



# ABERGELLI POWER PROJECT PRELIMINARY ENVIRONMENTAL INFORMATION REPORT NON- TECHNICAL SUMMARY

*Abergelli Power Ltd*

PB Ref: 287521A  
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# **Abergelli Power Project Preliminary Environmental Information Report Non- Technical Summary**

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## **1 INTRODUCTION**

### **1.1 Overview**

- 1.1.1 This document is the non-technical summary of the Preliminary Environmental Information Report (PEIR) prepared for the proposed Abergelli Power Project (hereafter referred to as '**the Project**'). The PEIR has been prepared by Parsons Brinckerhoff on behalf of Abergelli Power Limited (APL).
- 1.1.2 The Project proposed is a gas-fired power station with a rated electrical output of between 50 and 299 Megawatts (MW). It is intended to be a 'peaking' plant designed to operate when there is a surge in demand for electricity associated with a particular stress event (e.g. where there is a sudden demand in power required by consumers or a sudden drop in power being generated by plants which are constantly operational, such as a sudden outage).
- 1.1.3 An Environmental Impact Assessment (EIA) is being undertaken to determine the likely significant effects of the project on the environment. The purpose of the PEIR is to present preliminary environmental information relating to the Project, including the preliminary findings of the EIA. This will enable consultees, including the local community, to understand the potential likely significant environmental effects of the Project, so they can provide a comprehensive response to the consultation.
- 1.1.4 Copies of the PEIR, NTS and other consultation material including APL's Statement of Community Consultation will be available at five local libraries as well as City and County of Swansea Council offices during the statutory consultation period from 13<sup>th</sup> October 2014 to 16<sup>th</sup> November 2014. In addition, the PEIR, NTS and other consultation material will be available on the APL website ([www.abergellipower.co.uk](http://www.abergellipower.co.uk)) from 13<sup>th</sup> October 2014 and at public exhibitions which will be held by APL in Llangyfelach, Felindre, Clydach and Tircoed between 22<sup>nd</sup> and 25<sup>th</sup> October 2014. Feedback received during the consultation process will help inform the development and design of the Project. Further detail about how feedback can be provided to APL is available in the Statement of Community Consultation.
- 1.1.5 Once complete, the findings of the EIA will be reported in full in the Environmental Statement to be submitted with the Application for a Development Consent Order.

## 1.2 The Project

1.2.1 The Project (see Figure 1.1) would comprise:

- A new **Power Generation Plant** in the form of a Simple Cycle Gas Turbine (SCGT) generating station fuelled by natural gas and with a rated electrical output of up to 299 MW which will operate during peak demand comprising;
  - The **Generating Equipment** including the Gas Turbine Generators and Plant which are located on the **Generating Equipment Site**;
  - A new **Access Road** to the Generating Equipment Site. Two options are currently under consideration: from the north via Rhyd-y-pandy Road (Option 1); or from the west via the B4489 (Option 2);
  - A temporary construction compound (**Laydown Area**);
- A new **Gas Connection** to bring natural gas to the Generating Equipment from the National Transmission System; 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.

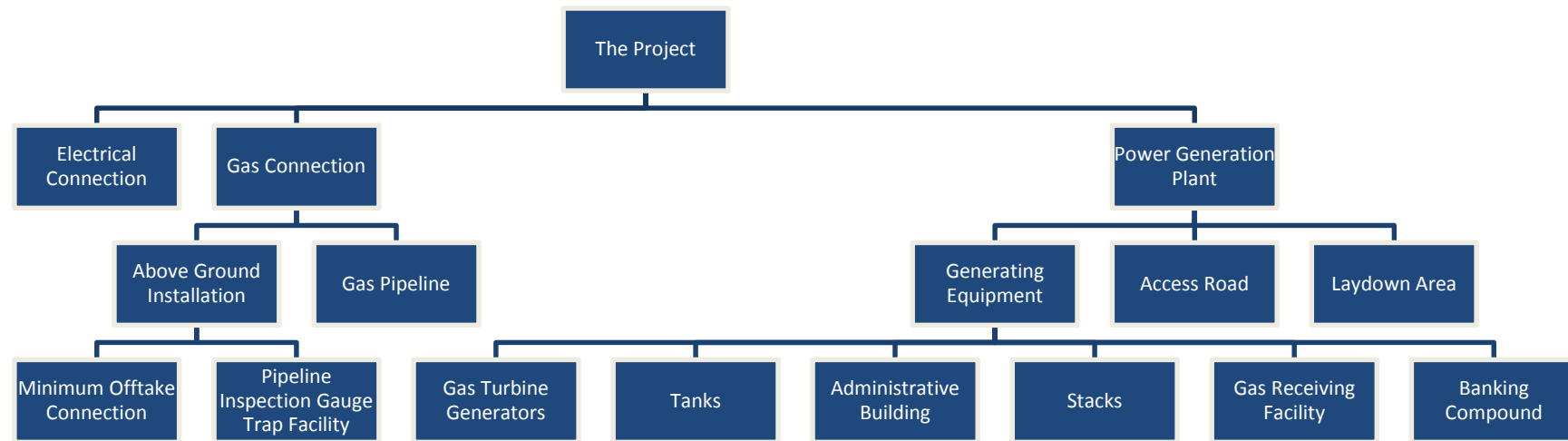
1.2.2 The Generating Equipment, Access Road and Laydown Area are together known as the **Power Generation Plant**, and are located within the **Power Generation Plant Site**.

1.2.3 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**'. Figure 1.1 shows how the elements of the Project relate to each other.

1.2.4 The Generating Equipment would consist of between one and five Gas Turbine Generators (and associated stacks of up to 40m). However, the combined rated electrical output will not exceed 299MW.

1.2.5 In the Gas Turbine Generators air is compressed and natural gas is injected. The fuel will then burn in the combustion chamber producing hot, high pressure gases. This gas expands across the blades of the gas turbine which drives the electrical generators to produce electricity. The exhaust silencer will reduce noise pollution from this process.

- 1.2.6      The waste gases and heat produced from this process will be released to the atmosphere via stacks. The stack(s) will be equipped with emissions control technologies which will reduce emissions released to the atmosphere.



**Figure 1.1: Project Description**

- 1.2.7 A Construction Environmental Management Plan will be prepared to mitigate environmental effects during construction. This will include measures to control dust, litter, noise and spillages. A Construction Traffic Management Plan will be prepared which will set out the routes construction traffic must use and during which hours. A Travel Plan will be prepared to encourage construction workers to minimise use of the private car.

### **1.3 Application for Development Consent**

- 1.3.1 In Wales, an onshore electricity generating station is considered to be a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008<sup>1</sup> if its generating capacity is more than 50 MW. As the Project would have an electrical generating capacity of more than 50 MW it would be classified as a NSIP and therefore a Development Consent Order is required. It is therefore intended that an Application for a Development Consent Order will be submitted to the Planning Inspectorate for examination on behalf of the Secretary of State for Energy and Climate Change.

### **1.4 The Applicant**

- 1.4.1 The Project Applicant is APL. APL is an energy development company established for the Project by Watt Power Limited. Further information on the companies is provided at <http://www.abergellipower.co.uk> and <http://www.wattpowerltd.co.uk>.

### **1.5 Needs and Benefits of the Project**

- 1.5.1 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 closure of coal-fired power plants and the likely increase in demand for electricity over the coming decades.
- 1.5.2 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.

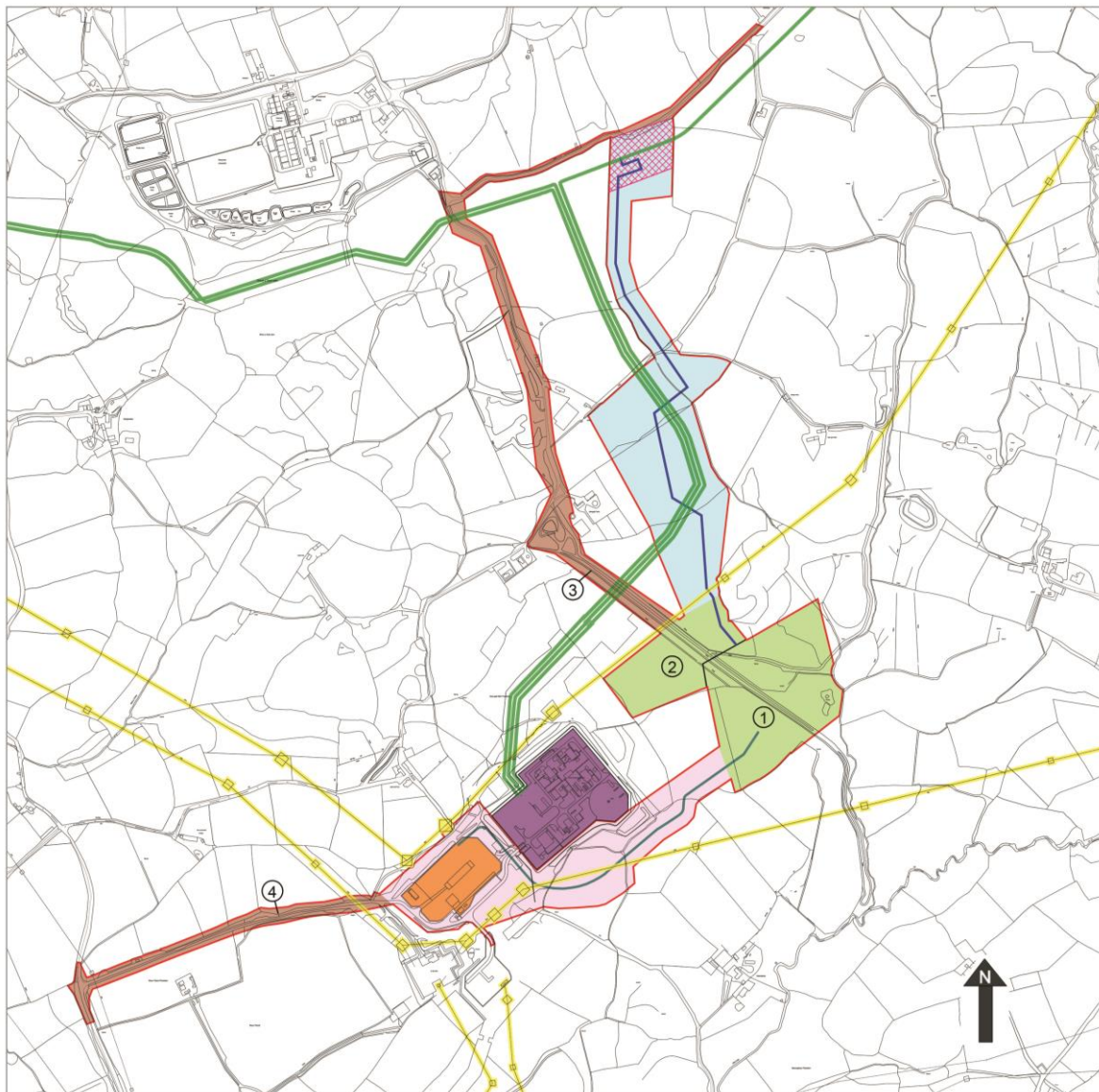
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<sup>1</sup> Planning Act 2008 <http://www.legislation.gov.uk/ukpga/2008/29/contents>

## **2 SITE AND SURROUNDINGS**

- 2.1.1 The Project Site is situated predominantly on farmland and will be accessed from Junction 46 of the M4 to the north of Swansea, in the administrative area of the City and County of Swansea Council. It is approximately 1 km southeast of Felindre, 760 m west of Llwyncelyn and 1.4 km north of Llangyfelach.
- 2.1.2 From the M4 there are two access options being considered at this stage: Option 1 from the north via the Rhyd-y-pandy Road utilising the existing farm road which runs north/south; and Option 2 from the west via the B4489 utilising the existing National Grid road and then via agricultural land to the west of the Generating Equipment Site and land following the southern boundary of the Gas Compressor Station.
- 2.1.3 Part of the Project Site is currently used for grazing as well as horse training and breeding. The western extent of the Project Site encompasses National Grid's Swansea North electrical substation and Felindre Gas Compressor Station.
- 2.1.4 The Power Generation Plant Site is located primarily within fields used for grazing bounded by a mixture of drainage ditches, fencing and defunct hedgerows with substantial gaps in them.
- 2.1.5 The Gas Connection is located north of the Generating Equipment Site crossing farmland. The Electrical Connection is located to the south west of the Generating Equipment Site linking in to the existing Gas Compressor Station.
- 2.1.6 The area surrounding the Project Site is partly rural with some existing and planned urban fringe development (e.g. Park and Ride Facilities) together with a substantial amount of utilities infrastructure in the area.





Legend:

- |   |   |   |                                 |
|---|---|---|---------------------------------|
| <span style="border: 1px solid red; display: inline-block; width: 20px; height: 10px;"></span>  | Proposed Redline Boundary (Incorporating Alternative Options) | ① | Generating Equipment Site       |
| <span style="background-color: lightblue; display: inline-block; width: 20px; height: 10px;"></span>  | Gas Connection Route Corridor                                 | ② | Laydown Area                    |
| <span style="background-color: pink; display: inline-block; width: 20px; height: 10px;"></span>   | Electrical Connection Route Corridor and Access Road Corridor | ③ | Access Road Corridor - Option 1 |
| <span style="background-color: brown; display: inline-block; width: 20px; height: 10px;"></span>  | Access Road Corridor Only                                     | ④ | Access Road Corridor - Option 2 |
| <span style="background-color: green; display: inline-block; width: 20px; height: 10px;"></span>  | Generating Equipment Site and Laydown Area                    |   |                                 |
| <span style="background-color: purple; display: inline-block; width: 20px; height: 10px;"></span>   | Existing Gas Compressor Station                               |   |                                 |
| <span style="background-color: orange; display: inline-block; width: 20px; height: 10px;"></span>   | Existing Swansea North Electricity Substation                 |   |                                 |
| <span style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); display: inline-block; width: 20px; height: 10px;"></span> | Indicative AGI Location                                       |   |                                 |
| <span style="border-bottom: 2px solid yellow; display: inline-block; width: 20px;"></span>  | 400kV Overhead Electricity Transmission Lines                 |   |                                 |
| <span style="border-bottom: 2px solid green; display: inline-block; width: 20px;"></span>   | National Gas Transmission System                              |   |                                 |
| <span style="border-bottom: 2px solid blue; display: inline-block; width: 20px;"></span>  | Indicative Electrical Connection Route                        |   |                                 |
| <span style="border-bottom: 2px solid purple; display: inline-block; width: 20px;"></span>  | Indicative Gas Connection Route                               |   |                                 |

**Figure 2.1 Site Location Plan**

### **3 REGULATORY AND POLICY BACKGROUND**

- 3.1.1 The EIA takes into account all relevant European Union Directives and National Policy Statements which relate specifically to NSIPs, Welsh and local planning policy, and other relevant policy and guidance.

### **4 ENVIRONMENTAL IMPACT ASSESSMENT**

- 4.1.1 In accordance with the Planning Act 2008, as amended, and the Infrastructure Planning (EIA) Regulations 2009, the EIA process for the Project includes the following:

- Establishing, through consultation, the scope of the EIA including obtaining a Scoping Opinion from the Secretary of State;
- Consideration of any potential technical and environmental alternatives;
- Establishing a comprehensive understanding of the existing baseline environmental conditions for the Project Site and the relevant study areas for each topic;
- Identifying the potential environmental effects resulting from the construction, operation and decommissioning of the Project;
- Determining how the potential environmental effects can be avoided, reduced or off-set;
- Assessing the significance of the potential environmental effects in conjunction with other effects arising from the Project and those from other reasonably foreseeable neighbouring developments and/or sources; and
- Proposing options as to how any significant adverse residual effects will be mitigated, managed and monitored.

- 4.1.2 APL requested a Scoping Opinion from Planning Inspectorate in June 2014. The request was supported by a Scoping Report that described the anticipated significant environmental issues that will require detailed evaluation as part of the EIA process. The Scoping Opinion was received in August 2014. It has allowed for agreement on the potential likely significant environmental effects of the Project and, therefore, the aspects of the environment on which the EIA should focus.

- 4.1.3 The organisations that have been consulted so far include:

- Natural Resources Wales;
- South and West Wales Wildlife Trust;
- Abertawe Bro Morgannwy;

- Civil Aviation Authority;
- Ministry of Defence;
- Cadw;
- Brecon Beacons National Park Authority;
- City and County of Swansea Council;
- Network Rail; and
- The Coal Authority.

4.1.4 The detailed design of the Project will take place at a later stage in the development process, and only after a successful DCO application. At this stage the Project is described using maximum (and in some cases minimum) parameters which cannot be exceeded. As described in section 2 above, the Project would include up to five Gas Turbine Generators each with a stack of up to 40m in height. Therefore, the assessment of the Project for each topic is carried out on the basis of the worst case scenario from within the parameters for that topic (this is known as the Rochdale envelope approach and is an accepted method for describing and assessing projects of this type).

4.1.5 The PEIR is an intermediate step in the EIA process which provides a preliminary assessment and highlights which issues need to be assessed further.

4.1.6 Due to the nature and location of the Project, it is considered that there will be no impacts caused by the Project that will affect any other EU Member State. A Transboundary Screening assessment has been undertaken by the Planning Inspectorate which confirms this approach.

4.1.7 This Report provides a non-technical summary of all of the topic areas with the PEIR, which are as follows:

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

## **5 ALTERNATIVES**

### **5.1 Alternative Project Sites**

- 5.1.1 The choice of site for the Power Generation Plant has been carefully considered with various sites investigated and a number of factors looked at during this process. The main factors determining the selection of the Power Generation Plant Site are: proximity to Gas and Electrical Connection points; setting; and road access. The Project Site has been selected as it presents the best option in terms of the determining factors detailed above.

### **5.2 Project Site Boundary**

- 5.2.1 The Project Site boundary outlined in red on Figure 2.1 has been reduced in size from the 'Scoping' stage to take account of the design refinement, including seeking to avoid environmentally sensitive areas, in relation to Gas and Electrical Connection routes.

### **5.3 Power Generation Plant**

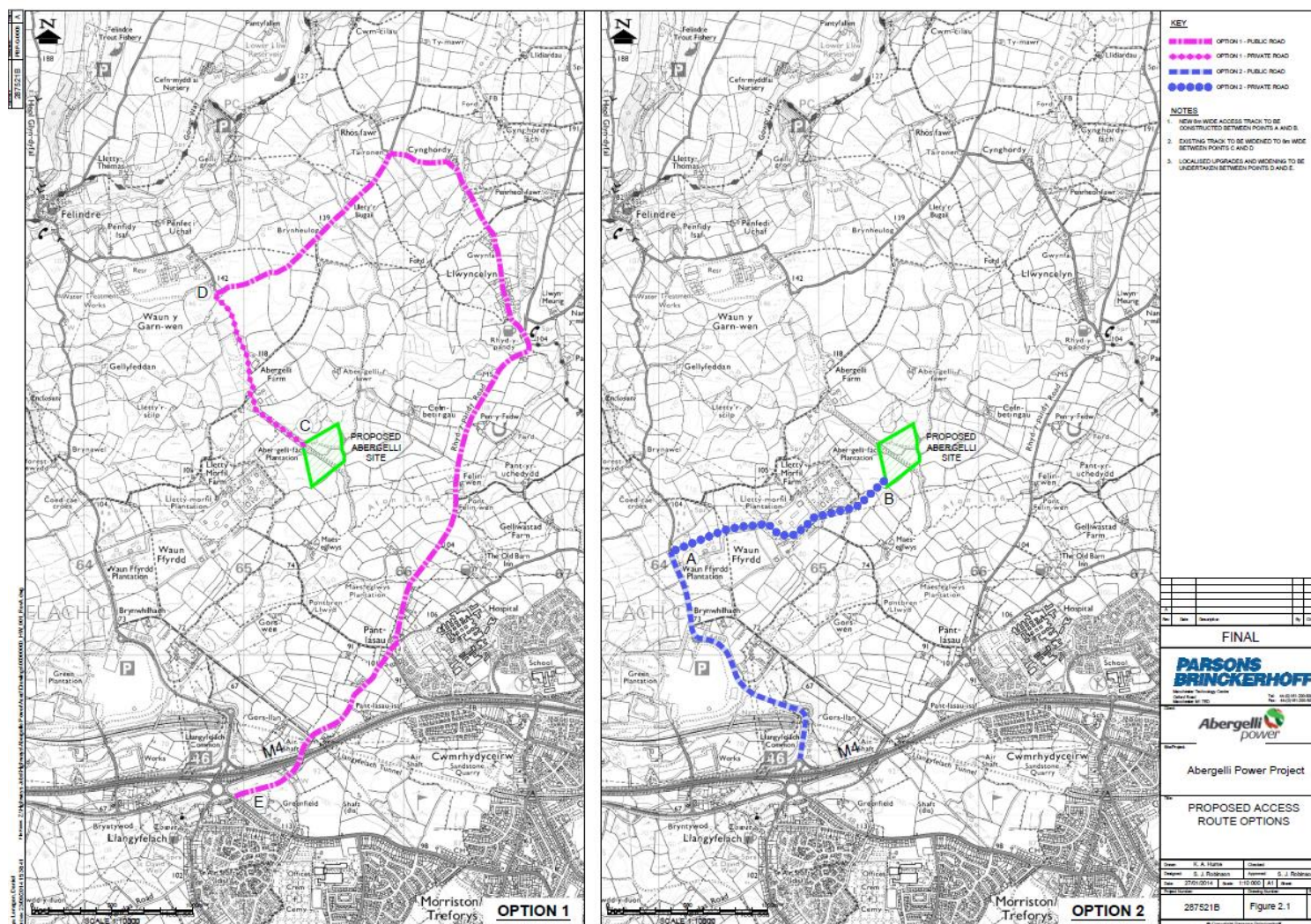
- 5.3.1 The Generating Equipment would be designed as a peaking plant and would operate for up to 1,500 hours per year. Peaking plants are required to operate when there is a 'stress event'. This occurs when there is a surge in demand for electricity or where there is a sudden drop in power being generated from plants which are constantly operational. Given these parameters, it has been determined that a Simple Cycle Gas Turbine plant is the preferred and most appropriate technology choice for the Project, based on a range of environmental, technical and feasibility considerations including visual impact, use of water resources, noise and available space. The other technology choices considered at this stage included aero-derivative gas turbine generators and industrial gas turbine generators.
- 5.3.2 The potential for using Combined Heat and Power opportunities with these technologies was also considered. However it is not technically or economically feasible with a peaking power station because the generation of electrical energy from the station cannot be guaranteed to coincide with the required heat demand of any potential customer.

### **5.4 Access Road**

- 5.4.1 There are two options for road access which are being consulted upon at this stage as described in Section 1.2. Option 1 will include implementing improvements to the local road network and the widening of the existing track within the Project Site. Option 2 will include the

construction of a new road across the fields between the Swansea North electrical substation and the Generating Equipment site.

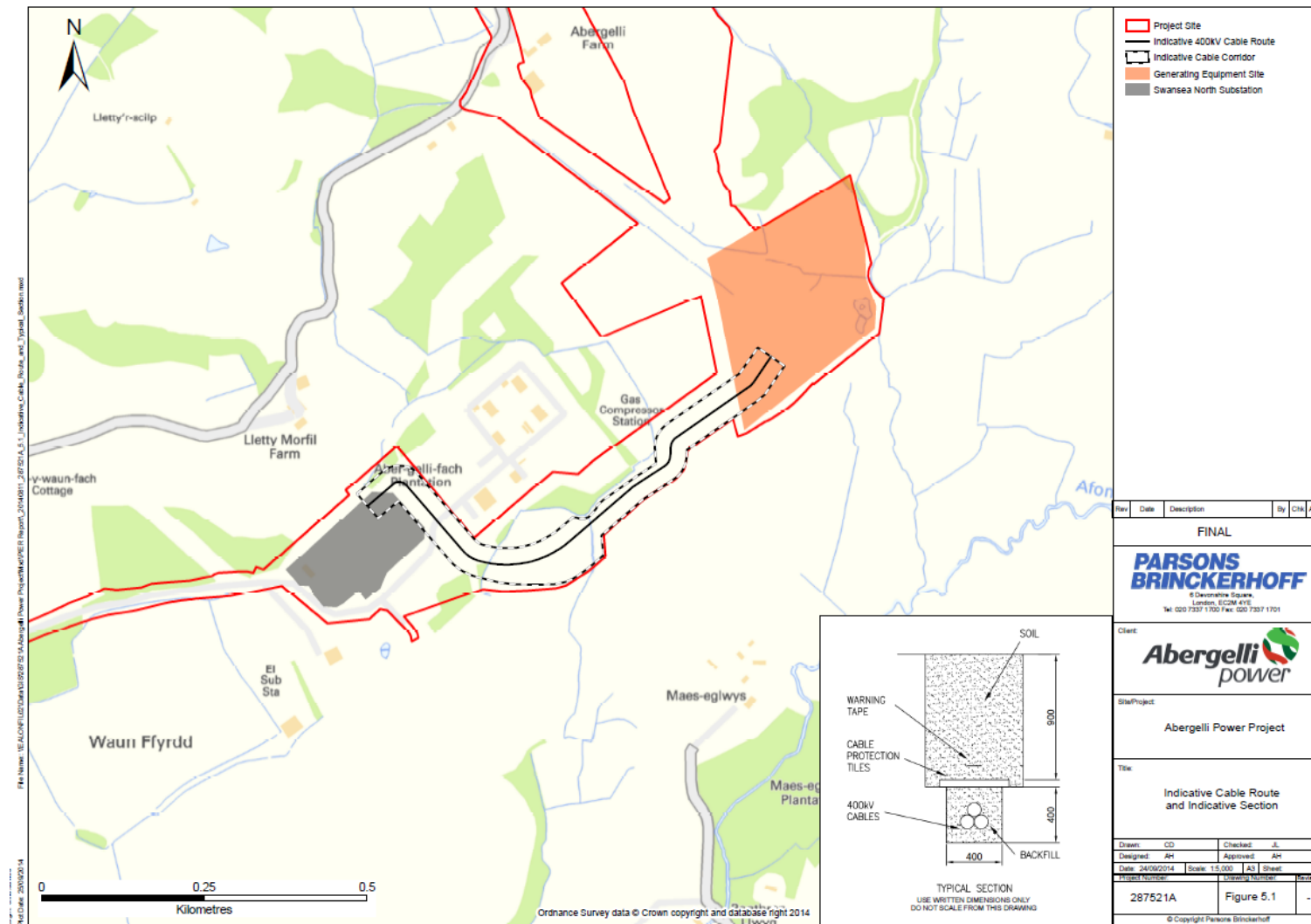




**Figure 5.1: Access Road Options**

## **5.5 Electrical Connection**

- 5.5.1 Both underground cables and overhead lines were considered. Underground cables were identified as the preferred option due to the limited visual impact.
- 5.5.2 The area to the south west of the Generating Equipment Site is the area within which the route for the Electrical Connection has been identified. In July 2014, the chosen route was identified during a site walkover of the Electrical Connection Opportunity Area. A limited number of route corridor options for the Electrical Connection were considered, as the most appropriate option i.e. the shortest, most direct route from the Generating Equipment Site to the substation, requiring the least amount of land take and avoiding any statutory designated sites or valued habitats, was available. This negated the need to assess any less favourable options.



**Figure 5.2: Electrical Connection and Typical Section**



## **5.6 Gas Connection**

- 5.6.1 Four connection options have been explored and further refined to a single Gas Connection Route. Cost, length and complexity as well as the potential presence of protected species were the main factors considered in choosing the preferred route (see Figure 2.1).

## **6 AIR QUALITY**

- 6.1.1 The construction, operation and decommissioning of the proposed Project has the potential to impact upon air quality. To date, a desk-based assessment, including a stack height sensitivity test, and site walkover has been undertaken to assess any potential impacts upon air quality from the proposed Project. A summary of the results from this preliminary assessment is provided below.

### **6.2 Assessment Methodology**

- 6.2.1 The assessment of construction dust impacts on humans is considered within 350 metres of potential dust sources and ecological receptors were considered within 100 metres. In relation to operational impacts, the study area extends 10 km in all directions from the Generating Equipment Site. There are no operational impacts on local air quality anticipated from the Gas and Electrical Connections.

### **6.3 Baseline Conditions and Receptors**

- 6.3.1 There is an Air Quality Management Area located 4.5 km south of the Project Site. Air pollutants and particulate matter at the Project Site are expected to be well within the relevant air quality objectives. In summary, NO<sub>2</sub> and particulate matter concentrations across the study area are generally very low, both in rural and suburban areas. At the roadside, outside of urban areas, concentrations are higher but likely to be well within the air quality objectives.
- 6.3.2 The area is largely rural in character although it is located on the urban fringe, interspersed with small residential settlements. Residential properties along B4489, Pant Lasau Road, Rhyd-Y-Pandy Road have also been considered. The study area also includes a number of nature conservation sites.

### **6.4 Preliminary Assessment**

- 6.4.1 It is considered unlikely that there will be permanent residual adverse effects associated with the construction of the Project. The effects relating to construction activities are all temporary. Effects during

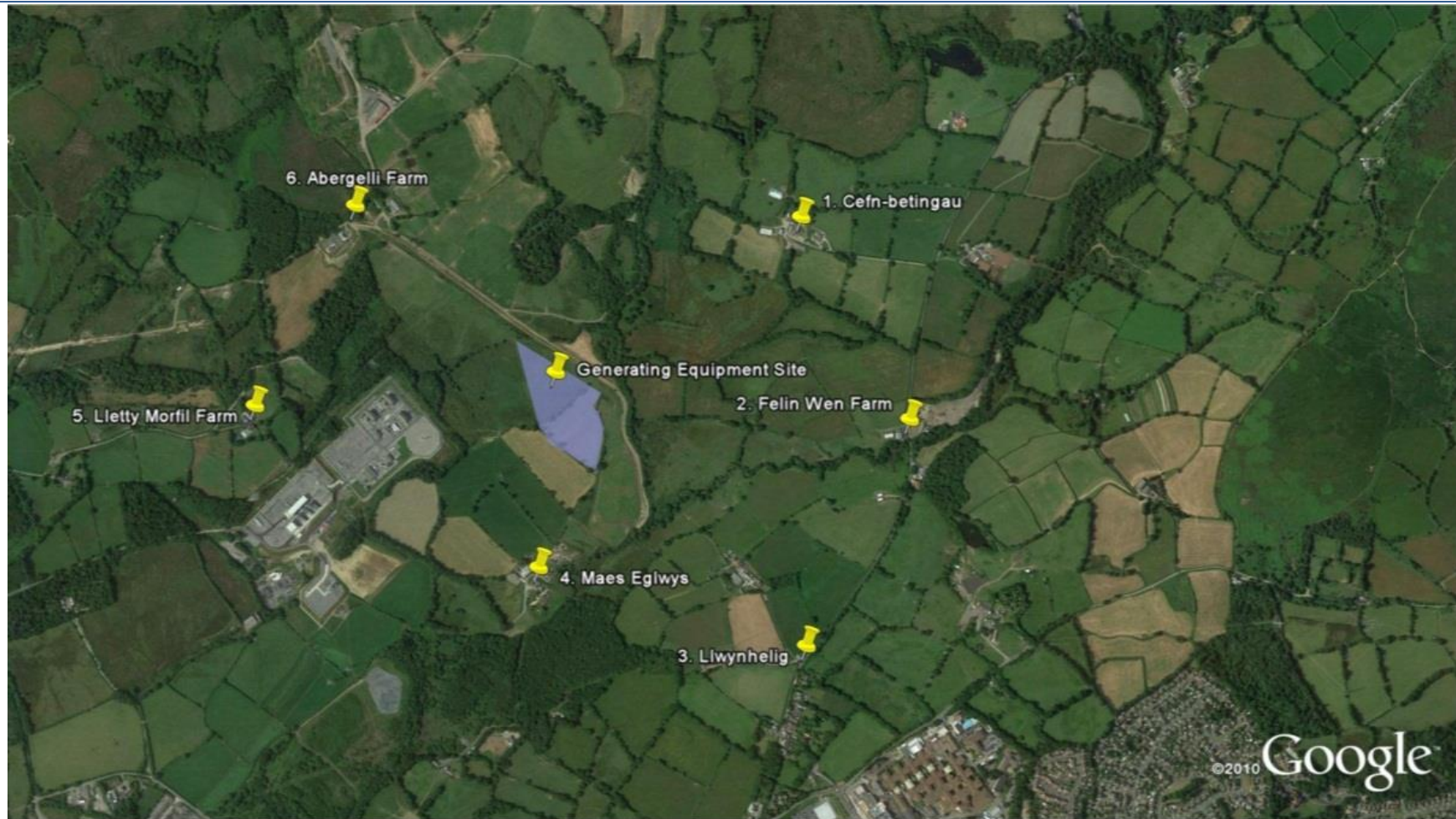
operation of the Power Generation Plant are not expected to be significant.

## **7 NOISE AND VIBRATION**

- 7.1.1 The construction, operation and decommissioning of the proposed Project has the potential to impact upon noise and vibration. To date, a baseline noise survey has been undertaken to assess any potential impacts upon noise sensitive receptors, such as residential properties, from the proposed Project. A summary of the results from this preliminary assessment is provided below.

### **7.2 Assessment Methodology**

- 7.2.1 The assessment methodologies used in the PEIR are the same as those that will be adopted for the EIA. However, the level of detail available at the PEIR stage is only sufficient to form preliminary conclusions.
- 7.2.2 Construction and decommissioning noise and vibration assessments of the Project has been undertaken following the guidance in the relevant British Standards. An outline construction programme has been 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 has been ascertained in the same way. The desk study has outlined suitable measures for the mitigation of construction and decommissioning impacts, and an assessment of residual effects.
- 7.2.3 Vibration from construction activities may impact on adjacent buildings. The criteria used in this assessment relates to the potential for cosmetic damage, not structural damage. The principal concern is generally vibration due to impact piling. Due to the minimum distance of a 230 m to the closest neighbouring structure (NG Compressor Station), a detailed construction vibration assessment has not been included in the PEIR.
- 7.2.4 A baseline noise survey has been undertaken in the vicinity of the Project Site to establish the current baseline noise levels. The monitoring locations for the baseline survey included a selection of the nearest noise sensitive receptors. These locations were agreed in advance with Swansea Council.



**Figure 7.1: Noise Sensitive Receptor Locations**

- 7.2.5 The operation of the Gas and Electrical Connections is not anticipated to cause any significant increase in background noise or vibration and is therefore scoped out of the assessment.

### **7.3 Baseline Conditions and Receptors**

- 7.3.1 The closest Noise Sensitive Receptors within 1 km of the Project Site include those within the nearby settlements of Morriston, Pant-lasau, Llwynceilyn and Felindre. In addition there are also isolated dwellings and farmsteads throughout the study area.
- 7.3.2 A noise survey was undertaken to determine the spread of noise in the area. A number of attended short term sampling measurements were taken over a period of 24hrs. In addition, two unattended long term noise monitors were used. These measured noise levels continuously at two locations for 7 days. Noise levels were measured at between 24 and 34 decibels.

### **7.4 Preliminary Assessment**

- 7.4.1 Predicted effects will range between Slight and Moderate adverse and therefore may or may not be significant at the construction and decommissioning stages of the Power Generation Plan. During operation, the effects are predicted to be slight adverse and therefore not significant.
- 7.4.2 The operation of neither the Gas Connection nor the underground Electrical Connection would give rise to any noticeable noise during operation. Any increases in noise levels will represent a temporary increase which will be restricted to the duration of the construction activities. The effects are predicted to be Slight adverse and therefore not significant.
- 7.4.3 During construction of the Power Generation Plant, Access Option 1 will have a Moderate adverse effect for Felin Wen Farm, but for Option 2 it will only be a Slight effect. There is no discernable difference between Option 1 and 2 during operation, or for the construction and decommissioning of the Gas Connection or Electrical Connection.

## **8 ECOLOGY**

- 8.1.1 The construction, operation and decommissioning of the proposed Project has the potential to impact upon ecology. To date, a desk based study and a range of protected species surveys has been undertaken (some are on-going) to assess any potential impacts upon ecology from the proposed Project. A summary of the results from this preliminary assessment is provided below.

## **8.2 Assessment Methodology**

- 8.2.1 A desk study was carried out within a study area of 10 km to identify statutory designated sites and bat records, and 2 km for non-statutory designated sites and protected/notable species. An Extended Phase 1 Habitat Survey was undertaken in February and July 2014. Surveys were also carried out for badgers, dormouse, otter, water vole, bats, breeding birds, Great Crested Newts, reptiles, terrestrial and aquatic invertebrates, flora and invasive species such as Japanese knotweed. Some of these surveys are still to be completed.

## **8.3 Baseline Conditions and Receptors**

- 8.3.1 There are a total of 35 statutory designated sites within a 10 km radius of the Project Site and 23 non-statutory designated sites within 2 km of the Project Site, as well as 101 areas of Ancient Woodland. The Project Site is located predominantly on pastoral farmland, mostly agriculturally improved but with large areas of marshy grassland and interspersed by woodland and scrub. There are numerous watercourses on site, mostly in the form of ditches or streams along field boundaries.





- 8.3.2 Signs of badgers were recorded during other surveys so they are known to be present in the wider area.
- 8.3.3 No dormice have been found to date, however further checks are yet to be undertaken.
- 8.3.4 The desk study provided 32 records of otter within the 2 km search radius, with the closest record 0.5 km to the south west of the River Llan. During the 2014 surveys a single fresh otter spraint was found in the stream that runs along the eastern boundary of the Survey Site. No other signs were observed that confirm otter presence within the Survey Site.
- 8.3.5 No records or fields signs provided evidence that water voles existing in close proximity to the Project Site, although historic records (from 1996) were provided from the River Llan, 1.9 km from the Project Site.
- 8.3.6 Surveys of buildings within the Survey Site confirmed at least four buildings are used as bat roosts. None of buildings will be directly affected by the Project. 35 trees were located within the Survey Site that were considered to present potential to support roosting bats. Surveys were carried out on eight of these trees and no bats were recorded. Preliminary activity survey findings recorded at least eight species of bats using the Survey Site. The highest numbers of passes were recorded along linear features such as hedges or streams.
- 8.3.7 Seven bird 'species of principal importance for nature conservation' were recorded on site, as well as other species of conservation concern in Wales.
- 8.3.8 Great Crested Newt presence/absence surveys have been undertaken and likely absence of species was recorded in all accessible waterbodies subject to survey. Therefore, for the purposes of this assessment, the absence of Great Crested Nets is assumed in all waterbodies within 250 m of the Project Site boundary.
- 8.3.9 Reptile presence/absence surveys across the Project Site are currently on-going, however to date common lizard and grass snakes were found present.
- 8.3.10 A total of 217 invertebrate species were recorded from the Survey Site.
- 8.3.11 National Vegetation Classification survey results are yet to be analysed.
- 8.3.12 Invasive species surveys across the Project Site were completed and five species of plant were recorded during the survey. The final design

will seek to avoid the locations where these species were recorded where possible.

## **8.4 Preliminary Assessment**

- 8.4.1 Potential effects during the construction and decommissioning phases of the Power Generation Plant, Gas Connection and Electrical Connection are envisaged to be mainly temporary. Effects are predicted to range between Slight and Moderate and therefore may or may not be significant. However, there is potential for loss of Ancient Woodland and non-statutory designated sites, which cannot be mitigated against or replaced and this will result in a major effect, and therefore significant, if Access Option 2 is implemented.
- 8.4.2 Effects during operation, such as disturbance of protected species, are likely to be between Slight and Moderate. Given that the Gas and Electrical Connections will be buried underground, with very small areas situated above ground, the residual effects are predicted to range between Slight and Moderate, depending on the level of disturbance and therefore may or may not be significant.
- 8.4.3 A Habitat Regulations Assessment Screening will be conducted to identify any potential impacts on internationally designated sites.

## **9 WATER QUALITY AND RESOURCES**

- 9.1.1 The construction, operation and decommissioning of the proposed Project has the potential to impact upon water quality and resources. To date, a site walkover and desk-based assessment of risks has been undertaken to assess any potential impacts upon water quality and resources from the proposed Project. A summary of the results from this preliminary assessment is provided below.

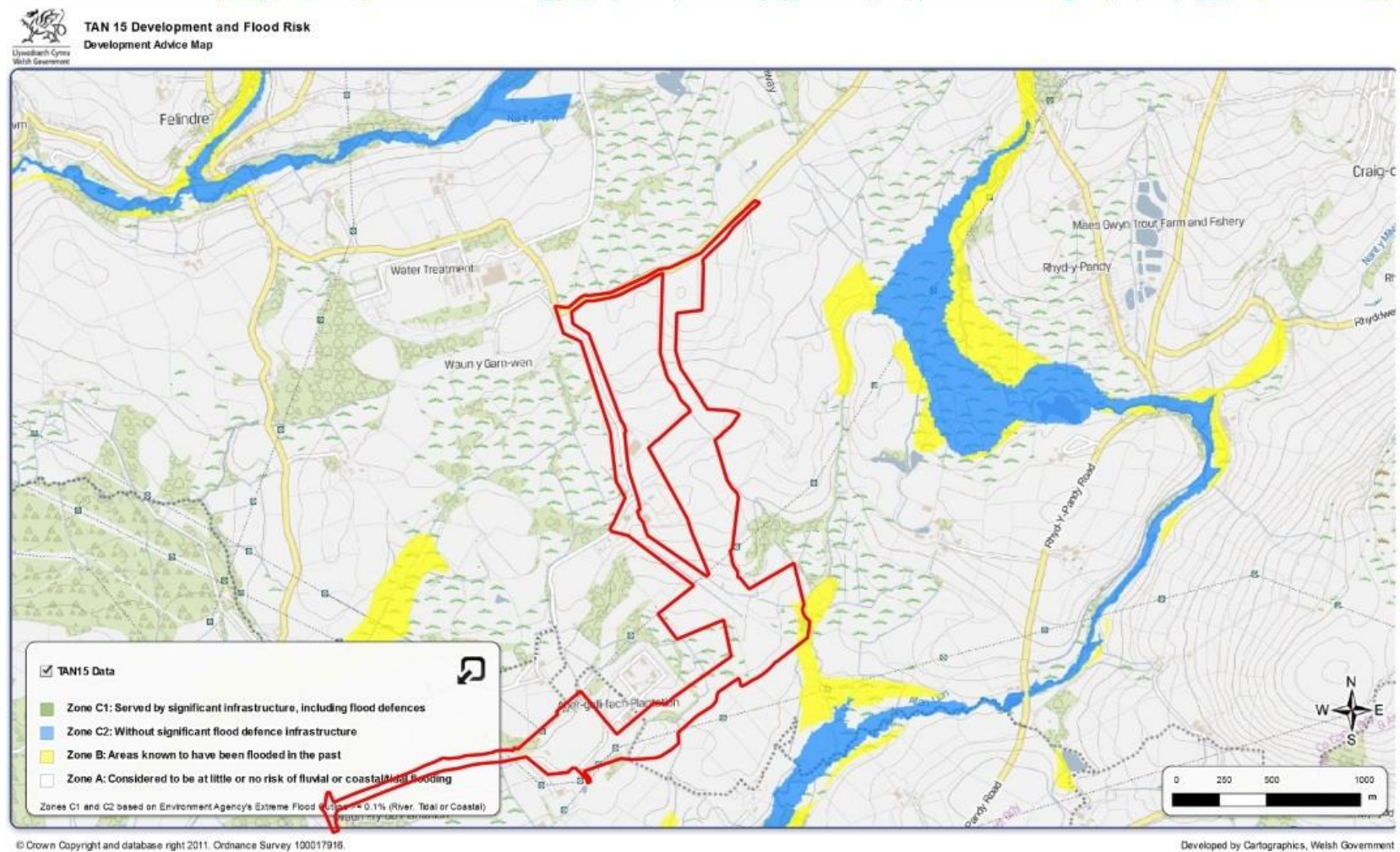
### **9.2 Assessment Methodology**

- 9.2.1 The study area generally includes features within 1 km of the Project Site boundary. However, more distant features that may be hydraulically connected to the Project Site have also been considered.
- 9.2.2 Hydrological features have been identified from OS mapping with information on geology, water quality and flood risk obtained from the Environment Agency website. All aspects of supply, demand and disposal of water and process effluents have been assessed for the construction, operational and decommissioning phases.



### **9.3 Baseline Conditions and Receptors**

- 9.3.1 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, eventually discharging to the Loughor Estuary. There are a number of smaller watercourses within the vicinity of the Project Site that drain to the Afon Llan, along with a number of springs and small ponds. The Felindre Water Treatment Works with covered reservoir is situated immediately north of the Project Site.
- 9.3.2 The Afon Lliw, which also discharges into the Loughor Estuary, is located approximately 1.3 km north of the Project Site. With the possible exception of the northern boundary, the Project Site is outside of the Afon Lliw topographic catchment and therefore it is expected that any direct connectivity will be limited.
- 9.3.3 No surface water abstraction points have been identified within the Project Site boundary.
- 9.3.4 A small area of the Project Site towards the Afon Llan lies in area known to have flooded in the past. Lower lying parts of the Project Site may be susceptible to groundwater flooding. A burst of the watermain flowing through the Project Site is a potential source of flooding.



**Figure 9.1: Areas at Risk from Flooding**

## **9.4 Preliminary Assessment**

- 9.4.1 There are not anticipated to be any significant residual effects on the main water bodies resulting from the construction, operation or decommissioning of the Power Generation Plant, Gas Connection and Electrical Connection. Most effects predicted to be neutral or Slight adverse and therefore not significant.
- 9.4.2 Although the Project Site is at low risk from flooding, an event such as a burst watermain may cause damage to the Power Generation Plant. This may therefore result in a major adverse effect due to the sensitivity of the receptor, which would therefore be significant.
- 9.4.3 Mitigation measures to reduce the effects on groundwater and surface water features, such as the Afon Llan and its tributaries, will include settlement ponds, directional drilling techniques, careful siting of stockpiles and implementation of Sustainable Drainage Systems.
- 9.4.4 There is no discernable difference between Access Option 1 and 2 at this stage in terms of impacts on water quality and resources.

## **10 GEOLOGY, GROUND CONDITION AND HYDROGEOLOGY**

- 10.1.1 The construction, operation and decommissioning of the proposed Project has the potential to impact upon geology, ground conditions and hydrogeology. To date, a desk-based assessment and site walkover has been undertaken to assess any potential impacts upon geology, ground conditions and hydrogeology from the proposed Project. A summary of the results from this preliminary assessment is provided below.

### **10.2 Assessment Methodology**

- 10.2.1 The study area for this topic is an area up to 1 km from the Project Site boundary. A site walkover was undertaken in July 2014 in order to identify potential sources of contamination, and potential receptors which may be adversely affected by the presence of contamination.
- 10.2.2 The baseline conditions, including the identification of previous land uses, were determined with reference to a variety of sources, include consultation with the Coal Authority.
- 10.2.3 The assessment of risk is a three stage process commencing with a Preliminary Risk Assessment which comprises a qualitative assessment.

### **10.3 Baseline Conditions and Receptors**

- 10.3.1 Historical uses of the Project Site include agriculture, a gravel pit, a colliery and an inert landfill. A Coal Authority Mining Report indicates that they have received no indication of the risk of the land being affected by subsidence.
- 10.3.2 The permeability of the bedrock geology ranges from low to high, depending on the degree of fracturing. The superficial deposits located across the Project Site comprise predominantly glacial till. There are also pockets of alluvium and peat present within the Project Site boundary.
- 10.3.3 The agricultural land classification for the land within and surrounding the Project Site is poor quality agricultural land (Grade 4).

### **10.4 Preliminary Assessment**

- 10.4.1 The construction and decommissioning works associated with the Power Generation Plant, such as ground disturbance and potential pollution incidents, will not result in significant effects. Effects will range between Neutral and Slight adverse.
- 10.4.2 The construction of both the Gas Connection and Electrical Connection will result in the temporary sterilisation of agricultural land, and other potential mineral resources. These effects will be neutral and therefore not significant.
- 10.4.3 There is the potential for a Moderate adverse, and therefore significant, effect resulting from ground instability on the Power Generation Plant, Gas Connection and Electrical Connection. This may affect any built structures during construction and operation.
- 10.4.4 Comprehensive Ground Investigation work will be carried out prior to construction of the Project to mitigate the potential effects described above.
- 10.4.5 There is potential for a Slight adverse, and therefore not significant, effect resulting from disturbance and remobilisation of existing contamination pathways to receptors through earthworks with Option 1. The effect of Option 2 is likely to be Neutral.

## **11 LANDSCAPE AND VISUAL IMPACTS**

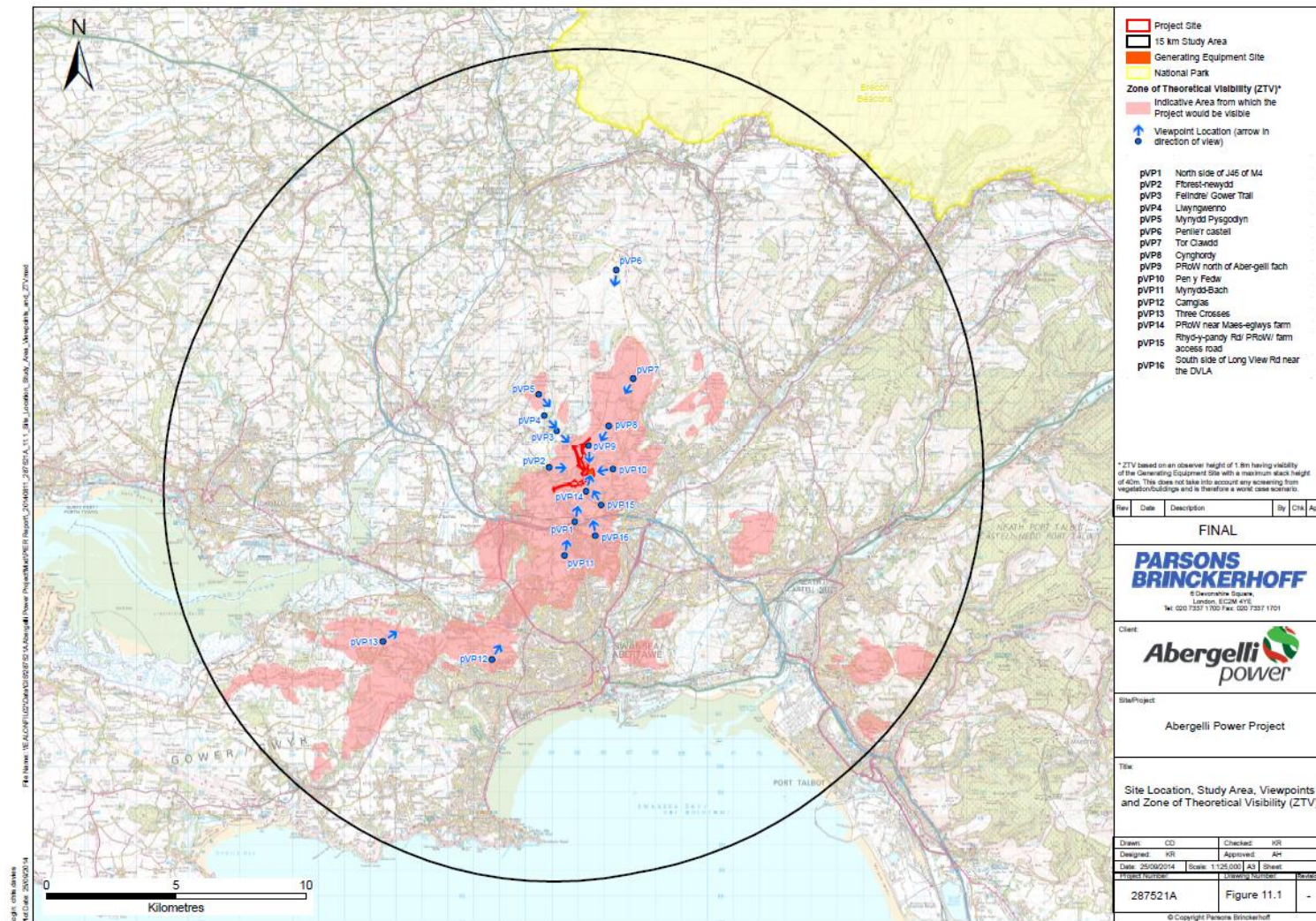
- 11.1.1 The construction, operation and decommissioning of the proposed Project has the potential to impact upon landscape character and resources, designated landscapes, registered parks and gardens, recreational interests, and visual amenity. To date, a Zone of

Theoretical Visibility has been prepared to identify where the Project will be visible from and a site visit has been undertaken to assess any potential impacts upon landscape from the proposed Project. A summary of the results from this preliminary assessment is provided below.

## **11.2 Assessment Methodology**

- 11.2.1 A mixture of desk study and field work has been undertaken to identify and record the character of the landscape and the elements, features and aesthetic and perceptual factors. The Study Area for visual effects is set at 15 km.





**Figure 11.1: Zone of Theoretical Visibility**

- 11.2.2 The computer-generated Zone of Theoretical Visibility indicates areas from which it might be possible to see part or parts of the Project. It has been compiled using topographical data and a model of the Project, assuming the highest point of the Generating Equipment will be the stack (between 35 and 40 m high).
- 11.2.3 Viewpoints have also been agreed with Swansea Council to represent the most visually sensitive locations. Photomontages will be prepared for some of the locations to illustrate the effects of the Project.
- 11.2.4 The use of Landscape Character Assessments is also an important element of establishing the current baseline and potential forces for change. LANDMAP has been used for this assessment, which is the national information system for Wales.

### **11.3 Baseline Conditions and Receptors**

- 11.3.1 The nearest Area of Outstanding Natural Beauty (AONB) is the Gower AONB which is physically remote from the Project Site and visually separated from the Project Site by intervening topography. The Project will also not be visible from the Brecon Beacons National Park.
- 11.3.2 Fields within and around the Project Site are medium to small and irregularly shaped, divided by combinations of hedge banks, low walls, and ditches. The Project Site is situated in the low lying parts of the Afon Llan Valley and consists of very gently sloping land. The Project Site is contained from the north, east and west by local topography and vegetation. Local roads are visually contained by high hedge banks. The M4 corridor and the northern suburbs of Swansea dominate the southern area, with more remote hill landscape to the north and east.
- 11.3.3 The Project Site and surroundings include a number of overhead lines as shown in Figure 11.1.



**Figure 11.1: Existing network of electricity pylons southwest of Abergelli Farm**

- 11.3.4 Receptors include nearby residential properties and Public Rights of Way.

#### **11.4 Preliminary Assessment**

- 11.4.1 The expectation is that the main visually prominent element of the Power Generation Plant will be the 40m high stacks, which represents a maximum height and therefore the worst-case scenario. These vertical elements are expected to have significant adverse effects on some viewpoints during construction and operation, as well as the landscape character of the Project Site. However, much of the Project Site itself will be screened by existing vegetation and local topography and this will reduce the visual effects of the main generators.
- 11.4.2 The Gas Connection and Electrical Connection are predominantly underground and are not expected to have significant effects during construction and operation other than where there is above ground infrastructure.
- 11.4.3 There is no discernable difference between Access Option 1 and 2 at this stage in terms of impacts on landscape character and visual amenity.



## **12 TRAFFIC, TRANSPORT AND ACCESS**

- 12.1.1 The construction, operation and decommissioning of the proposed Project has the potential to impact upon the local transport network. To date, a preliminary assessment has assessed the local road network to identify any potential impacts upon the road network from the proposed Project. A summary of the results from this preliminary assessment is provided below.

### **12.2 Assessment Methodology**

- 12.2.1 The assessment has established the existing capacity conditions around the Project Site and assessed network and corridor performance in relation to a number of receptors. This is based on data collected on site and existing data.
- 12.2.2 The ES will present the findings of trip estimates from the Project, the mode split of all trips, and the likely distribution across the transport network. Forecasting of baseline traffic data will be carried out to establish a realistic worst case scenario for a future year.
- 12.2.3 An assessment of pedestrians, cyclists and other non-motorised users of the transport network will also be undertaken.

### **12.3 Baseline Conditions and Receptors**

- 12.3.1 The B4489 lies west of the Project Site and runs north-south linking Felindre to Llangyfelach and is marked with a 40 mph speed limit. North of the access to the National Grid's Swansea North electrical substation and Felindre Gas Compressor Station, the B4489 is a narrow rural road. It then widens to a single carriageway road for the rest of its length, with the stretch leading to the junction with the A48 having two lanes south-bound.
- 12.3.2 The Rhyd-Y-Pandy Road is an unclassified road which runs east and north of the Project Site, from Pant-lasau to Rhyd-Y-Pandy in an almost directly north-south direction. There are several other private roads in proximity to the Project Site, all of which are rural in nature.
- 12.3.3 Access Road Option 1 would use the Rhyd-y-pandy Road to access the site and Option 2 would use the B4489 to access the site.
- 12.3.4 An initial review of accident data shows that between 2009 and 2012, there was one accident on the Rhyd-Y-Pandy Road. This was a slight accident involving two vehicles and with one casualty. There were also several accidents along the B4489 within this time period, however,

none within close proximity to the Project Site or potential access routes.

- 12.3.5 There is no pedestrian footway or cycling infrastructure provision along the Access Road route options. There is one bus route in the vicinity of the Project Site, although there are several other bus routes that pass through nearby villages. There are no train stations or railway infrastructure in close proximity to the Project Site.

## **12.4 Preliminary Assessment**

- 12.4.1 It is estimated that construction and decommissioning will result in approximately 200 car or van trips per day and around 150 HGV deliveries per day during the peak construction/decommissioning period. This assumes a 22 month construction period with the peak of HGV deliveries occurring during the first quarter of construction and the peak of car and van trips occurring during the fifth quarter of construction. The car or van trips would be limited to the start and end of the working day whilst HGV trips would be spread across the day.
- 12.4.2 During construction of the Power Generation Plant, Gas Connection and Electrical Connection, there are anticipated to be Slight to Moderate effects resulting from traffic increases, which therefore may or may not be significant. There will be Slight effects resulting from obstruction by abnormal loads which will therefore not be significant. These effects are likely to be similar for either access option.
- 12.4.3 Decommissioning is likely to cause the same effects as that of construction, but goods are taken away from site rather than to site. The decommissioning stage will generate fewer vehicle movements, as it is likely that the Gas Connection will be left in situ.
- 12.4.4 During operation, it is anticipated that approximately three people would be present on site during each shift. With three shifts per day, this would equate to 18 two-way car trips.
- 12.4.5 There are likely to be neutral effects during the operation of the Project as operational staff numbers will be low (approximately nine full time employees) and the delivery and removal of goods to the Project Site are also expected to be very low. Maintenance vehicles are expected to be very infrequent and are not anticipated to cause any detriment to the local transport network.

## **13 ARCHAEOLOGY AND CULTURAL HERITAGE**

- 13.1.1 The construction, operation and decommissioning of the proposed Project has the potential to impact upon heritage assets. To date, a

desk-based assessment and site walkover has been undertaken to assess any potential impacts upon heritage assets from the proposed Project. A summary of the results from this preliminary assessment is provided below.

## **13.2 Assessment Methodology**

- 13.2.1 A Desk Based Assessment (DBA) has been undertaken in consultation with Cadw. It included searches of records held by the Royal Commission on Ancient and Historical Monuments, Swansea Historic Environment Record, aerial photographs, historic mapping, Conservation Areas and Historic Landscape Characterisation.
- 13.2.2 Searches have been limited to 1 km from the Project Site for archaeology as the Project has the potential to impact on archaeological remains within the Project Site and the immediate surroundings only.
- 13.2.3 The Setting Assessment considers those designated Heritage Assets within a 5 km from the Project Site. This assessment considers effects on the setting of Scheduled Monuments, Listed Buildings, Registered Parks and Gardens, World Heritage Sites and non-designated but important buildings.

## **13.3 Baseline Conditions and Receptors**

- 13.3.1 No designated Heritage Assets have been identified within the Project Site. 30 designated Heritage Assets and 47 Grade II Listed Buildings have been identified within 5 km of the Project Site. Five non-designated Heritage Assets have been identified within the Project Site.



## **13.4 Preliminary Assessment**

- 13.4.1 At this preliminary stage of the assessment, it has been determined that there will be a neutral effect upon the setting of Heritage Assets within 5 km of the Project Site resulting from the construction, operation and decommissioning of the Power Generation Plant. The effects will therefore be not significant.
- 13.4.2 There is the potential for adverse effects upon the standing remains of Abergelli Colliery resulting from damage to the asset by construction traffic using Access Road Option 1. These effects are likely to be neutral, and therefore not significant, if the building is protected.
- 13.4.3 There is also potential for adverse effects upon a possible ancient field boundary if the Gas Connection is routed through the asset, although these effects will not be significant. However, these effects will be limited by implementation of appropriate mitigation measures, such as a programme of recording, which will be devised in consultation with the Planning Archaeologist.
- 13.4.4 There will neutral effects resulting from the operation of the Gas Connection and Electrical Connection which will therefore be not significant.

## **14 SOCIO-ECONOMICS**

- 14.1.1 The construction, operation and decommissioning of the proposed Project has the potential to impact upon the labour market and tourism. To date, a desk based assessment has been undertaken to assess any potential socio-economic impacts from the proposed Project. A summary of the results from this preliminary assessment is provided below.

### **14.2 Assessment Methodology**

- 14.2.1 The socio-economic assessment is based on drive time catchment areas from the Project. The 'local area' is defined within a 30-minute drive time, 'wider area' within a 45-minute drive time, and 'wider region' within a 60-minute drive time.
- 14.2.2 The tourism assessment is focussed on the area defined by a 15 km radius from the Project. Facilities or notable points of focus of visitor attraction within this area have been reviewed. Any significant tourism facilities located just outside the boundary have also been included.



- 14.2.3 As proximity is likely to be the main determinant of impacts and their scale, the status (or catchment) of community facility receptors in an area determines the scale and significance of any effects.
- 14.2.4 The study area's socio-economic position has been described using standard indicators relating to the economic/labour market, tourism, social and policy context. The assessment has considered impacts on jobs and Gross Value Added.
- 14.2.5 A business survey has been carried out to gain a more detailed understanding of the local tourism economy and its current performance. Businesses contacted include key visitor accommodation providers, leisure activity providers and other relevant tourism businesses.

### **14.3 Baseline Conditions and Receptors**

- 14.3.1 The socio-economic study area surrounding the Project is characterised by; an increasing population; projected population increase of c.6% between 2013 and 2021; a growing retirement age population; an economic activity rate higher than the UK average; slightly higher levels of unemployment comparable to the UK average; a slightly higher proportion of people working in manufacturing; a comparable proportion of people working in the construction sector; a higher proportion of people employed in semi-skilled/unskilled jobs and lower proportion of people in highly skilled jobs; and a higher proportion of people achieving no qualifications and low level qualifications compared to the UK average.
- 14.3.2 Domestic visitor tourism spending and bed-nights are at their highest level since 2006-08. Visitor trips, despite falling recently, remain high and above average. Overseas tourism appears to be declining in Swansea. Overseas trips, bed-nights and spending are at their lowest level since 2006.
- 14.3.3 Two of the top ten visitor attractions in South West Wales are within the tourism study area.
- 14.3.4 An initial audit of community facilities indicates the provision of: 21 schools within three miles of the Project Site; five GP surgeries; one hospital; six pharmacies; and one library. The level of existing community infrastructure is considered to be sufficient to accommodate additional demand.

#### **14.4 Preliminary Assessment**

- 14.4.1 No significant labour market, tourism and recreation, and community infrastructure adverse effects are anticipated during construction, operation and decommissioning of the Project given there is an availability of skilled, construction labour with a 60-minute drive time and there will be limited increased demand on community infrastructure.
- 14.4.2 There is no discernable difference between Access Option 1 and 2 at this stage in terms of impacts on the labour market, tourism and community infrastructure.

#### **15 OTHER EFFECTS CONSIDERED**

- 15.1.1 Each topic chapter where effects may result that may affect human health i.e. noise, air quality and ground conditions (potential land contamination) will consider those potential effects in the ES.
- 15.1.2 Electric and Magnetic Fields have been considered in the preliminary assessment, but will not be subject to further assessment since the Electrical Connection will be buried underground and therefore adverse effects are unlikely to occur.

#### **16 CUMULATIVE EFFECTS**

- 16.1.1 The findings of the preliminary assessment have concluded that there are unlikely to be any adverse cumulative effects in addition to those likely to result from the development of the Project when it is considered in combination with the following developments. This will be reviewed in more detail in the full EIA as it is an on-going assessment.
- Planning Application 2013/1221 – Installation of 16 wind turbines at Mynydd y Gwair;
  - Planning Application 2013/0795 – Installation of four 5 kW wind turbines at Tyle Coch Mawr;
  - Planning Application 2013/0135 – Installation of ground mounted array of solar panels, at Abergelli Farm. This development will be located east of the Gas Connection;
  - Planning Application 2013/1639 (Rhyd-y-pandy Solar Park) – Construction of 7 MW solar park;
  - Planning Application 2013/1835 (Felindre Business Park) – Construction of park and ride/share car park; and



- Planning Application 2014/1022 (Brynwhilach Solar Park) – Construction of 12.69MW solar park.
- Strategic development proposals at Swansea Vale and Felindre Sustainable Urban Village forming part of the emerging Swansea LDP Preferred Strategy.

16.1.2 The inter-relationship of effects of the Project on receptors identified in the PEIR i.e. more than one effect on the same receptor, will be considered as part of the full EIA.

## **17 SUMMARY**

17.1.1 The preliminary assessment as described in the PEIR has identified the following potential significant residual effects resulting from the Project:

- It is considered unlikely that there will be permanent residual effects associated with the construction of the Project relating to air quality. The effects relating to construction activities are all temporary.
- During construction it is anticipated that there will be some increases in traffic and some disruption to the road network during off peak times. These effects will all be temporary as there will be limited traffic during operation of the Project.
- Where views of the stacks are possible these are unlikely to be mitigated by planting and adverse effects on visual amenity are likely to occur.
- The risk of flooding is low. However, should it occur, such as from a burst watermain, the effects may be significant due to the possible damage to the Project or harm to workers that may occur.

17.1.2 The adverse effects of the Gas Connection and Electrical Connection will be similar to the Power Generation Plant during construction. During operation the effects will be limited as both will be underground.

17.1.3 The main differences between the two access options is that Option 2 will result in permanent habitat loss, Option 1 will have a wider impact on the road network, as it is longer, and may also impact on a non-designated heritage asset without mitigation.

17.1.4 As the design and EIA are completed, the Applicant will seek to identify further mitigation and design measures to seek to reduce the significant adverse effects where appropriate.