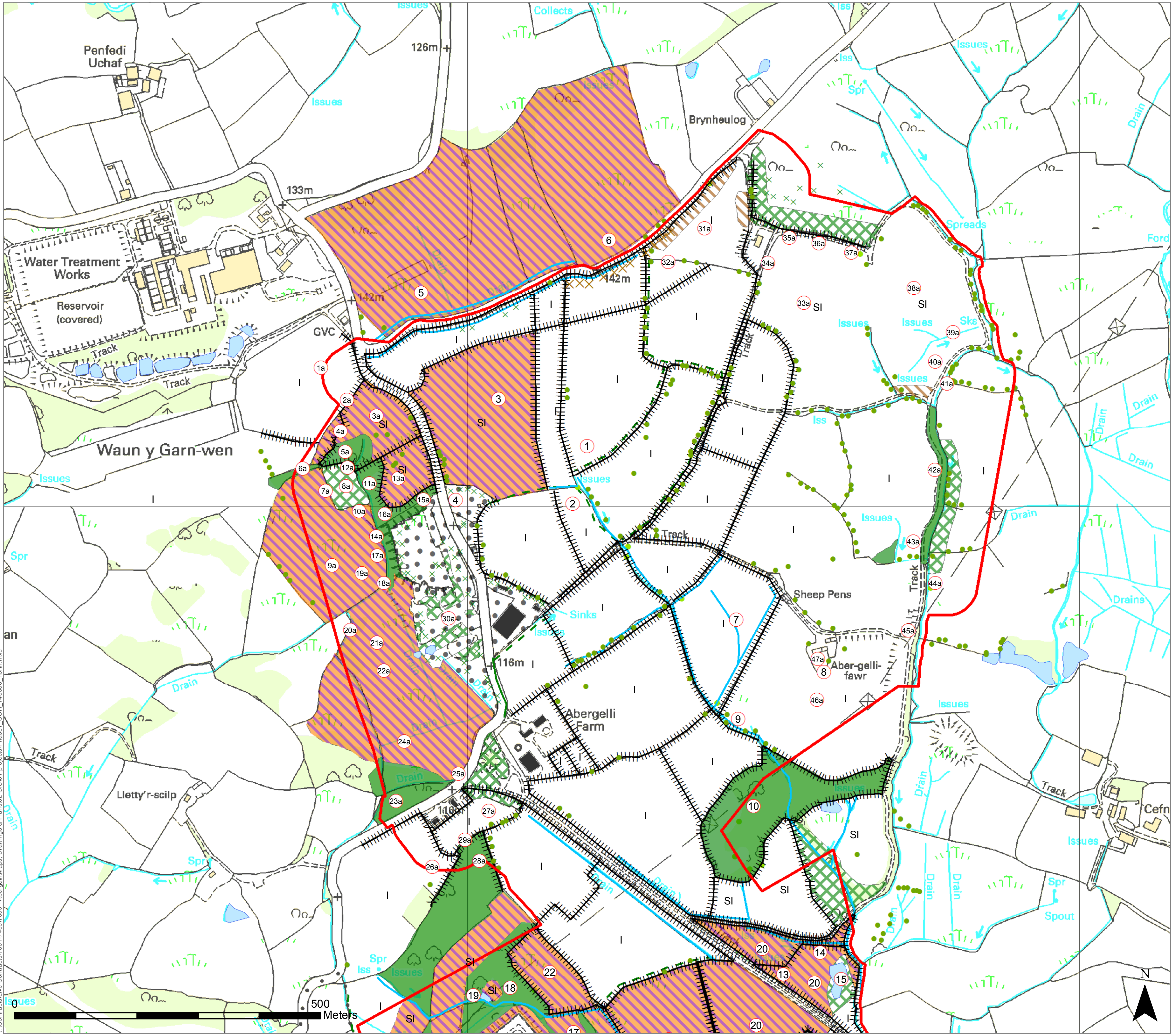

LEGEND

- Site boundary
- Target notes
- Broadleaved woodland
- Dense scrub
- I Improved grassland
- Marshy grassland
- SI Semi-improved grassland
- Tall ruderal
- Bare ground
- Buildings
- Standing water
- Water course
- Species-poor intact hedge
- Species-poor defunct hedge
- Fence
- Scattered scrub
- Broadleaved tree
- Bracken

BSG | ecology

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PROJECT TITLE
ABERGELLI POWER PLANT

DRAWING TITLE
Figure 1a - Phase 1 Habitat Survey North

DATE: 05.06.2014	CHECKED: MH	SCALE: 1:6,000
DRAWN: COH	APPROVED: MH	STATUS: FINAL

Sources: Ordnance Survey, BSG survey data

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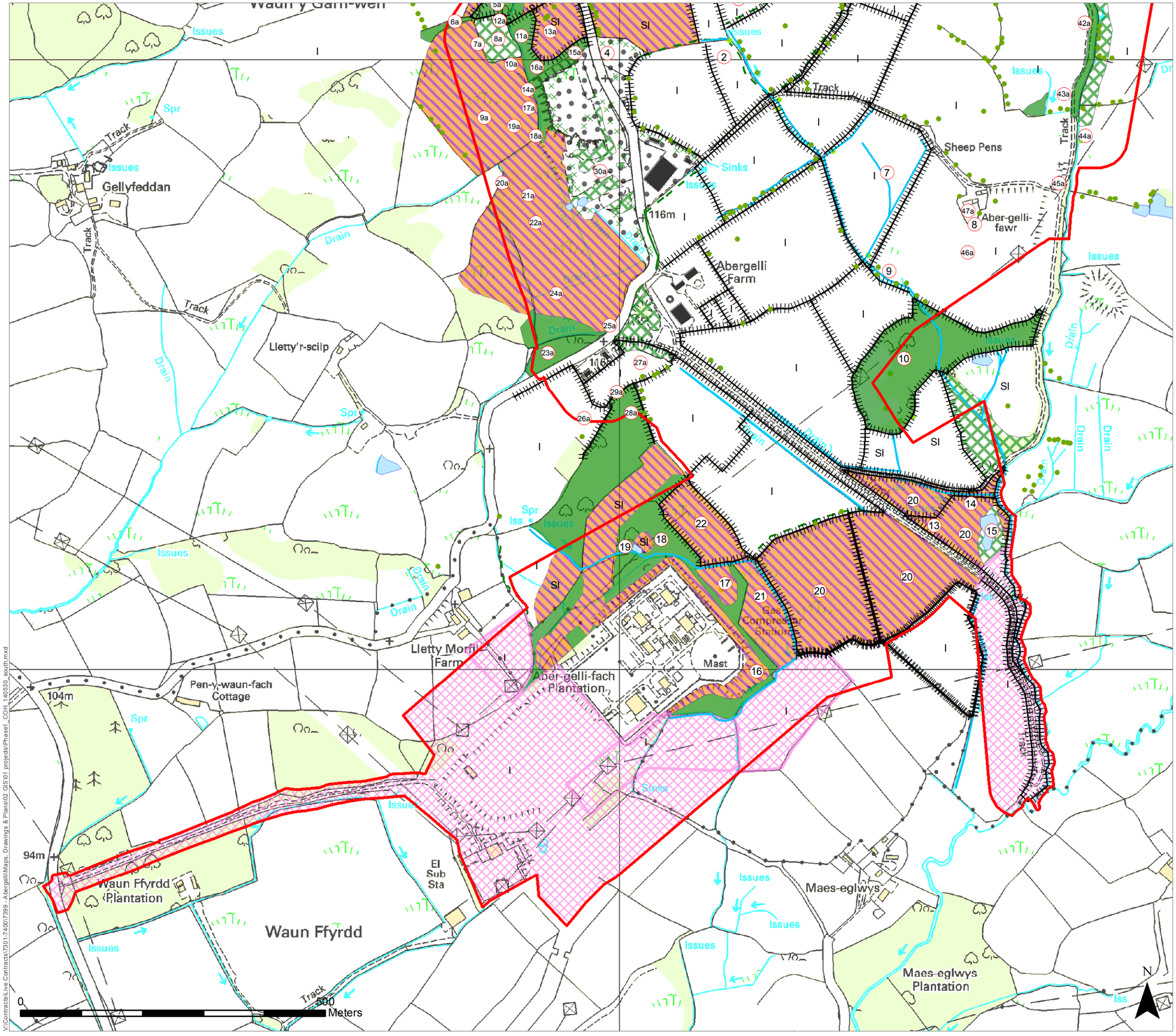

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LEGEND

- Site boundary
- Target notes
- Broadleaved woodland
- Dense scrub
- I — Improved grassland
- Marshy grassland
- SI — Semi-improved grassland
- Tall ruderal
- Bare ground
- Not surveyed
- Buildings
- Standing water
- Water course
- Species-poor intact hedge
- Species-poor defunct hedge
- Fence
- Scattered scrub
- Broadleaved tree
- Bracken

BSG ecology

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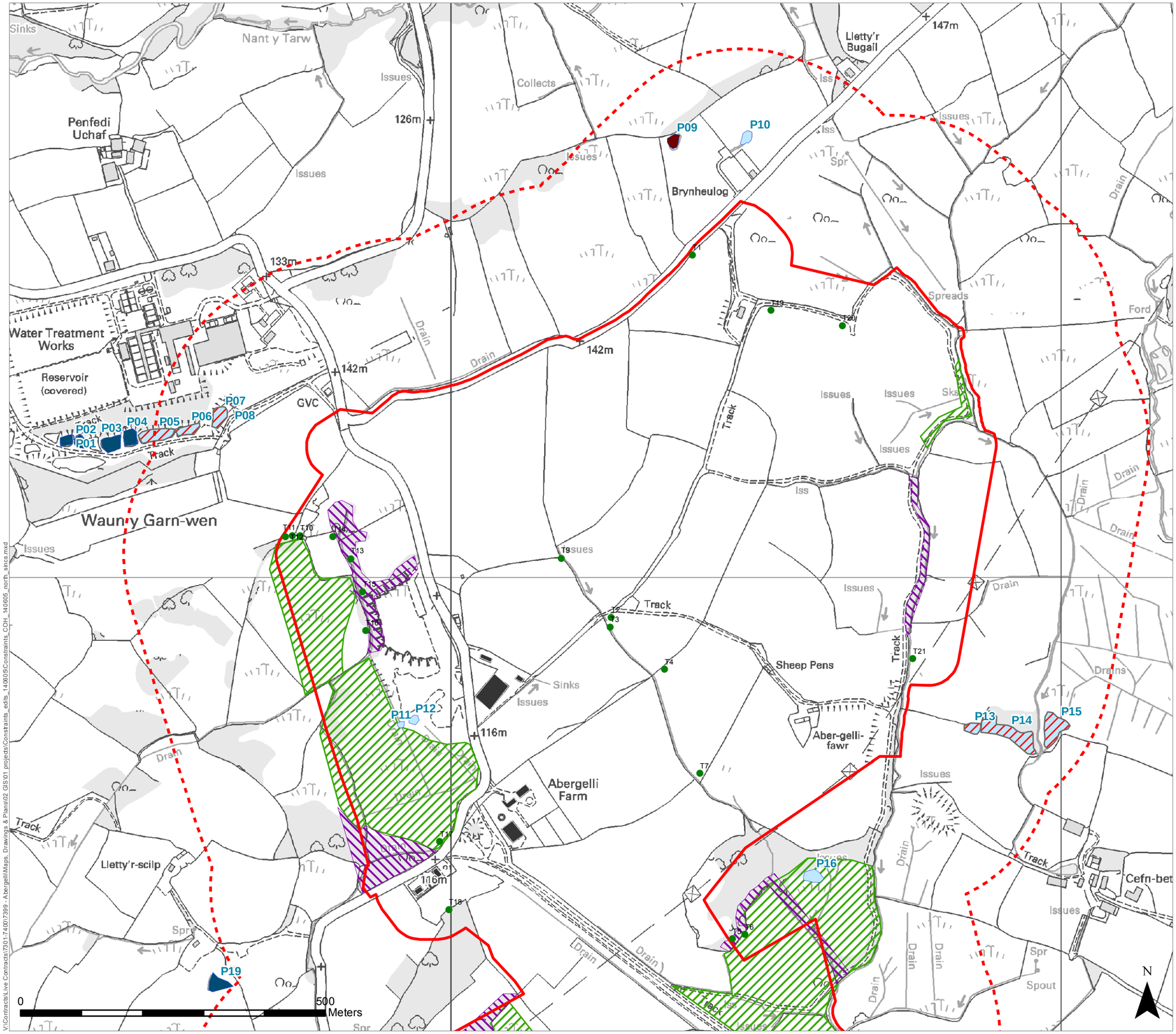
JOB REF: 7399.00

PROJECT TITLE
ABERGELLI POWER PLANT

DRAWING TITLE
Figure 1b - Phase 1 Habitat Survey South

DATE: 05.06.2014 CHECKED: MH SCALE: 1:6,000
DRAWN: COH APPROVED: MH STATUS: FINAL



LEGEND

- Site boundary
- 250m buffer of survey site

Great crested newts

- Pond within 250m of Survey Site that should be surveyed for GCN
- Ponds within 250m of the Survey Site for which access was denied
- Ponds within 250m of the Survey Site that are unsuitable for amphibians
- Ponds within 250-500m of the Survey Site

Bats

- Buildings with potential to support roosting bats
- Trees with potential to support roosting bats

Dormice

- Areas with highest potential to support dormice

Reptile Potential

- Areas with highest potential to support reptiles

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PROJECT TITLE
ABERGELLI POWER PLANT

DRAWING TITLE
Figure 2a - Ecological Constraints Map North

DATE: 05.06.2014 CHECKED: MH SCALE: 1:6,000
DRAWN: COH APPROVED: MH STATUS: FINAL

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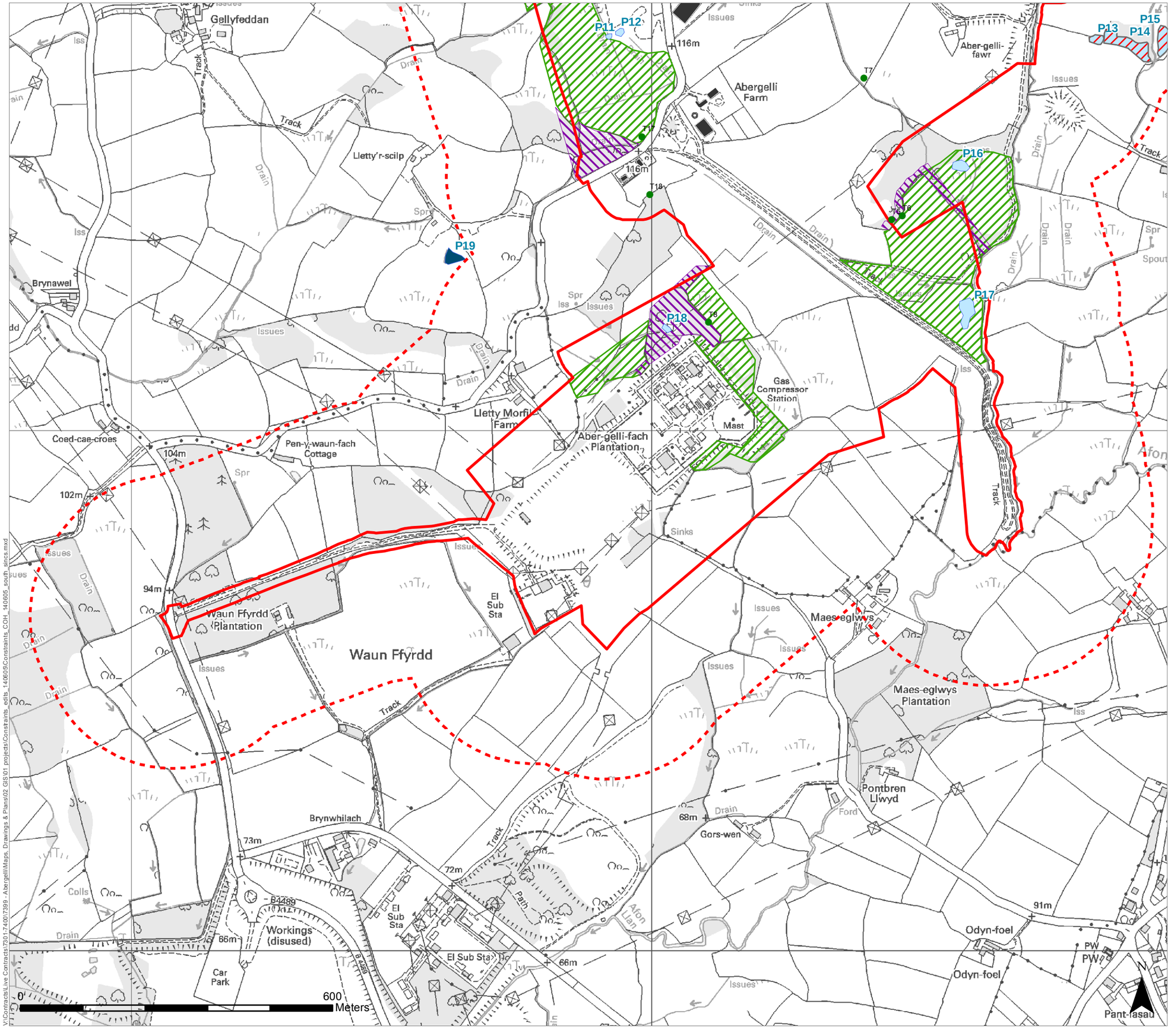

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LEGEND

- Site boundary
- 250m buffer of survey site

Great crested newts

- Pond within 250m of Survey Site that should be surveyed for GCN
- Ponds within 250m of the Survey Site for which access was denied
- Ponds within 250m of the Survey Site that are unsuitable for amphibians
- Ponds within 250-500m of the Survey Site

Bats

- Buildings with potential to support roosting bats
- Trees with potential to support roosting bats

Dormice

- Areas with highest potential to support dormice

Reptile Potential

- Areas with highest potential to support reptiles

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PROJECT TITLE

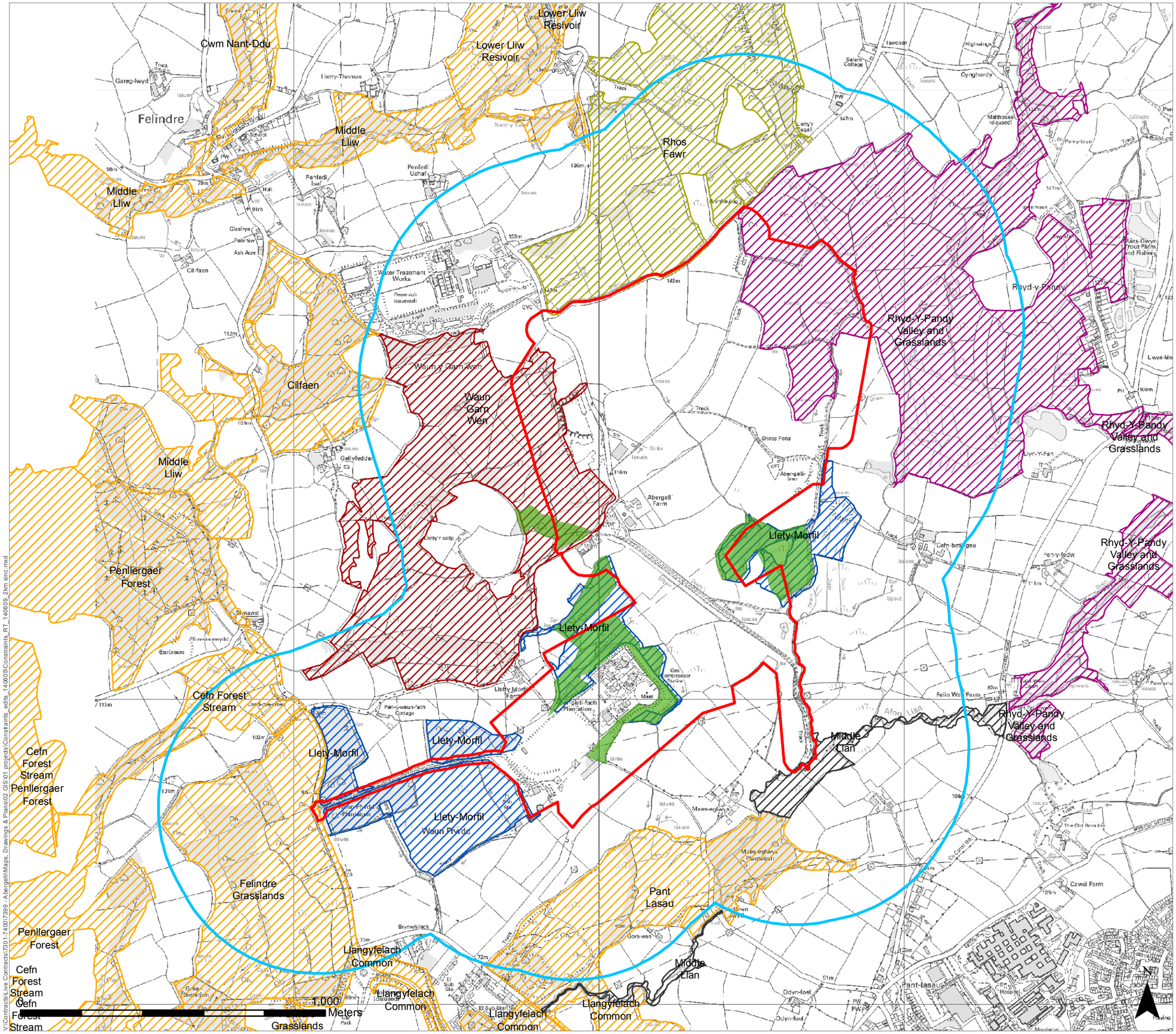
ABERGELLI POWER PLANT

DRAWING TITLE

Figure 2b - Ecological Constraints Map South

DATE: 05.06.2014 | CHECKED: MH | SCALE: 1:7,000

DRAWN: COH | APPROVED: MH | STATUS: FINAL



LEGEND

Site boundary

500m radius from site boundary

Site of Importance for Nature Conservation (SINC)

SINC: Llety-Morfil

SINC: Middle Llan

SINC: Rhos Fawr

SINC: Rhyd-Y-Pandy Valley and Grasslands

SINC: Waun Garn Wen

Other SINC location

Ancient Woodland

Ancient Woodland

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JOB REF: 7399.00

PROJECT TITLE

ABERGELLI POWER PLANT

DRAWING TITLE

Figure 3 - SINC and Ancient Woodland map

DATE: 16.06.2014 CHECKED: MH SCALE: 1:12,000

DRAWN: RT APPROVED: MH STATUS: FINAL

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Appendix 1: Target Notes

February Survey

1. A spring running into a wet ditch. The ditch has a muddy base with sweet-grass *Glyceria* sp. and soft rush the dominant plant species. Frog spawn was present.

2. A wet ditch fenced on either side. The ditch meets a spring which runs into it flowing southwards. The ditch has steeply sloping grassy banks, is open and unshaded with great willow herb *Epilobium hirstum* and soft rush present. A newly planted hedge runs along the south side – gapping up a defunct hedge. Also, occasional large coppices of holly were recorded.

3. Marshy grassland with abundant soft rush. The sward is grazed very short by horses. Frequent patches of sedge species were recorded including common sedge and glaucous sedge. Other species noted include sharp-flowered rush and/or jointed rush (difficult to separate in winter and when closely grazed), cinquefoil species, daisy and creeping bent.

4. A small concrete bunker with wasteland area. The concrete bunker is formed of 2m high brick walls with a flat roof formed from concrete sleepers. There is an open doorway on the south elevation and a 30cm x 30cm hole at the top of the west-facing wall. No evidence of bats was recorded. The surrounding land is compacted course aggregate which is becoming colonised with common grassland species. There is an earth bund around the south-east and north-east boundary, topped with dense bramble and gorse scrub.

5. An area of marshy grassland which is very closely grazed. Occasional heather and bilberry plants and patches of sphagnum moss were recorded. Purple moor grass is frequent and forms dominant tussocks at the north end of the field. Other species include sheep's fescue and a sedge species.

6. An area of marshy grassland dominated by soft rush. The field was not entered as it is outside the ownership boundary, but inspection from the roadside suggests that rushes are interspersed with agriculturally improved grassland.

7. A wet ditch running through the middle of the field containing fast flowing water with orange discolouration. The ditch is overgrown with bramble and joins another ditch on its eastern boundary, which is lined with purple moor grass, greater willowherb, and soft rush. The surrounding field is agriculturally improved with patches of soft rush.

8. A derelict stone farmhouse with only the bottom halves of walls still present. Patches of rubble and overgrown vegetation are present, which may provide good habitat for reptiles.

9. A stream lined with trees, which is fast-flowing with a stony substrate.

10. An area of broadleaved woodland. The western end is on a hill, which slopes steeply down to the east. This end (delineated by a stream running north-south) is dry with widely spaced trees and a grazed grassland ground flora (Yorkshire fog, common mouse-ear, and creeping buttercup were the most prominent species) and very little understorey was noted. The eastern end is much wetter, with carpets of opposite-leaved golden-saxifrage, extensive areas of purple moor-grass dominated ground flora with some sphagnum moss species. The understorey is thicker here and is predominantly bramble. Tree species include birch, crab-apple, holly and pedunculate oak. Most specimens are small-medium in size.

11 and 12. These Target Notes relate to evidence of badger activity and are provided in a confidential version of this report. They are also omitted from Figures.

13. A ditch along a line of small-medium trees (beech, holly, pedunculate oak) and a fence. Bilberry is growing along the fence.

14. A marshy grassland field with abundant soft rush tussocks. The area indicated by this target note is dominated by purple moor-grass with occasional cross-leaved heath and scattered small trees/scrub.

15. A shallow pond (less than 10cm deep), approximately 10m in diameter, completely covered in a sedge species (only dead leaves were evident so identification was not possible) and with a small tree-covered island in the centre. The pond is ringed by small trees. The surrounding vegetation includes purple moor-grass with occasional heather and cross-leaved heath and densely growing small trees and scrub (willow species, bramble and alder. A small pond immediately to the south is shown on OS maps. This consisted of small patches of standing water (including wheel ruts) within marshy (rushes, purple moor grass) vegetation.

16. A strip of land around the gas station, which is higher than the surrounding land. There is a gravel strip immediately surrounding the boundary fence then a steep slope covered in soft-rush dominated grassland. At the base of the slope is a mosaic of marshy rush-dominated grassland with dense bramble scrub and wet

woodland. The woodland consists of closely spaced, small and straggly trees composed largely of holly, pedunculate oak, birch, willow and alder.

17. A patch of marshy grassland almost totally dominated by soft rush. Small patch of bulrush were found towards centre of field. The field is surrounded by encroaching scrub and straggly woodland.

18. An area of wet woodland with dense bramble understorey. The species present and structure are as for Target Note 16. Wet underfoot.

19. A small pond within woodland fed by a stream. No emergent/marginal vegetation was in evidence and the pond is surrounded by small saplings.

20. Marshy grassland fields consisting of more than 25% soft rush. The intervening grassland is agriculturally improved, including perennial rye-grass *Lolium perenne*, common mouse-ear and white clover *Trifolium repens*.

21. An area of marshy grassland with approximately 75% soft rush cover. The intervening grassland is semi-improved.

22. An area of marshy grassland almost totally dominated by soft rush. The western boundary fence has heather and purple moor-grass growing along it.

April Survey

1a Improved grassland with short sward grazed by horses. Access to field restricted by presence of horses. Species observed from track include creeping thistle *Cirsium arvense*, perennial rye-grass, broad-leaved dock *Rumex obtusifolius* and creeping bent.

2a Species-poor hedge with hawthorn *Crataegus monogyna* and willow *Salix* sp., grading into old bank boundary with overgrown hedge with oak *Quercus* sp. and holly *Illex aquifolium* and drainage ditch along north side.

3a Semi-improved marshy grassland with very short sward, grazed by horses. Species recorded include soft rush *Juncus effusus*, Yorkshire fog *Holcus lanatus*, perennial rye-grass, creeping buttercup *Ranunculus repens,* silverweed *Potentilla anserina*, white clover *Trifolium repens*, dandelion *Taraxacum officinale* agg.., ribwort plantain *Plantago lanceolata*, lesser spearwort *Ranunculus flammula*, mouse-ear-hawkweed *Pilosella officinarum*, unidentified sedges *Carex* spp.

4a Marshy grassland with small copse of willow, oak and birch *Betula* sp., fenced off from horses with head of spring in centre. Potential for terrestrial phase amphibians and reptiles in sunny hedgebank and refugia provided by piles of dead wood and nesting birds in trees. Species recorded include common bent Agrostis capillaris, Yorkshire fog, soft rush, creeping bent, sweet grass *Glyceria* sp., wavy bittercress *Cardamine flexuosa*, creeping buttercup, curled dock *Rumex crispus*, broad-leaved willowherb *Epilobium montanum*, bird's-foot-trefoil *Lotus corniculatus*, lady fern *Athyrium felix-femina*.

5a Area of dense bramble *Rubus fruticosus* agg. scrub and willow regeneration immediately beneath power lines which links to wooded spur to west and marshy grassland copse to east.

6a Small wooded spur with tree species including oak, birch, holly, hawthorn with an understorey dominated by brambles and including ivy *Hedera helix*, creeping bent, Yorkshire fog, soft rush, hard fern *Blechnum spicant*, scaly male fern *Dryopteris affinis*, and bracken *Pteridium aquilinum*.

7a Bank feature delineating boundary of small field (see 8) with birch and willow regeneration and mature oak to southern end. Ground flora dominated by bracken and bramble with bluebell *Hyacinthoides non-scripta* and bilberry *Vaccinium myrtillus* to south.

8a Small field dominated by bramble scrub with bracken, broad-leaved willowherb and soft rush. Grades into copse of birch and willow regeneration to east with ephemeral ditch along south and east boundaries.

9a Large field of wet dwarf shrub heath, dominated by purple moor grass *Molinia caerulea* with soft rush, bracken, common haircap moss *Polytrichum commune*, unidentified sphagnum moss *Sphagnum* sp., ling *Calluna vulgaris*, cross-leaved heath *Erica tetralix* and bilberry along margins. Some birch and willow regeneration in small scattered copses.

10a Badger snuffle holes and intermittent trails.

11a Mature oak.

12a Mature alder *Alnus glutinosa*.

13a Semi-improved grassland with high proportion of herbs and low proportion of grass. Species recorded include soft rush, ribwort plantain, mouse-ear-hawkweed, dandelion, daisy *Bellis perennis*, self-heal *Prunella vulgaris*, white clover, creeping buttercup, broad-leaved willowherb, bird's-foot-trefoil, common mouse-ear *Cerastium fontanum*, yarrow *Achillea millefolium*, marsh thistle *Cirsium palustre* and with lesser spearwort, water figwort *Scrophularia aquatica* and horsetails *Equisetum* sp. in the southern corner.

14a Wooded stream corridor with oak, hawthorn, birch and occasional alder. Understorey dominated by bramble scrub.

15a Embankment of large raised area with mature trees on banks. Northern side with young willow, hawthorn, birch, elder *Sambucus nigra*, rowan *Sorbus aucuparia* and semi-mature / mature oak. Ground flora dominated by brambles but with hart's-tongue fern *Asplenium scolopendrium*, lady fern, hard fern, scaly male fern, unidentified polypody fern *Polypodium* sp., common nettle *Urtica dioica* and dog's mercury *Mercurialis perennis*. Several stands of Japanese knotweed Fallopia japonica identified.

16a Mature oak tree.

17a Mature oak tree.

18a Wooded stream corridor with willow and elder and intermittent bramble scrub. Species recorded include common nettle, broad-leaved willowherb, horsetails, water figwort, soft rush, hard fern, bracken, angelica *Angelica sylvestris*, herb Robert *Geranium robertianum* and pendulous sedge *Carex pendula*. Stand of Japanese knotweed at bend in stream.

19a Stand of bramble scrub within willow and birch regeneration with damp substrate supporting reed canary grass *Phalaris arundinacea*. Lots of piles of dead wood.

20a Irrigation ditch, occasional young birch and willow with purple moor-grass, soft rush and bracken. Ditch dry.

21a Large field superficially similar to 9a but appears to have been managed. Purple moor-grass not as dominant, lots of bare earth and young ling and cross-leaved heath plants. In addition hare's-tail cotton grass *Eriphorum vaginatum*, deergrass *Trichophorum germanicum* and lousewort *Pedicularis* sp.

22a Field drain holding water with common reed *Typha latifolia*, broad-leaved pondweed *Potamogeton natans* and water-plantain *Alisima plantago-aquatica*. Common lizard *Lacerta vivipara* directly observed on bank of ditch.

23a Wooded copse comprised of young birch and willow with understorey of bramble scrub and ground flora comprising common nettle, lady fern, scaly male fern, wood false brome *Brachypodium sylvaticum*. Himalayan balsam *Impatiens glandulifera* seedlings abundant. There is also a ditch with very shallow, ponded, oily water with no aquatic vegetation.

24a Drainage ditch holding water, and with dense stands of sphagnum moss in bottom of ditch. Steep sides with ling, cross-leaved heath and purple moor-grass.

25a Birch.

26a Improved grassland with very short sward, grazed by horses. Horses present, not surveyed in detail.

27a Area of partially colonised tipped spoil, being re-graded at time of survey. Bramble and willow scrub around margins / banks and horse training area to North. Species recorded in this area include bramble, gorse *Ulex europea*, curled dock, broad-leaved dock, common nettle, a brassica *Brassicaceae*, creeping thistle, colt's foot *Tussilago farfara*, foxglove *Digitalis purpurea*, wavy bittercress, bird's-foot trefoil, Yorkshire fog and white clover.

28a Area of deciduous woodland and scrub comprising occasional mature oak with hazel *Corylus avellana*, holly, birch, rowan, willow, a scrub layer of bramble and a ground flora including bluebells, hard fern, soft rush, creeping bent, common bent, a spurge *Euphorbiaceae*, wood false-brome and abundant Himalayan balsam seedlings. Area contains many piles of fallen deadwood and there is a bank feature along part of the northern boundary.

29a Mature ash *Fraxinus excelsior*.

30a Earth works with large percentage bare, waterlogged earth. In undisturbed marginal sloped areas gorse, willow and bramble scrub is present.

31a Improved grassland with very short sward, grazed by horses. Species recorded include perennial rye-grass, common bent, occasional soft rush, daisy, broad-leaved dock, mouse-ear hawkweed, white clover, dandelion, cocksfoot *Dactylis glomerata*, annual meadow grass *Poa annua* and couch grass *Elymus repens* with approximately 20% bare earth.

32a Bank field boundary with many mature but small holly trees and ground flora of grazed improved grassland.

33a Semi-improved grassland similar in composition to 38 but with very short sward, grazed by horses.

34a Stone wall / bank delineating eastern edge of domestic property.

35a Mature oak.

36a Treeline along track with mature / semi-mature oak, and scrub layer comprising gorse and bramble. There are many loose rocks and exposed tree roots with a wet ditch along the northern side fringed by soft rush. The water is ponded and shallow with no aquatic plants observed.

37a Mature oak.

38a Semi-improved grassland on a sloped field with a spring issuing in the centre. There are occasional scrub stands comprised of hawthorn, bramble, willow, gorse with common nettles and cleavers *Galium aparine*. The slope is not uniform and there are wetter areas indicated by stands of soft rush. Other species recorded include perennial rye-grass, creeping bent, common bent, Yorkshire fog, cocksfoot, creeping thistle, marsh thistle, broad-leaved dock, dandelion, daisy, yarrow, creeping buttercup.

39a Damp drainage ditch with soft rush, common reed, broad-leaved willowherb and occasional pendulous sedge. No visible standing water as vegetation very dense. Likely to be ephemeral.

40a Area where soft-rush dominant and very low percentage of grass. Herbs recorded include common sorrel *Rumex acetosa*, knotgrass *Polygonum aviculare*, common mouse-ear, creeping buttercup, wavy bitter-cress and cleavers.

41a Stream, flowing water approximately 30cm deep, good water quality, moderate flow. Bankside vegetation including lesser water-parsnip *Berula erecta*, horsetails *Equisetum* sp., reed canary-grass, angelica, broad-leaved willowherb, bramble, bracken, soft rush, common nettle, hard fern, common haircap moss, cuckoo pint and lesser celandine *Ranunculus ficaria*. Stream fringed by regenerating birch and willow scrub.

42a Tree-lined stream corridor with mature / semi-mature oak trees along Eastern edge with occasional birch, willow, ash and holly. Understory of gorse with bramble scrub and soft rush grading into improved grassland to east. Along western bank, grassland typical of wider area but with longer sward (low-density sheep-grazing) and also including sweet vernal grass *Anthoxanthum odoratum*, crested dog's tail *Cynosurus cristatus*, a fescue *Festuca* sp. and field wood rush *Luzula campestris*.

43a Large mammal slide and run to hole under bank / tree on eastern side of bank. Many vole tunnels along western side of bank in long tussocky grass.

44a Mature oak.

45a Drainage ditch and area of marshy grassland including species such as horsetails, flote-grass, lesser water-parsnip, angelica and soft rush.

46a Area of improved grassland with short sward, grazed by sheep. Contains piles of semi-colonised rubble with common nettles and gorse.

47a Curtilage of old barns containing a number of mature / dead ash trees.

Appendix 2: Photographs

Habitats

Photo 1: Improved grassland with defunct hedge.

Photo 2: Marshy grassland at TN3.

Photo 3: Marshy grassland at TN5.

Photo 4: Marshy grassland at TN22.

Photo 5: Marshy grassland at TN14.

Photo 6: Woodland at TN10.

Habitats – April Survey

Photo 1a: Hare's-tail cottongrass

Photo 2a: Improved grassland

Photo 3a: Semi-improved grassland at TN3a

Photo 4a: Marshy grassland at TN21a

Photo 5a: TN22a Field drain

Photo 6a: Stream corridor at TN42

Photo 7: Woodland at TN18.

Photo 8: Stream in woodland TN10.

Photo 9: Stream at TN9.

Ponds surveyed with HSI method

Photo 10: Pond P1 within water treatment works.

Photo12: Pond P3.

Photo 14: Pond P5.

Photo 11: Pond P1 within water treatment works.

Photo 13: Pond P4.

Photo 15: Pond P6.

Photo 16: Pond P7.

Trees with potential for roosting bats

Photo 17: T1

Photo 18: T2

Photo 19: T3

Photo 20: T4

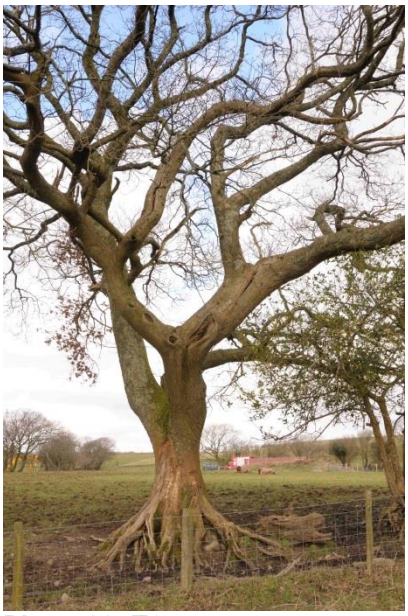

Photo 21: T5

Photo 22: T6

Reptiles – examples of suitable habitat.

Photo 24: Mounds of wood south of TN10.

Photo 25: Tussocky grassland suitable for reptiles.

Badger – images providing evidence of badgers are provided in a confidential version of this report.

Buildings

Photo 26: Abergelli Farm

Photo 27: Abergelli Farm Stables

Photo 28: Barn to south of Abergelli Farm

Photo 29: Barn to North of Abergelli Farm

Photo 30: Building adjacent to barn at Photo 4

Photo 31: Bunker at TN4

Appendix 3: Bat Tree Survey Results

6.1

ID	OSGR	Species	Category	Height	DBH (cm)	Type	Aspect	Extent	Height	Canopy	U-storey
T1	SN6539002532	Oak	2	12m	110	Extensive ivy cover on stem with lifted plates	N		4-8m	20	0
T2	SN6525601938	Birch	2	5m	40	Cavity- small hollows on both stems	E	0.4x0.2m	1-2m	0	0
T3	SN6530601421	Birch	2	8m	100	Woodpecker hole	SW		4m	0	0
T4	SN6534301853	Oak	1	10m	90	Two splits one open one less obvious	S		5 and 5 m	0	0
T5	SN6545501412	Birch	2	14m	160	Rot hole – extent unknown			4m	50	10
T6	SN6547501418	Birch	2	15m	80	Rot hole	NW	0.5m	2-3m	50	0
T7	SN6540101683	Oak	2	17m	80	Thick ivy and hollow trunk exposed	N		Throughout	0	0
T8	SN6509901209	Oak	2	17m	200	Recently cut limb has revealed rot hole within	S	0.1m	2m	50	25
T9	SN6517002031	Oak	2	15m	80	Split limb	N			0	0
1404-01	TN6 – N edge	Oak	2		30	WPH x 5	All	2-4m AGL	2-4m AGL	50	20
1401-02	TN6 – N edge	Oak	2		30	Hollow @ base	N	0.2 x 0.5	0-1m AGL	50	20
						Split in branch	?		8m AGL	50	20
1404-03	TN6 – N edge	Oak	2		100	Cavity / rot back			6m AGL		
						Split limb	E		6m AGL		
1404 - 04	TN11	Oak	2		50	Dense ivy	All	All	All	50	50
1404 -05	TN12	Alder	2		40	Hollow limb			6mAGL	50	50
1404 - 06	TN16	Oak	2		60	Multiple splits	N and E		4m AGL	50	50
1404 -07	TN17	Oak	2		40	WPH	S	10cm diameter	4mAGL	50	50
1404-07	TN 25	Birch	2		60	Dense ivy	All	All	All	50	50
1404-08	TN29	Ash	1		75	Rot hole	N		3mAGL	50	50
						Hollow limb	N		7mAGL		
1404-09	TN35	Oak	2		60	Hollow limb	N		5mAGL	50	50
						Cavity main stem	W		4mAGL		

						Split / hollow limb	W		5mAGL		
1404-10	TN37	Oak	2		40	Slit main stem	Up		6mAGL	50	50
						Rot hole /hollow	S		3mAGL		
1404-11	TN44	Oak	2		100	Dense ivy	All	All	All	50	50

Appendix 4: HSI Results

Pond	HSI	Value for great crested newts
P07	0.67	Average
P08	0.77	Good
P09	0.47	Poor
P10	0.64	Average
P16	0.66	Average
P17 on site	0.61	Average
P18 on site	0.53	Below average

Pond Ref.	Location	Pond Area M^2	Pond permanence	Water Quality	Pond Shading %	No. of waterfowl	Occurrence of fish	Pond density	Proportion of newt friendly habitat around pond within 500m – Any Barriers?	Macrophyte content (est % total of emergent and submerged macrphytes)	Notes
P08	SN6463502258	240	Never dries	Good	10	Minimal	Possible	Y	Good	30	Typha and rushes around edge. Close access not possible.
P07	SN6464602272	150	Never dries	Good	30	Minimal	Possible	Y	Good	0	Not well vegetated.
P10	SN6548702727	70	Sometimes dries	Good	5	Minimal	Possible	Y	Good	20	Small and shallow.
P09	SN6535602709	20	Annually dries	Moderate	30	Absent	No	Y	Good	0	Very shallow and unlikely to fill up – probably mostly dry.
P16	SN6558701536	25	Sometimes	Good	60	Absent	No	Y	Good	40	
P17	SN6559801237	100	Annually dries	Good	80	Absent	No	Y	Good	100	Water shallow and covered in Carex species. To south consists of patches of standing water within Molinia
P18	SN6503101199	50	Never	Moderate	100	Absent	No	Y	Moderate	0	Small pond within woodland – water dark and no aquatic vegetation in evidence.

Appendix 5: Bird species recorded during Phase 1 survey.

Latin Name	Common Name
Mallard	*Anas platyrhynchos*
Buzzard	*Buteo buteo*
Red kite	*Milvus milvus*
Woodpigeon	*Columba palumbus*
Great spotted woodpecker	*Dendrocopos major*
Meadow pipit	*Anthus pratensis*
Pied Wagtail	*Motacilla alba yarrellii*
Dunnock	*Prunella modularis*
Wren	*Troglodytes troglodytes*
Robin	*Erithacus rubecula*
Blackbird	*Turdus merula*
Song Thrush	*Turdus philomelos*
Mistle thrush	*Turdus viscivorus*
Redwing	*Turdus iliacus*
Blue Tit	*Parus caeruleus*
Great Tit	*Parus major*
Long tailed tit	*Aegithalos caudatus*
Magpie	*Pica pica*
Jackdaw	*Corvus monedula*
Carrion crow	*Corvus corone*
Rook	*Corvus frugilegus*
House sparrow	*Passer domesticus*
Chaffinch	*Fingilla coelebs*
Greenfinch	*Carduelis chloris*
Goldfinch	*Carduelis carduelis*
Reed bunting	*Emberiza schoeniclus*

Appendix 6: Summaries of Relevant Legislation, Policy and Other Instruments

National Planning Policy

6.2 Technical Advice Note (TAN) 5 provides Welsh Assembly Government advice about how the land use planning system in Wales should contribute to protecting and enhancing biodiversity and geological conservation.

6.3 It follows that the TAN provides guidance to local planning authorities on: the key principles of positive planning for nature conservation; nature conservation and Local Development Plans; nature conservation in development management procedures; development affecting protected internationally and nationally designated sites and habitats; and, development affecting protected and priority habitats and species.

6.4 Planning considerations with regard to habitats and species are of greatest relevance to the Abergelli Farm proposal. For a full account, the TAN should be referred to, but some of the key principles are summarised as follows:

i. When dealing with cases where a European protected species of plant or animal may be affected, a local planning authority needs to have regard to the requirements of the Habitats Directive in the exercise of its functions.

ii. The TAN refers to the Wildlife and Countryside Act 1981 (as amended), which makes it an offence (with certain limited exceptions and in the absence of a licence) to intentionally to kill, injure or take any wild bird, or to damage, take or destroy the nest of any wild bird whilst that nest is being built or in use, or to take or destroy its eggs. Further offences apply to species listed under Schedule 1 of the Act.

iii. The above Act also affords protection to wild animals of the species listed in Schedule 5, and to wild plants listed in Schedule 8, most of which are not European protected species. Actions that are likely to result in an offence are identified;

iv. With regard to badger, Meles meles, the TAN refers to the provisions of the Protection of Badgers Act, 1992;

v. The TAN makes reference to Sections 40 and 42 of the Natural Environment and Rural Communities Act 2006, which place a duty on the Welsh Assembly Government to have regard to the purpose of conserving biodiversity (see Section 1.10 of this report);

vi. In section 2.4 it is noted that when deciding planning applications that may affect nature conservation, local planning authorities should protect wildlife and natural features in the wider environment, with appropriate weight attached to priority habitats and species in Biodiversity Action Plans;

vii. When determining planning applications, planning authorities should ensure that all material considerations are taken into account, that decisions are informed by adequate information about the potential effects of development on nature conservation, and that the range and population of protected species is sustained;

viii. Planning applications should demonstrate a step-wise approach to avoid harm to nature conservation, minimise unavoidable harm by mitigation measures, offset residual harm by compensation measures and look for new opportunities to enhance nature conservation.

UK Post-2010 Biodiversity Framework

6.5 The Environment Departments of all four governments in the UK work together through the Four Countries Biodiversity Group. Together they have agreed, and Ministers have signed, a framework of priorities for UK-level work for the Convention on Biological Diversity. Published on 17 July 2012, the 'UK Post-2010 Biodiversity Framework' covers the period from 2011 to 2020.

6.6 Most work which was previously carried out under the UK Biodiversity Action Plan (UK BAP) is now focussed in the four countries of the UK through the new framework. The UK BAP partnership no longer operates but includes detailed Action Plans for priority habitats and species, which are still in use and of relevance. The list of priority habitats and species included within the UK BAP list is equivalent to the list of Section 42 habitats and species.

6.7 The UK BAP is supported by a series of Local Biodiversity Action Plans (LBAPs), usually set up on a local authority administrative boundary basis. Each LBAP identifies those habitats and species considered to be most important in that area (usually referred to as priority habitats and species). Commonly, an LBAP will identify a number of habitats and species for which "action plans" have been prepared. The Swansea LBAP is was created in 2005 but is unavailable as it is under review.

Wildlife Legislation

6.8 Legislation of most relevance to this assessment includes the following:

Natural Environment and Rural Communities (NERC) Act 2006

6.9 Section 40 of the Natural Environment and Rural Community Act (NERC) 2006 sets out the duty which public authorities have to conserve biodiversity. Section 40 States that: "every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity". The term Public Authority includes local authorities and local planning authorities.

6.10 Paragraph 40(3) goes on to state that "conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat".

6.11 Paragraph 42(1) states that "the Secretary of State must, as respects Wales, publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity". This replaces a similar reference to the list that was found in Section 74 of the Countryside and Rights of Way Act 2000 (the CRoW Act).

The Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000)

Protection afforded to birds

6.12 Section 1 of the Wildlife and Countryside Act 1981 (WCA) prohibits the intentional killing, injuring or taking of any wild bird and the taking, damaging or destroying of the nest (whilst being built or in use) or eggs. Section 1 also prohibits disturbing any bird listed on Schedule 1 of the Act whilst at or near the nest and prohibits disturbing the dependent young of such birds.

Protection afforded to other animals

6.13 Species listed on Schedule 5 that may be of relevance to this site include GCNs, bats, otter, water vole and all species of reptiles. The places of shelter used by otter and water vole are protected, but reptiles are protected from killing and injury only.

Protection afforded to Sites of Special Scientific Interest (SSSIs)

6.14 Section 28 allows for the creation of SSSIs by the government (through Natural Resources Wales in Wales) where Natural Resources Wales (NRW) "is of the opinion that any area of land is of special interest by reason of any of its flora, fauna, geological or physiographical features."

6.15 Section 28G specifies the duty of specific public authorities (including local authorities) to further the conservation and enhancement of the features by reason of which the site is designated and also to notify NRW of operations likely to damage such features in order that NRW may consent to or refuse permission for such operations.

The Conservation of Habitats and Species Regulations 2010

6.16 The Conservation of Habitats and Species (Amendment) Regulations 2012 consolidates the various amendments that have been made to the Regulations. The original (1994) Regulations transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

6.17 "European protected species" (EPS) are those which are present on Schedule 2 of the Conservation of Habitats and Species Regulations 2010. They are subject to the provisions of Regulation 41 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

a) Intentionally or deliberately capture, injure or kill any wild animal included amongst these species;

b) Possess or control any live or dead specimens or any part of, or anything derived from a these species;

c) Deliberately disturb wild animals of any such species;

d) Deliberately take or destroy the eggs of such an animal; or

e) Intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place.

6.18 For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

a) to impair their ability—

I. to survive, to breed or reproduce, or to rear or nurture their young, or

II. in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

6.19 To affect significantly the local distribution or abundance of the species to which they belong.

6.20 Although the law provides strict protection to these species, it also allows this protection to be set aside (derogated) through the issuing of licences. The licences in England are currently determined by NE for development works. In accordance with the requirements of the Regulations (2012), a licence can only be issued where the following requirements are satisfied:

a) The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment';

b) 'There is no satisfactory alternative'; and

c) The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.

6.21 EPS that may be relevant to this proposal include GCNs, bats, dormouse and otter.

Invasive Species Legislation

6.22 Japanese knotweed and Himalayan balsam are both listed on Part 2, Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Section 14 of the Act states that it is an offence for a person to plant or otherwise cause to grow in the wild any species listed on Part2, Schedule 9. The Environmental Protection Act 1990 contains a number of legal provisions concerning 'controlled waste'. Any soil or plant material contaminated with Japanese knotweed that is to be discarded is classified as controlled waste.