Preliminary Environmental Information Report

Non-Technical Summary

October 2013

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LIST OF ABBREVIATIONS

BBNPA	Brecon Beacons Nation Park Authority
CCGT	Combined Cycle Gas Turbine
CEMP	Construction Environmental Management Plan
CHP	Combined Heat and Power
CO	Carbon Monoxide
DCO	Development Consent Order
DECC	Department for Energy and Climate Change
EIA	Environmental Impact Assessment
ES	Environmental Statement
GT	Gas Turbine
GW	Gigawatt
Ha	Hectare
HPL	Hirwaun Power Ltd
km	Kilometres
kV	Kilovolt
LVIA	Landscape and Visual Impact Assessment
MW`	Megawatt
NGC	National Grid Company
NOx	Nitrous Oxides
NPS	National Policy Statements
NSIP	Nationally Significant Infrastructure Project
NTS	Non-Technical Summary
PEIR	Preliminary Environmental Information Report
RCTCBC	Rhonda Cynon Taf County Borough Council
RGE	Reciprocating Gas Engine
SINC	Site of Important Nature Conservation
SCGT	Simple Cycle Gas Turbine
SPV	Special Purpose Vehicle
ZTV	Zone of Theoretical Visibility

SECTION 1

INTRODUCTION

1 INTRODUCTION

1.1 Overview

1.1.1 This document is the non-technical summary (NTS) of the Preliminary Environmental Information Report (PEIR) for the Hirwaun Power Project (hereafter referred to as the Project). It has been prepared by Parsons Brinckerhoff on behalf of Hirwaun Power Limited (HPL).

1.1.2 HPL is promoting a new gas fired power station on land at the Hirwaun Industrial Estate, South Wales (approximate grid reference SN 938 061).

1.1.3 The Project comprises three main elements:

- A new gas fired power generating station (referred to as the Power Generation Plant), designed to provide an electrical output of up to 299 Megawatts (MW);
- A new electrical connection (referred to as the Electrical Connection), which will export electricity from the Power Generation Plant to the National Grid substation at Rhigos for distribution to homes and businesses; and
- A new gas connection (referred to as the Gas Connection), which will transport natural gas from the Gas National Transmission System to the Power Generation Plant for use as fuel, together with all access requirements.

1.1.4 The proposed Power Generation Plant would operate as a 'peaking plant'. This means it would operate intermittently, with maximum operation not exceeding 1,500 hours per year. A peaking plant is designed to operate when there is a surge in demand for electricity associated with a particular event (e.g. when a large number of people boil their kettles following the end of a popular TV programme) or when there is a sudden drop in power being generated from power stations which are constantly operational (e.g. sudden outages). It will also support intermittent forms of renewable energy which are weather dependant (e.g. wind and solar).

1.1.5 The Power Generation Plant, together with the integral Electrical Connection and Gas Connection, constitutes a Nationally Significant Infrastructure Project (NSIP), which means that a Development Consent Order (DCO) is required to build, operate and maintain it. The proposed DCO Application will be processed and examined by the Planning Inspectorate who will make a recommendation on whether the

DCO should be granted to the Secretary of State for Energy and Climate Change (Secretary of State). The final decision on the proposed DCO Application is made by the Secretary of State.

1.1.6 Rhondda Cynon Taf County Borough Council (RCTCBC) and the Welsh Government will be key consultees throughout the DCO process.

1.1.7 Consultation with local people, businesses and organisations is also an essential part of the DCO process and will help to influence the final designs of the Project.

1.1.8 The main PEIR and this NTS have been prepared in accordance with Regulations 2 and 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the 'EIA Regulations'). They present information specifically aimed at assisting consultees and local communities to understand the nature, scale, and location of the proposed Project.

1.1.9 Copies of the main PEIR and this NTS may be examined during a consultation exercise being carried out by HPL between 17 October 2013 until 28 November 2013 at Hirwaun Library, Aberdare Library, Treherbert Library, Glynneath Library and Merthyr Tydfil Central Library and also at the main office of Rhondda Cynon Taf County Borough Council Planning Department.

1.1.10 Copies of the main PEIR and this NTS can also be found on the Project website: www.hirwaunpower.co.uk.

1.1.11 HPL welcomes your comments on the proposals and the information provided in this NTS. Representations can be made:

- by email to: info@hirwaunpower.co.uk
- in writing to: Freepost RTEY-JYYB-ERSR, Hirwaun Power Ltd, 49 York Place, Edinburgh, EH1 3JD
- Phone: 0800 9589015

1.1.12 Representations must be received on or before 28 November 2013.

1.2 Needs and Benefits of the Project

1.2.1 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 Government's policies in relation to NSIPs are set out in National Policy Statements (NPSs). NPS EN-1 (the Overarching Energy NPS) 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 provides 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 Indications from the Government, in other documents (e.g. the 'Gas Generation Strategy', released by DECC in December 2012) are that up to 26 gigawatts (GW) of new gas generation will be needed by 2030 to underpin long term electricity supplies and provide back-up to nuclear and wind generation at times of peak demand.

1.2.5 'Energy Wales – a low carbon transition' published by the Welsh Assembly states that gas is also a flexible, responsive and reliable source of electricity that should support the transition to a low carbon economy.

1.2.6 With the large number of wind turbines that are now providing electricity to the National Grid and the many proposals for further wind turbines onshore and offshore, coupled with proposed solar farm developments including in South Wales, significant consideration is being given to the need for flexible / peaking power on the network.

1.2.7 At present, thermal peaking capacity in the UK is relatively small due to the nature of the electricity generation mix on the National Grid.

1.2.8 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 at the Hirwaun Industrial Estate could allow for the rapid provision of reserve capacity to the National Grid, thus playing a role in meeting the energy requirements of the UK going forward.

1.3 The Developer

1.3.1 The developer of the proposed Project is HPL. HPL is the Special Purpose Vehicle (SPV) which has been set up to develop the Project

and has been established by Watt Power Limited (WPL). WPL has been established to develop flexible gas-fired power stations, designed to meet the Government's energy policy objectives of security of supply and affordability, in support of the UK's transition to a low carbon economy.

1.3.2 For further details on HPL please visit: http://www.hirwaunpower.co.uk or http://www.wattpowerltd.co.uk

1.4 Purpose of the document

1.4.1 The Project requires an Environmental Impact Assessment (EIA) in accordance with the EIA Regulations. EIA is an assessment of the Project's likely significant environmental effects. Under Regulation 10(b) of the EIA Regulations, HPL must consult on preliminary environmental information relating to the Project. That information has been compiled into the main PEIR and summarised in this NTS.

1.4.2 The PEIR has been prepared to provide information on the Project as part of the pre-application consultation process for the proposed DCO Application. It presents the preliminary environmental information and assessments which have been completed to date and identifies the additional information or studies required in order to complete the EIA. Feedback received during the pre-application consultation process will help inform the development of the Project and further refine the EIA. The full findings of the EIA will be presented in an Environmental Statement (ES) that will be submitted with the proposed DCO Application.

1.4.3 This document is a summary (in non-technical language) of the PEIR for the Project

1.5 Planning Policy Context

1.5.1 The Department for Energy and Climate Change has published a number of NPSs in relation to energy infrastructure, which were designated by the Secretary of State in July 2011. These NPSs set out national policy against which proposals for NSIPs are assessed and decided on.

1.5.2 Due to the nature of the proposed Project (which will generate over 50MW of electricity), four of the designated NPSs are considered relevant to the determination of the proposed DCO Application:

- Overarching National Policy Statement for Energy EN-1: This sets out national policy for energy infrastructure as defined by the

Planning Act 2008, which provides the primary basis for decisions by the Secretary of State;

- National Policy Statement for Fossil Fuel Electricity Generating Infrastructure EN-2: This sets out policies specific to the determination of applications for fossil fuel electricity generating infrastructure;

- National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines EN-4: This sets Government policy on the relevant considerations and factors that should be taken into account as to route selection for developers for, inter alia, gas pipelines; and

- National Policy Statement for Electricity Networks Infrastructure (EN-5): This provides the primary basis for decisions taken by the Secretary of State on applications it receives for electricity network NSIPs, including the relevant considerations and factors that should be taken into account related to route selection.

1.5.3 NPS EN-1 states that consideration may be given to planning policy outside the NPSs where it is important and relevant to the Secretary of State's decision. Other national planning policies have therefore been considered in the preparation of the PEIR as these may be relevant to the determination of the proposed DCO Application

SECTION 2

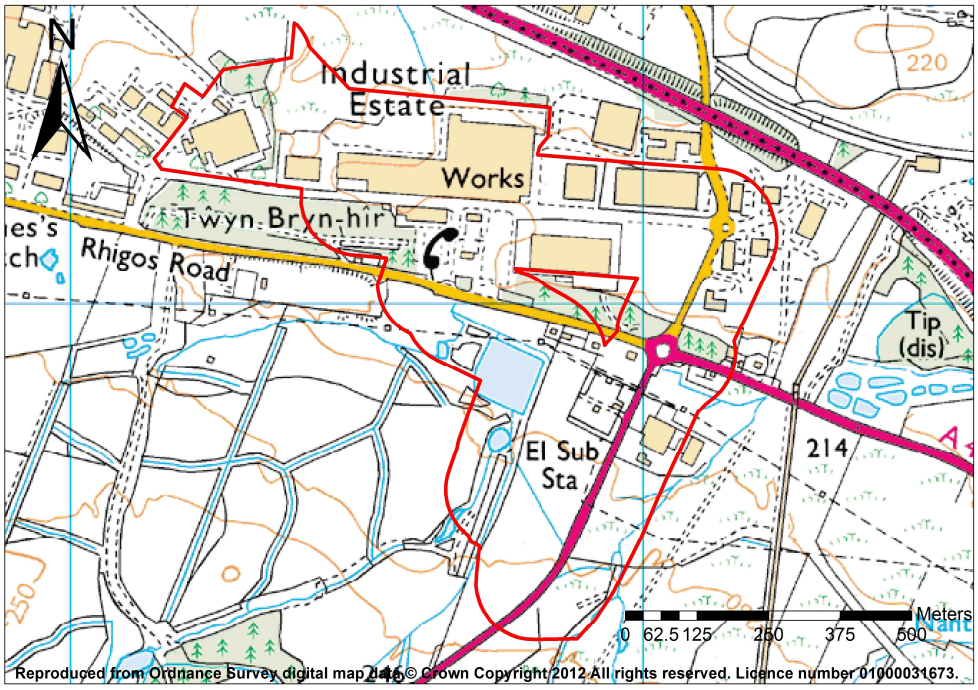
PROJECT AND SITE DESCRIPTION

2 PROJECT AND SITE DESCRIPTION

2.1 Site and Surroundings

2.1.1 The site for the Project (hereafter referred to as the Project Site) is illustrated by the red line in Insert 1 and encompasses all three elements of the Project as described in Section 1.1. Any temporary areas for equipment / material laydown, required during construction of the Project, would also be located within the Project Site. The Project Site lies entirely within the administrative boundary of RCTCBC, although it is also close to the area administered by the Brecon Beacons National Park Authority (BBNPA).

Insert 1 – Location of the Project Site



2.1.2 The Power Generation Plant would be located within the Project Site, approximately 1.3 km north east of Rhigos, 1.4 km west of Hirwaun and 5 km west of Aberdare. The Power Generation Plant Site within the Project Site covers an area of approximately 7.5ha. However, the footprint of the Power Generation Plant would be smaller than this (approximately 5ha). The Power Generation Plant Site is currently occupied by large industrial buildings, used for storage and distribution, which is owned by International Greetings UK Ltd.

2.1.3 The Power Generation Plant Site and immediate surrounding area are characterised by industrial buildings, hardstanding, scrub grassland

and plantation woodland. The A465 'Heads of the Valleys' Road runs approximately 0.1km north of the Power Generation Plant Site, Tower Colliery is approximately 1 km to the south and Penderyn Reservoir is approximately 1 km north.

2.1.4 Insert 2 shows an illustrative visual of the Power Generation Plant Site.

Insert 2 – Illustrative Visual of the Power Generation Plant Site

2.1.5 At this stage in the Project, the route of the Gas Connection and Electrical Connection have yet to be confirmed. There are two options for each under consideration. Further detail on these options is outlined in Sections 2.3 and 2.4 below.

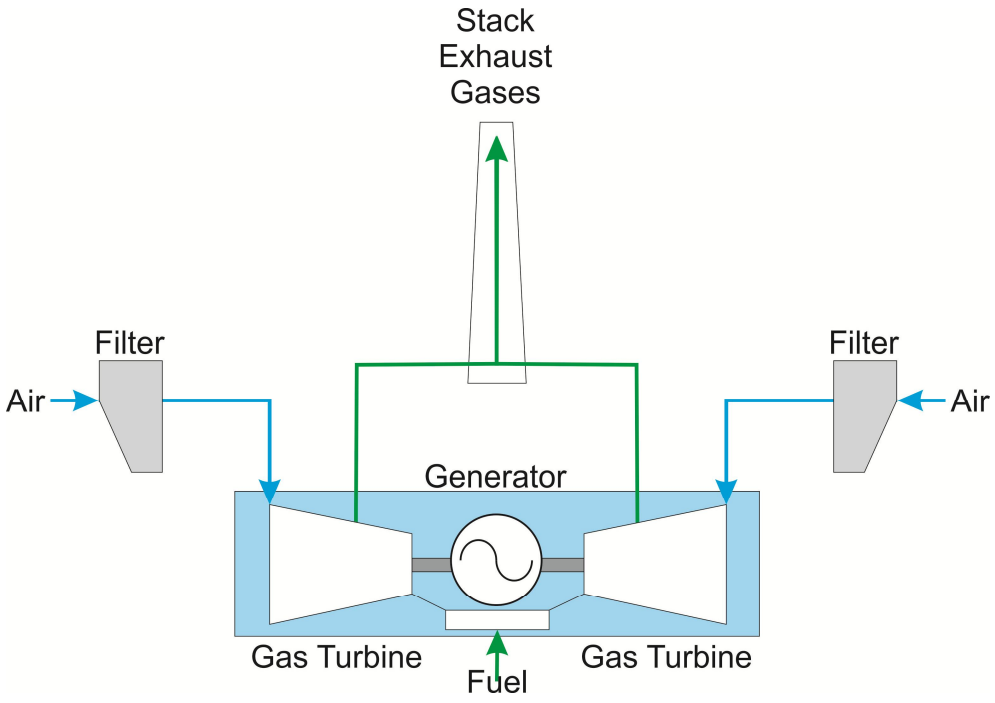
2.2 Power Generation Technology

2.2.1 The Power Generation Plant would be fired on natural gas. It would provide a total output of up to 299 MW (enough to power the equivalent of 400,000 homes) and operate as a peaking plant. 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. Further detail is provided in Section 3.3 and a schematic showing SCGT operation is shown below in Insert 3.

2.2.2 There are several options of SCGT plant available to generate up to 299 MW. These different options mainly relate to the number and type of gas turbine generator used.

2.2.3 SCGT plant usually use aero-derivative gas turbine generators (i.e. turbines derived from the aeronautical industry), primarily because of their suitability to frequent start-ups, flexibility, high efficiency and high-availability maintenance options. However, 'industrial' type units can also be used. These are typically larger and often more suited to longer operational hours. For the Power Generation Plant, HPL envisages using 3, 4 or 5 individual aero-derivative gas turbine generators or, alternatively 1 or 2 industrial gas turbine generators to generate up to 299 MW. To allow for a precautionary approach, the assessments in the PEIR have been based on the Power Generation Plant using 5 individual aero-derivative gas turbine generators unless otherwise stated. This is because 5 gas turbine generators would generally have greater impacts on the environment than fewer units and is therefore considered to be the realist worst case scenario.

Insert 3 – SCGT Schematic



2.2.4 The main equipment in an SCGT is a gas turbine generator, comprising of the following components:

- Inlet air filter;
- Air compressor;

- Combustion chamber;
- Power turbine; and
- Exhaust silencer.

2.2.5 In the gas turbines 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.

2.2.6 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.

2.2.7 The Power Generation Plant will have up to five gas turbine generators and five stacks, each up to 35m in height.

2.2.8 In addition to the gas turbine generators, the following will also be present on the Power Generation Plant Site:

- Process water tanks – for the storage of high purity water for use in the gas turbines;
- Fire Water Tanks;
- A control building – in order to monitor the plant operation;
- A workshop and stores building – to store maintenance spares and to provide a facility to carry out minor maintenance of the plant;
- A gatehouse – needed to provide security and maintain a log of site attendance / deliveries;
- Site lighting infrastructure, including perimeter lighting columns;
- A switchyard – required to connect the Power Generation Plant to the National Grid;
- A gas receiving installation; and
- A black start generator;

- Internal roadways, car parking, pedestrian network, cycle parking and potentially hardstanding for planned maintenance car parking; and

- Site vehicular access(es) potentially including works to the junction at Main Avenue

2.3 Gas Connection

2.3.1 A new underground gas pipeline is required to connect the Power Generation Plant to the existing Gas National Transmission System to provide a reliable supply of fuel.

2.3.2 There are two connection options (referred to as route corridor options 1 and 2) for the Project. These are described in more detail below.

Gas Connection Route Corridor option 1

2.3.3 This route is approximately 1.1 km long.

2.3.4 It begins at the Power Generation Plant Site, heading south, past industrial buildings in the Hirwaun Industrial Estate, across Main Avenue and then under Rhigos Road; a single carriageway that runs along the entire south side of Hirwaun Industrial Estate.

2.3.5 The route continues south of Rhigos Road into fields where it crosses under a set of overhead lines and continues heading south east where it then crosses two field drains. The route then turns east where it crosses under an unnamed minor road and another field drain. It then turns south east again, and heads towards the A4061. The route crosses under A4061 in an easterly direction. The route reaches the Gas National Transmission System east of the A4061 at Grid Reference SN938055.

Gas Connection Route Corridor Option 2

2.3.6 This route is approximately 1.25 km long.

2.3.7 The route begins at the Power Generation Plant Site heading south, immediately turning east, with mainlaying (laying pipe beneath the road) required down Main Avenue. Mid way down Main Avenue the route passes under an overhead walkway. The route then continues for a short distance up Main Avenue before turning south east through a field and reaches Fifth Avenue.

2.3.8 The route then turns south, mainlaying down Fifth Avenue, the single carriageway road that runs along part of the eastern boundary to the

Power Generation Plant Site. The route then continues being mainlayed across the Rhigos Road/A4061 and continues heading south where it crosses under a set of overhead lines. The route continues being mainlayed down Rhigos Road/A4061 before leaving the road.

2.3.9 The route turns into the field east of the A4061 for a short distance before turning back to run south, parallel to the A4061 where it crosses under another set of overhead lines. Shortly after crossing the overhead lines the route turns to the east where it connects to the Gas National Transmission System east of A4061at the same point as route corridor option 1.

Common Elements

2.3.10 Land over which Gas Connection route corridor options 1 and 2 will cross is initially similar to the Power Generation Plant Site (i.e. characterised by the Hirwaun Industrial Estate) although the final two thirds of the routes are characterised by agricultural land.

2.3.11 The AGI for both connection routes would be accessed via a short stretch of track which would be constructed between the A4061 and the AGI.

2.4 Electrical Connection

2.4.1 A new electrical connection would be required to allow electricity generated by the Power Generation Plant to be exported to the National Grid. The point of connection to the national grid will be at the National Grid Rhigos substation (to the north west of the Power Generation Plant Site) which is expected to be completed in 2016.

2.4.2 There are two electrical route connection corridors being considered and these are as follows.

Electrical Connection Route Corridor Option 1

2.4.3 This route is approximately 250m in length and would consist of a 400 kV overhead line. The line would run directly west from the Power Generation Plant into the Rhigos Substation. This route option is entirely within the area administered by RCTCBC.

2.4.4 A maximum of three pylons would be required to support the overhead line. The pylons would be approximately 35m in height. One or two would be located within the Power Generation Plant Site and one would be located within the Rhigos substation.

2.4.5 Electrical Connection route corridor option 2 crosses over marshy, waterlogged ground to the west of the Power Generation Plant Site. The closest residential properties to the Electrical Connection are the same as those identified for the Power Generation Plant Site.

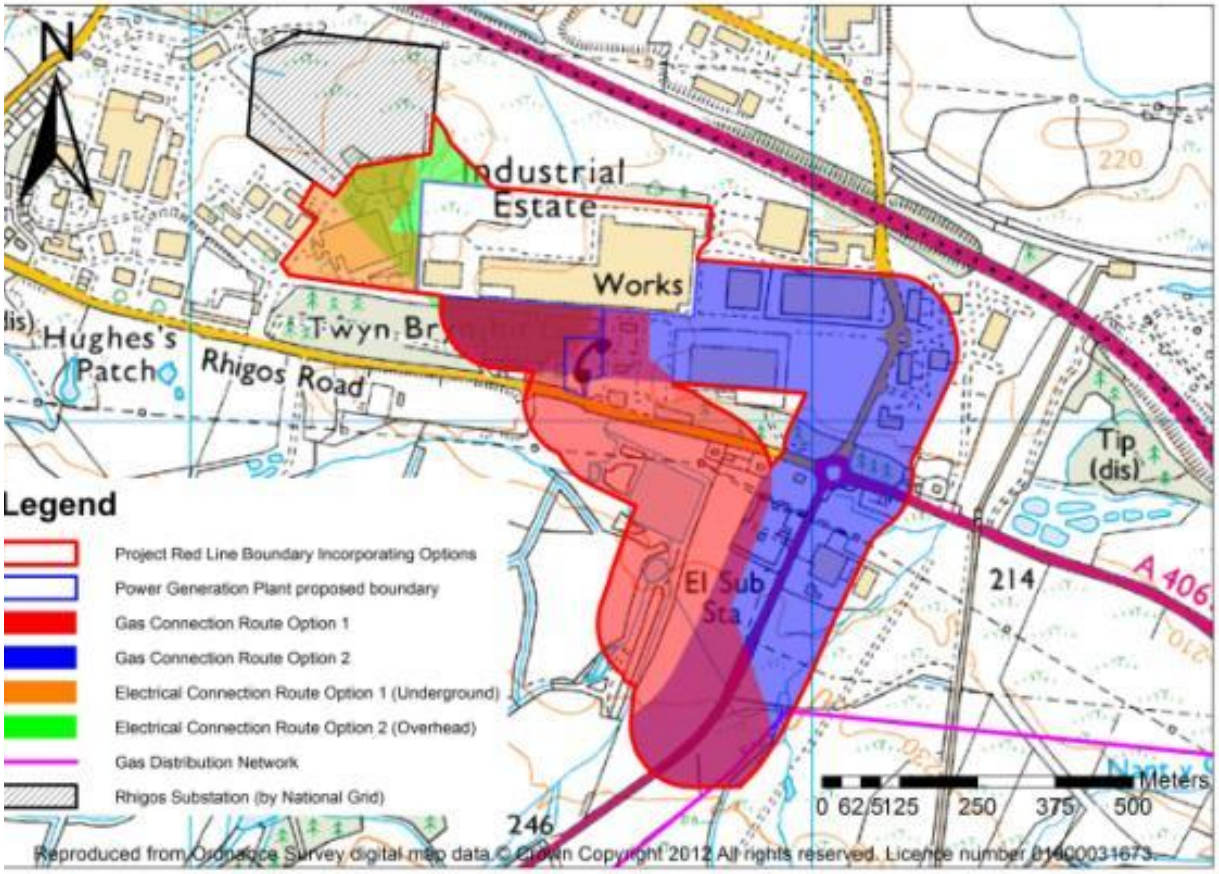
Electrical Connection Route Corridor Option 2

2.4.6 The route is approximately 650m in length. It would consist of a 400 Kv buried underground cable. The cable would run from the Power Generation Plant Site, alongside Main Avenue, to the south of a disused industrial warehouse, before heading north, alongside Fourteenth Avenue in between disused industrial warehouse buildings before connecting into the Rhigos Substation. This route option is entirely within the area administered by RCTCBC.

2.4.7 Land over which Electrical Connection route corridor option 1 will be situated is characterised by minor roads, hardstanding and scrub within Hirwaun Industrial Estate. The closest residential properties to the Electrical Connection are the same as those identified for the Power Generation Plant Site.

2.4.8 The route corridor options for the Gas and Electrical Connection are shown in Insert 4 below.

Insert 4 – Location of Gas Connection and Electrical Connection Route Corridor Options



SECTION 3

SITE SELECTION, ALTERNATIVES AND DESIGN EVOLUTION

3 SITE SELECTION, ALTERNATIVES AND DESIGN EVOLUTION

3.1 Introduction

3.1.1 An overview of the alternatives that have been considered for the proposed Project as part of the design evolution process is provided below.

3.2 Alternative Development Sites

3.2.1 As part of a detailed feasibility assessment, WPL has looked at a range of sites around the UK to support power generation plants of this nature. The key factors which WPL considered necessary in a site were broadly four fold: technical (e.g. the size of the site and the proximity to appropriate gas and electrical connection points), environmental, economic and whether the proposals would be in line with local planning policy.

3.2.2 Based on these factors, the Project Site was considered suitable as it is within close proximity to the Gas National Transmission System and to a high voltage electrical transmission infrastructure. The Project Site is also within an existing industrial estate, surrounded by similar industrial developments. The aims of local planning policy steer employment development towards the Hirwaun Industrial Estate. In addition, there is more than adequate space to develop the Power Generation Plant and integral infrastructure.

3.3 Power Generation Plant

3.3.1 Four technology options were originally considered for the 299MW Power Generation Plant: SCGT plant, Combined Cycle Gas Turbine (CCGT) plant and Reciprocating Gas Engines (RGE) plant. The potential for utilising Combined Heat and Power (CHP) opportunities using these technologies was also considered.

3.3.2 HPL has undertaken a number of studies as to the technology choice and it has been concluded that an SCGT is the most suitable technology choice for generating up to 299MW as a peaking plant at the Power Generation Plant Site. This has been determined based on the following environmental, technical and feasibility considerations:

- Visual impact: the use of a SCGT plant over a CCGT plant limits the height of the stack(s) required and therefore the visual impacts associated with the Power Generation Plant.
- Water resources: the water requirement of a SCGT plant is significantly lower than for a CCGT and CHP 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 Power Generation Plant Site to generate up to 299MW. 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.
- 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 flexible demands.

3.4 Gas Connection

3.4.1 Four potential options to connect the Power Generation Plant to the Gas National Transmission System were assessed. Further analysis discounted two of the routes for a combination of reasons, including proximity to a cemetery and a nature reserve. Accordingly, the two routes described above have been taken further into the assessment.

3.5 Electrical Connection

3.5.1 Two routes have been considered for the electrical connection. These have subsequently been refined and their footprint reduced. The two options, as discussed in Section 2.4 have been taken further into the assessment.

SECTION 4

PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT

4 PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT

4.1 Environmental Impact Assessment Methodology

4.1.1 In accordance with relevant regulations, the EIA process for the Project incorporates 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 impacts resulting from the Project;
- Determining how the potential environmental impacts can be avoided, reduced or off-set through informed design and / or further mitigation and how its benefits may be enhanced;
- Assessing the significance of the potential environmental impacts in conjunction with other impacts arising from the Project and those from other neighbouring developments and / or sources (in-combination and cumulative impacts); and
- Proposing options as to how any significant residual impacts will be mitigated, managed and monitored.

4.1.2 The PEIR is an intermediate step of the EIA process required by the EIA Regulations, reporting on information currently available and some likely approaches to mitigation measures which might be used to avoid, reduce and if possible remedy any significant adverse impacts.

4.1.3 Before commencing the EIA for the Project, HPL requested a Scoping Opinion from the Secretary of State in May 2013, who then consulted bodies such as RCTCBC and Natural Resources Wales (NRW).The views given in the formal Scoping Opinion, received in July 2013, have been taken into account in preparing the PEIR.

4.1.4 Throughout the following sections, the terms construction, operation and decommissioning have been used. These are defined as follows:

- **Construction –** Construction of the Project, including demolition of existing buildings. Depending on the final plant selection, this is anticipated to take between 18 and 36 months.

- **Operation –** Operation of all aspects of the Project, including maintenance. The Project is anticipated to have a lifetime of approximately 25 years.

- **Decommissioning –** Removal of some plant items and site reinstatement when the Power Generation Plant has reached the end of its operational life. This is anticipated to take a similar time to construction. It is likely that the Gas Connection would be left in situ.

4.2 Air Quality

Introduction

4.2.2 The construction, operation and decommissioning of the Project have the potential to impact on air quality both through the generation of dust during the construction phase and the generation of stack emissions during operation.

4.2.3 A desk based assessment, together with air dispersion modelling have been carried out to assess any potential air quality impacts resulting from the construction, operation and decommissioning of the Project on identified receptors. These include residential areas in Hirwaun, Pontbren Llwyd and Rhigos, as well as ecological receptors within 10 km of the Power Generation Plant Site.

Preliminary Assessment of Potential Impacts

Power Generation Plant

Construction

4.2.4 The main potential impacts resulting from construction of the Power Generation Plant on air quality are from dust generated from construction activities (e.g. demolition of existing buildings and excavation for new foundations). There is also a small potential for impacts arising from exhaust emissions from construction traffic.

4.2.5 Despite this, it is considered unlikely that levels of atmospheric dust would be generated which would constitute a health hazard or nuisance to local people or industry. Impacts would be minimised through successful implementation of an agreed Construction Environmental

Management Plant (CEMP), which would incorporate appropriate dust mitigation measures such as damping down or covering of stock piles and excavations during dry and windy weather. Additionally, the majority of particulates from construction activities settle within a short distance of the construction site. Therefore, impacts on receptors further afield will be minor following implementation of the CEMP.

Operation

4.2.6 The main potential impacts arising from operation of the Power Generation Plant are associated with the stack emissions arising as a result of the combustion of natural gas. Emissions from the stack(s) include Nitrous Oxides (NOx) and Carbon Monoxide (CO).

4.2.7 However, modern gas fired power plant are inherently clean and produce far fewer emissions than other fossil fuel power plants (e.g. coal) when compared on an energy output basis. Emissions of both NOx and CO are strictly limited under national and international guidelines such as the Industrial Emissions Directive.

4.2.8 Initial air quality modelling has shown that an appropriate stack height which will achieve adequate dispersion of NOx and CO to meet legislative limits and prevent any impacts to identified receptors is between 25m and 35m. It is concluded, therefore, that impacts on air quality during operation will be minor.

Decommissioning

4.2.9 During decommissioning of the Power Generation Plant, there is the potential for similar impacts as identified during construction. However, the same mitigation measures and best practice working guidelines would be put in place to ensure any impacts on receptors will be minor following implementation of the CEMP.

Gas Connection (route corridor options 1 and 2)

Construction

4.2.10 Movement of soils from construction activities is anticipated to lead to the generation of some short-term airborne soil dust. However, at any one location, the construction activities will only occur for a short period of time as construction moves along the gas pipeline route. In some locations the impact will be no greater than that experienced by existing dust producing agricultural activity and therefore any impacts are likely to be minor.

4.2.11 Given the similarity of the two Gas Connection route corridor options, there are not considered to be differences in the potential impacts of the different routes.

Operation

4.2.12 During operation of the Gas Connection (no matter which option is selected), there will be no impacts to air quality.

Decommissioning

4.2.13 During decommissioning of the Gas Connection, there is the potential for similar impacts as identified during construction. However, the same mitigation measures and best practice working guidelines would be put in place to ensure any impacts are minor.

Electrical Connection (route corridor options 1 and 2)

Construction

4.2.14 The construction of the Electrical Connection is not anticipated to generate significant dust, plant / machinery or traffic emissions due to the small scale of the construction / installation works. In the case of route corridor option 1 (overhead), there will be a minimal amount of construction work within the Power Generation Plant Site and the impacts would be considered as part of those construction works.

4.2.15 In the case of route corridor option 2 (underground), there will be a minimal amount of excavation / trenching within the Hirwaun Industrial Estate and adjacent to the Power Generation Plant Site.

4.2.16 For both route corridor options there is the potential for generation of dust. However, in reality this can be considered as part of the same potential impacts as the construction of the Power Generation Plant, given their close proximity and that the same receptors will potentially be impacted.

4.2.17 Additionally, given that both Electrical Connection route corridor options will give rise to minimal construction works and they are in close proximity to one another, there are not considered to be differences in the potential impacts of the different routes.

Operation

4.2.18 During operation of the electrical connection (no matter which option is selected), there will be no impacts to air quality.

Decommissioning

4.2.19 During decommissioning of the Electrical Connection, there is the potential for similar impacts as identified during construction. However, the same mitigation measures and best practice working guidelines would be put in place to ensure any impacts are minor.

Conclusions

4.2.20 Based on the results of the preliminary environmental assessment, taking into account potential mitigation measures, the Project is not predicted to have any likely significant effects on air quality.

Next Steps

4.2.21 A full air quality impact assessment will be undertaken to determine the likely environmental impacts of operation of the proposed Project, both in isolation and in conjunction with other significant emissions sources identified through consultation with the relevant authorities. The impact of emissions from traffic during the construction and decommissioning phases of the proposed Project will also be assessed in greater detail. The results of this assessment work will be presented within the ES.

4.3 Noise and Vibration

Introduction

4.3.1 The construction, operation and decommissioning of the Project have the potential to impact upon local noise levels and generate vibration, which may impact on sensitive receptors.

4.3.2 A desk based assessment, a noise survey and preliminary noise modelling have been undertaken to make a preliminary assessment of the potential noise impacts caused by the construction, operation and decommissioning of the Project.

4.3.3 Background noise measurements were made at the following six residential locations in the vicinity of the Project in order to determine the existing baseline noise climate:

- Rhigos Road;
- Hoel Y Graig;
- Halt Lane;
- Castell Farm;

- Tai Cwplau; and
- Willow Farm

4.3.4 These locations were determined as representative of properties which have the potential to be impacted by noise produced from the Project and were agreed in consultation with RCTCBC.

Preliminary Assessment of Potential Impacts

Power Generation Plant

Construction

4.3.5 Construction activity inevitably leads to some degree of noise disturbance at locations in close proximity to construction activities. Noise at the Power Generation Plant Site could arise from demolition of existing buildings, excavation for foundations and delivery of plant. This will however be a temporary source of noise. Based on a conservative, worst case assessment, where numerous large plant items are operating simultaneously, the significance of the overall impact of construction noise from the Power Generation Plant is predicted to be minor at all receptor locations following the implementation of the CEMP which will include noise reducing measures.

Operation

4.3.6 During operation, noise disturbance could potentially occur from the operation of the Power Generation Plant from, such as from the. rotating components of the Power Generation Plant (e.g. the gas turbine generator units).

4.3.7 In order to predict operational noise, the background noise measurements taken at the receptors were modelled alongside noise levels predicted for typical power generation plants similar to that expected at Hirwaun.

4.3.8 This preliminary assessment has shown that there are potential noise impacts predicted at nearest sensitive receptors during operation of the Power Generation Plant. However, at this stage. this is an initial worst case assessment. Several mitigation measures and further refinements in plant design will be put in place to ensure that there are no significant impacts at any of the receptor locations during operation. These mitigation measures include: the fitting of high performance silencers and the acoustic cladding of all gas turbine generator units. Following

this mitigation, it is predicted that the noise impact of the Power Generation Plant on sensitive receptors will be minor.

4.3.9 Additionally, operational noise will be continuously monitored to ensure that there are no breaches of allowed noise limits.

4.3.10 During operation, vibration effects are anticipated to be imperceptible at the nearest receptors. All plant items will also be designed and positioned so that they do not generate vibration impacts.

Decommissioning

4.3.11 During decommissioning, similar impacts to those predicted during construction will be experienced (i.e. minor at all receptors) as the construction and decommissioning phases will involve similar activities.

Gas Connection (route corridor options 1 and 2)

Construction

4.3.12 Construction of the Gas Connection (both route corridor options) is expected to lead to the generation of some short-term construction noise, primarily from the excavation of the trench in which the pipeline will sit. However, at any one location, the construction activities will only occur for a short period of time as construction moves along the gas pipeline route. In some locations the impact will be no greater than that experienced currently with the movement of agricultural machinery. Therefore a preliminary assessment of the significance of noise impacts can be considered as minor.

4.3.13 Given the similarity of the two Gas Connection route corridor options, there are not considered to be differences in the potential impacts of the different routes.

Operation

4.3.14 During operation, there will be small amounts of noise generated by the gas AGI. This may be a low 'hum' noise or 'hiss' type of noise as the AGI regulates the flow of gas from the Gas National Transmission System to the Power Generation Plant.

4.3.15 This noise is rarely perceptible except when in very close proximity to the AGI. Given that there are no residential properties in close proximity to the proposed location for the AGI, an initial assessment is that the operational noise from the Gas Connection would be negligible.

4.3.16 This applies to either Gas Connection option.

Decommissioning

4.3.17 During decommissioning, similar impacts to those predicted during construction may be experienced (i.e. minor) as the construction and decommissioning phases will involve similar activities.

Electrical Connection (route corridor options 1 and 2)

Construction

4.3.18 The construction of the Electrical Connection is not anticipated to generate significant noise from plant / machinery or traffic due to the small scale of the construction / installation works. In the case of route corridor option 1, there will be a minimal amount of construction work within the Power Generation Plant Site and the impacts would be considered as part of those construction works.

4.3.19 In the case of route corridor option 2, there will be a minimal amount of excavation / trenching within the Hirwaun Industrial Estate and adjacent to the Power Generation Plant Site. The cable would be installed between 1 and 2 m below ground and in a corridor of no more than 3 m wide.

4.3.20 For both Electrical Connection route corridor options there is the potential for generation of noise during construction, however, in reality this can be considered as part of the same potential impacts as the construction of the Power Generation Plant, given their close proximity and that the same receptors will potentially be impacted.

Additionally, given that both Electrical Connection route corridor options will give rise to minimal construction works and they are in close proximity to one another, there are not considered to be differences in the potential impacts of the different routes.

Operation

4.3.21 Should an overhead electrical connection be selected (i.e. Electrical Connection route corridor option 1) then it is possible that it will produce a low ‘hum’ during operation caused by the flow of electricity through the line. However, this noise is usually imperceptible except when directly under the line. Additionally, the connection at Hirwaun would be very short and not in close proximity to residential properties. An initial assessment is therefore that the operational noise from the Electrical Connection would be negligible.

4.3.22 Should option 1 be pursued (i.e. an underground cable) then there would be no perceptible noise during operation.

Decommissioning

4.3.23 During decommissioning, similar impacts to those predicted during construction may be experienced. (i.e. minor).

Conclusions

4.3.24 Based on the preliminary assessment undertaken to date, there are not considered to be any likely significant environmental effects on noise due to construction of the Power Generation Plant, Gas Connection or Electrical Connection. Additionally, no impacts from noise are predicted during operation of the Gas Connection or Electrical Connection. A worst case assessment has predicted noise impacts at nearest sensitive receptors from operation of the Power Generation Plant. However, these will be subject to mitigation measures which will mean that there are no significant impacts.

Next Steps

4.3.25 Further detailed noise modelling will be undertaken as part of the ongoing EIA process, as well as establishing ways to mitigate noise impacts during operation.

4.4 Ecology

Introduction

4.4.1 The construction, operation and decommissioning of the Project have the potential to impact upon sensitive ecological receptors. The Power Generation Plant also has the potential to provide ecological value, for example, by reinforcing existing habitats or through the introduction of screen planting, which could provide additional habitat for some species.

4.4.2 In order to assess the current ecological conditions at the Project Site the following steps have been / are being undertaken:

- Ecological consultations with statutory and non statutory stakeholders is ongoing to understand where the areas of potential ecological sensitivity are most likely to be located.
- Local desk studies and site walkover and habitat classification studies known as a “phase 1 habitat surveys” were undertaken to assess the habitats and notable species at the Project Site.

- Once the desk studies, the phase 1 surveys were completed, the resulting information obtained from them was then used to inform species specific surveys termed "Phase 2 protected species surveys". These surveys involved field based assessments to determine the presence / absence of notable species and their population size if present.

- All desk studies and Phase 1 studies have been completed for the Project, as have the majority of Phase 2 studies.

4.4.3 The assessments undertaken so far have identified sensitive ecological areas and species in close proximity to the Project Site, including the Hirwaun Industrial Estate Site of Importance for Nature Conservation (SINC), and populations of bats. As a precautionary measure, surveys for reptiles, important breeding birds and Great Crested Newts were also undertaken, although no populations were found. Surveys for otters are currently still ongoing.

Preliminary Assessment of Potential Impacts

Power Generation Plant

Construction

4.4.4 During construction, potential impacts on ecological receptors could occur from habitat loss, increased noise and vibration, increased traffic movement, increased dust and habitat disturbance. This could impact on bats and the Hirwaun SINC. However, based on a preliminary assessment, the significance of these impacts, after appropriate mitigation, is considered to be minor.

4.4.5 Elements anticipated to require the greatest consideration are potential air/water-borne pollutants on the adjacent Hirwaun Industrial Estate SINC and the demolition of buildings known to be used by nesting birds and roosting bats.

4.4.6 Based on the preliminary assessment undertaken to date, it is envisaged that there will be some compensatory habitat creation required for any bat roosts that are lost as part of the demolition of existing buildings prior to construction of the Power Generation Plant.

4.4.7 However, no significant impacts on ecological receptors are predicted following the implementation of mitigation.

Operation

4.4.8 During operation of the Power Generation Plant, the main potential impacts to ecology will arise from stack emissions impacting on ecologically sensitive sites. Other impacts may include increased light spill affecting bats and increased noise and vibration, affecting the SINC and bats and birds However, based on a preliminary assessment, the significance of these impacts, after appropriate mitigation, is considered to be minor.

Decommissioning

4.4.9 During decommissioning, similar impacts to those predicted during construction may be experienced as the construction and decommissioning phases will involve similar activities.

Gas Connection (route corridor options 1 and 2)

Construction

4.4.10 The majority of the potential impacts associated with the proposed Gas Connection will be temporary in nature and related to habitat disturbance whilst the trench is being excavated and the pipeline laid. Habitats present would be reinstated following installation of the pipeline, and would be restored to as closely match pre-existing habitats as possible. There are, therefore, not anticipated to be any significant impacts resulting from construction of the Gas Connection.

4.4.11 Given the similarity of the two gas connection route corridor options, there are not considered to be differences in the potential impacts of the different routes.

Operation

4.4.12 During operation, there will be no impacts on ecology from the Gas Connection (no matter which option is chosen).

Decommissioning

4.4.13 During decommissioning, no impacts are predicted as the pipeline will be most likely left in-situ.

Electrical Connection

Construction

4.4.14 Electrical Connection route corridor option 1 would be an overhead line. Due to the short distance of the line and close proximity to the Power

Generation Plant, the impacts of the connection could be considered as part of the construction of the Power Generation Plant.

4.4.15 Electrical Connection route corridor option 2 would be a buried underground cable which would be sited entirely on in hardstanding on the Hirwaun Industrial Estate. Although there would be increases in disturbance to the area during construction, due to the nature of the location of the electrical connection, the small construction footprint and remoteness from any sensitive ecological sites, it is not anticipated to have any impacts on ecological receptors.

Operation

4.4.16 During operation, there will be no impacts on ecology from the Electrical Connection (no matter which option is chosen).

Decommissioning

4.4.17 During decommissioning, similar impacts to those predicted during construction may be experienced.

Conclusions

4.4.18 There are potential impacts to ecological habitats during construction, operation and decommissioning of the Power Generation Plant. However, following the implementation of mitigation measures, these are not anticipated to be significant. The specific mitigation measures will be determined once all of the phase 2 protected species surveys have been completed .

Next Steps

4.4.19 As the ecological impact assessment progresses, specific ecological consultation will include further detailed correspondence with NRW and RCTCBC.

4.4.20 The Phase 2 species surveys which are still ongoing will be completed and the results of the other surveys which have recently been completed will be finalised .

4.5 Water Resources

Introduction

4.5.1 The construction, operation and decommissioning of the Project have the potential to impact upon local water quality and water resources. Although the Power Generation Plant would utilise air cooling,

substantially reducing the need for water during operation, small quantities of water would still be required. Consequently, any water use at the Project Site has the potential to impact upon the water resources in the area.

4.5.2 A Desk based assessment has been carried out with regards to water resources. This has identified all surface water resources within the study area, as well as any areas of vulnerability and previous pollution incidents which may have impacted on water bodies.

4.5.3 The main water bodies within the vicinity of the Project Site are considered to be:

- Penderyn Reservoir which is around 800m north of the Power Generation Plant Site;
- River Camnant which is culverted underneath the Power Generation Plant Site;
- Fishing pond approximately 200 m south of the Power Generation Site;
- Numerous drainage ditches and several small ponds on agricultural land to the south of Rhigos Road; and
- Hirwaun Ponds approximately 1 km east of the Power Generation Plant Site.

Preliminary Assessment of Potential Impacts

Power Generation Plant

Construction

4.5.4 Based on the preliminary environmental assessment data, the main potential impact that may result from construction of the Power Generation Plant is contaminated material entering a surface water body. However, there are not anticipated to be any impacts on the water bodies listed above as the majority are a significant distance from the Power Generation Plant Site. Best practice would also be employed during construction to protect the water environment, in accordance with guidelines published by NRW.

4.5.5 It is predicted that following mitigation, any impacts on water quality and resources will be negligible.

Operation

4.5.6 During operation, the Power Generation Plant Site would be equipped with a surface water drainage system and a sewerage system. The surface water drainage system would remove any potentially polluted runoff, prior to reaching the main sewerage network. It is currently anticipated that the on-site sewerage system would connect to the existing mains drainage system, currently present at the Power Generation Site and used by International Greetings UK Ltd.

4.5.7 Due to the intermittent water demand of the Power Generation Plant, all water would be tankered to the Power Generation Plant and stored in water storage tanks adjacent to the administration buildings. No surface water or groundwater abstraction would be required.

4.5.8 It is predicted that any impacts on water quality and resources will be negligible.

Decommissioning

4.5.9 During decommissioning, similar impacts to those predicted during construction may be experienced.

Gas Connection (route corridor options 1 and 2)

Construction

4.5.10 Gas Connection route corridor option 1 requires the crossing of three minor field drains and route corridor option 2 requires the crossing of one field drain. The exact construction methods used to cross these drains has not yet been determined and it is likely that this will need to be done in consultation with the landowner. It could be that these field drains are re-routed or it could be that the pipeline is laid under these drains. However, no matter what construction method is used, due care and attention will be paid so that no potential pollutant pathways are opened up which could impact on the field drains. As for construction of the Power Generation Plant, best practice will be followed including the implementation of a CEMP. It is predicted that following this mitigation, any impacts on water quality and resources will be negligible.

4.5.11 Given the similarity of the two gas connection route corridor options, there are not considered to be differences in the potential impacts of the different routes.

Operation

4.5.12 During operation, there will be no impacts on water quality or resources from the Gas Connection (no matter which option is chosen).

Decommissioning

4.5.13 During decommissioning, no impacts on water quality and resources are anticipated as the Gas Connection will be left in situ.

Electrical Connection (route corridor options 1 and 2)

Construction

4.5.14 Electrical Connection route corridor option 1 does not cross any water bodies. It does cross over a waterlogged and marshy area to the north and west of the Power Generation Plant. However, route corridor option 1 will be an overhead line and therefore no direct impacts to this area are anticipated.

4.5.15 Electrical Connection route corridor option 2 runs through the Hirwaun Industrial Estate and not in close proximity to any watercourses. Therefore no impacts to water quality are anticipated.

Operation

4.5.16 During operation, there will be no impacts on water quality or resources from the Electrical Connection (no matter which option is chosen).

Decommissioning

4.5.17 During decommissioning, as for construction, no impacts on water quality and resources are anticipated.

Conclusions

4.5.18 The Power Generation Plant requires a small amount of water during construction and operation. However, no likely significant environmental effects on water quality or resources are anticipated.

4.5.19 Due to the nature of the Gas Connection and Electrical Connection, no likely significant environmental effects on water quality and resources are anticipated.

4.5.20 Next Steps

4.5.21 The following next steps will be undertaken in order to complete the assessment of potential impacts on water quality from the Project:

- More detailed survey of water bodies in the vicinity of the Project Site;
- Further consultation with NRW on potential impacts on water quality;
- Full Flood Risk Assessment completed; and
- Further assessment of plant drainage design.

4.6 Geology, Ground Conditions and Hydrogeology

Introduction

4.6.1 The construction, operation and decommissioning of the proposed Project has the potential to impact upon geology, ground conditions and hydrogeology by, for example, the removal of good quality agricultural land. The proposed Project also has the potential to result in impacts from contamination (existing or created) on human health and sensitive ecological receptors.

4.6.2 An initial desk based assessment has been carried out to assess the baseline geology and ground conditions underlying the Project Site. The assessment studied information regarding previous land uses of the Project Site and the surrounding area, the soils and geology present at the Project Site, any potential contamination issues resulting from former site uses and any potential mining and ground stability hazards.

4.6.3 Several former landfill sites are present in the vicinity of the Project Site, as are areas of deep peat deposits and areas previously affected by coal mining, which all have the potential to impact on the development of the Project.

4.6.4 The Power Generation Plant, Gas Connection route corridors and Electrical Connection route corridors are all underlain by the 'South Wales Lower Coal Measures' formation.

4.6.5 The superficial deposits covering a small area in the centre of the Power Generation Plant Site and the majority of the Gas Connection route corridor options is Devensian Till – a diamicton which includes a mixture of clay, sands and gravels.

4.6.6 The majority of the Power Generation Plant Site and Electrical Connection route corridor options are covered by Peat deposits (waterlogged organic material).

4.6.7 A Conceptual Site Model (CSM) approach has been used to assess the risk posed by contaminants on human health and other sensitive receptors. This examines the potential sources of contamination (e.g. historical sources), the potential receptors that could be affected (e.g. soil and construction workers) and the pathways to these receptors (e.g. leaching in surface water and inhalation of airborne contaminants).

Preliminary Assessment of Potential Impacts

Power Generation Plant

Construction

4.6.8 During construction of the Power Generation Plant, the main potential impacts on geology and land contamination will be from;

- Disturbance of existing contamination and creation of pollution pathways; and
- Creation of pollution incidents from e.g. spillages.

4.6.9 Despite this, stringent mitigation measures such as working within best practice guidelines and adhering to a detailed CEMP will be employed to prevent any contamination or pollution incidents impacting on the local geology or soils, thus the impact will be negligible. Furthermore given the previous industrial land use of the Power Generation Plant Site there are no important geology or soils underlying the site.

Operation

4.6.10 During operation of the Power Generation Plant, no further impacts on geology and soils are anticipated as there will be no further ground disturbance. Accordingly, any impacts will be negligible.

4.6.11 Any potential impacts resulting from e.g. ground instability will be mitigated by the undertaking of a detailed geotechnical site investigation prior to construction.

Decommissioning

4.6.12 During decommissioning, similar impacts to those predicted during construction may be experienced.

Gas Connection (route corridor options 1 and 2)

Construction

4.6.13 The construction of Gas Connection route corridor option 1 will result in the temporary sterilisation of agricultural land. However, this will be a relatively narrow corridor (maximum of 30m working width) and any impacts would be temporary. There is therefore considered to be a minor impact. Given that land underlying gas connection route corridor option 1 has not been subject to industrial development, the potential for encountering contaminated materials is considered to be low.

4.6.14 The construction of Gas Connection route corridor option 2 would be alongside roads for its majority and would therefore not result in the sterilisation of a large quantity of agricultural land. Therefore any impacts would be negligible.

Operation

4.6.15 During operation, there will be no impacts on geology, ground conditions or hydrogeology from the Gas Connection (no matter which option is chosen).

Decommissioning

4.6.16 During decommissioning, no impacts are anticipated as the Gas Connection will be left in situ.

Electrical Connection (options 1 and 2)

Construction

4.6.17 The construction of Electrical Connection route corridor option 1 is not considered to have any impact on geology, soils or hydrogeology. The connection will be an overhead line. Although some above ground infrastructure would be required, this would be sited within the Power Generation Plant Site and no construction would take place outside of this, other than at the Rhigos substation. Any impacts will therefore be negligible.

4.6.18 Electrical Connection route corridor option 2 would involve the excavation of a narrow trench (of the order of 3m wide) alongside roads and in hard standing on the Hirwaun Industrial Estate. This excavation will therefore have a negligible impact on geology and soils.

Operation

4.6.19 During operation, there will be no impacts on geology, ground conditions or hydrogeology from the electrical (no matter which option is chosen).

Decommissioning

4.6.20 Decommissioning impacts are considered to be the same as those set out for construction.

Conclusions

4.6.21 Based on the preliminary assessment undertaken to date taking into account potential mitigation measures, the proposed Project is not predicted to have any likely significant effects on geology, ground conditions and agriculture. As part of the full EIA process a more detailed assessment will be carried out. The results of this assessment work will be presented within the ES.

Next Steps

4.6.22 The following next steps will be undertaken in order to complete the assessment of potential impacts on ground conditions from the Project:

- Further, more in depth assessment of potential contamination at the Power Generation Plant Site from previous land uses;
- Further consultation with NRW and RCTCBC to determine the nature, scope and timing of any intrusive ground investigation works considered necessary; and
- Further risk assessment of ground instability issues.

4.7 Landscape and Visual Impacts

Introduction

4.7.1 A desk based assessment and preliminary site visit have been undertaken to determine the baseline landscape character in which the Project would sit and the sensitive receptors which may be impacted by the visual appearance of the Project. This study identified landscape designations, nature conservation designations, public rights of way, settlements, infrastructure and the historic landscape in the vicinity of the Project.

4.7.2 Preliminary Assessment of Potential Impacts

Power Generation Plant

Construction

4.7.3 The main potential sources of landscape and visual impact during construction of the Project are: earthworks, site clearance works, the

removal of vegetation, construction traffic and construction site lighting. However, given the already industrial nature of much of the Project Site, as well as the limited construction period, these impacts are considered to be minor.

Operation

4.7.4 During operation, impacts on landscape and visual amenity will result from the introduction of permanent structures, particularly the stacks of the Power Generation Plant which will be the largest structure on site.

4.7.5 No direct impacts are likely to be felt during operation as a result of landscape losses, because the Project would not intensify the existing industrial landscape as it will directly replace an existing industrial building. Furthermore, impacts on visual amenity to the immediate surrounding area are likely to be negligible for the same reason, and also because of the low lying nature of the Hirwaun Industrial Estate and the level of tree screening it is afforded.

Decommissioning

4.7.6 During decommissioning, similar impacts to those predicted during construction may be experienced.

Gas Connection (route corridor options 1 and 2)

Construction

4.7.7 During construction, similar potential impacts to those identified for the Power Generation Plant may be experienced (e.g. through land clearance and presence of construction plant), although construction of the Gas Connection would be a smaller undertaking than for the Power Generation Plant. Hence impacts would be minor or negligible.

Operation

4.7.8 During operation, there will be no impacts on landscape or visual impacts from the majority of the Gas Connection (no matter which option is chosen) as it would be a buried pipeline.

4.7.9 There may be minor impacts from the AGI, although this would be a small structure and it would be screened with vegetation to prevent any significant landscape and visual impacts. Additionally, there are no residential receptors in close proximity to the AGI.

Decommissioning

4.7.10 During decommissioning, similar impacts to those predicted during construction may be experienced.

Electrical Connection (route corridor options 1 and 2)

Construction

4.7.11 During construction, similar potential impacts to those identified for the Gas Connection are predicted (e.g. presence of large construction plant items.

Operation

4.7.12 During operation, there may be some minor impacts resulting from Electrical Connection route corridor option 1 as it will be an overhead line, supported by up to three towers of approximately 35m in height. However, these impacts could be considered as part of the overall infrastructure of the Power Generation Plant. It is predicted, therefore, that the landscape and visual impact of the Electrical Connection option 1 is minor. .

4.7.13 There will be no impacts on landscape or visual amenity from Electrical Connection option 2 as it will be a buried cable.

Decommissioning

4.7.14 During decommissioning, similar impacts to those predicted during construction may be experienced.

Conclusions

4.7.15 Given the current industrial nature of the Power Generation Plant Site, no likely significant environmental effects are anticipated on landscape and visual amenity. However, further studies are required to establish the exact nature of any impacts.

Next Steps

4.7.16 A full Landscape and Visual Impacts Assessment is currently being undertaken, the results of which will be presented within the ES. The methodology for the full LVIA is based on current best practice and guidance. It will include a visual survey during the winter to assess potential views of the development when screening from vegetation is at its least effective. The visual assessment will consider viewpoints from locations throughout the Study Area that are representative of potential views from residential properties, public rights of way, recreational resources and heritage assets. Separate computer

generated Zone of Theoretical Visibility (ZTV) maps will be produced for the stack(s) and main structures to assist in viewpoint selection.

4.8 Waste Management and Health

Introduction

4.8.1 The construction, operation and decommissioning of the Project have the potential to generate a variety of waste material that would need to be handled and disposed of with care in order to avoid impacts upon public health.

4.8.2 The Project could also create impacts relating directly to human health (e.g. through changes to air quality or water quality).

Preliminary Assessment of Potential Impacts

Power Generation Plant

Construction

4.8.3 It is anticipated that the majority of waste would be generated during the construction and decommissioning phases of the Power Generation Plant, when significant quantities of wastes such as concrete, inert builders rubble, spoil and scrap metal would be produced, particularly during demolition of the existing industrial buildings at the Power Generation Plant Site.

4.8.4 Additionally, there is the potential to generate noise, air quality and pollution impacts which could negatively impact on human health. However, it is predicted that none of these impacts are likely to be significant.

Operation

4.8.5 During operation, the production of waste is likely to be significantly less than for construction, although minimal quantities of both non-hazardous and hazardous waste would be likely to be produced, including used air filters, scrap metal, used insulation material, general office waste, and other miscellaneous wastes, as well as small quantities of waste water. These impacts will not be significant.

The main potential impact on human health during operation of the plant is from the generation of stack emissions which may impact air quality. However, it is predicted that any impact is not likely to be significant.

Decommissioning

4.8.6 During decommissioning, similar impacts to those predicted during construction may be experienced.

Gas Connection (route corridor options 1 and 2)

Construction

4.8.7 During construction of the Gas Connection, small quantities of spoil and construction waste will require disposal, although on a smaller scale than for the Power Generation Plant. No significant impacts are anticipated.

4.8.8 There may also be minor impacts from dust generation.

4.8.9 Given the similarity of the two Gas Connection route corridor options, there are not considered to be differences in the potential impacts of the different routes.

Operation

4.8.10 During operation, there will be no impacts from waste generation or on human health from the gas connection (no matter which option is chosen).

Decommissioning

4.8.11 During decommissioning, no impacts are anticipated as the Gas Connection will be left in situ.

Electrical Connection (route corridor options 1 and 2)

Construction

4.8.12 During construction of the Electrical Connection, small quantities of spoil and construction waste will require disposal. In the case of route corridor option 1 this will be from excavation works required to site pylons and for route corridor option 2 this will be from excavation works when laying the cable. However, this will be on a smaller scale than for the Power Generation Plant. Therefore no significant impacts are anticipated.

4.8.13 There may also be minor impacts from dust generation.

Operation

4.8.14 During operation, there will be no impacts from waste generation or on human health from the Electrical Connection (no matter which option is chosen).

Decommissioning

4.8.15 During decommissioning, similar impacts to those predicted during construction may be experienced.

Conclusions

4.8.16 All types of waste generated can have a detrimental impact on the environment if not appropriately managed and controlled. HPL would, therefore, ensure that all waste would be dealt with in a manner that complies with the relevant regulations and (upon leaving the site) waste would be treated and disposed of by suitably licensed contractors. As such, taking into account potential mitigation measures, the preliminary environmental assessment has identified that the proposed Project is not predicted to have any likely significant effects on waste management.

4.8.17 At present, it is anticipated that the main potential impacts to public health arising from the proposed Project would result from changes to local air quality, although potential impacts may also arise from contaminated land, site run-off and noise impacts. A CSM approach has been used to assess the risks posed by contaminants to public health. This examines the cause of the impact (e.g. stack emissions may result in a change in air quality), the potential human receptors that could be affected and the pathways to these receptors. Based on the results of the preliminary environmental assessment, taking into account potential mitigation measures, the proposed Project is not predicted to have any likely significant effects on public health.

Next Steps

4.8.18 As part of the ongoing assessments, further work will be undertaken to fully characterise any impacts on human health from noise and air quality from all aspects of the Project. When more detail is known about the construction programme, further details will be provided on the likely quantities and composition of waste.

4.9 Traffic, Transport and Access

Introduction

4.9.1 The construction, operation and decommissioning of the Project have the potential to impact upon the local transport network, through the generation of additional traffic movements to the area.

4.9.2 An initial desk based assessment has been carried out as part of the PEIR. This identified and assessed the following:

- Pedestrian and cycle facilities including the National Cycle Network Route 46;
- Public transport services including bus and rail services;
- Private transport services including parking provision;
- Highways networks and junctions; and
- Road safety and collision statistics.

4.9.3 Access to the Power Generation Plant Site and Electrical Connection is currently anticipated to be from the A4061, Rhigos Road and Main Avenue via an existing gated access, which is currently used for the International Greetings UK Ltd. site. Access to the Gas Connection is anticipated to be from the A4061, from which a small new access track will be created.

Preliminary Assessment of Potential Impacts

Power Generation Plant

Construction

4.9.4 During construction, the Power Generation Plant is anticipated to require up to 250 workers at its peak construction phase. Assuming that two workers share a vehicle on average, this will result in approximately 125 journeys to the Power Generation Plant Site to start work and 125 journeys away from work.

4.9.5 The construction of the Power Generation Plant will also require the delivery of large plant items such as the gas turbine generators and stacks. There is therefore the potential to impact on the surrounding road network through for example, temporary road closures and requirement for escort vehicles. However, given the temporary nature of the construction phase, the impacts on traffic and transport are predicted to be minor.

Operation

4.9.6 During operation of the Power Generation Plant, up to a maximum of 15 construction staff are anticipated to be employed full time. Additionally, there will be infrequent maintenance visits by 1 or 2 engineers. This will generate very similar traffic movements as are currently experienced in the local area due to the existing staff levels at the International Greetings UK Ltd. site.

4.9.7 Therefore, operation of the Power Generation Plant is not anticipated to have any negative impacts on the local road network.

Decommissioning

4.9.8 During decommissioning, similar impacts to those predicted during construction will be experienced, assuming that all plant items are removed.

Gas Connection (route corridor options 1 and 2)

Construction

4.9.9 During Construction, there would be an increase in the number of vehicle movements associated with the main construction works (e.g. excavation of the trenches for laying the pipeline in) as well as loads associated with the delivery of large sections of pipe. This may also have an impact on the local road networks although due to the relatively small nature of the construction works, these impacts are likely to be minor.

Operation

4.9.10 Operation of the Gas Connection would not create any impacts as the only traffic movements would be associated with maintenance visits by one or two engineers very infrequently.

Decommissioning

4.9.11 During decommissioning, no impacts are anticipated as the Gas Connection will be left in situ..

Electrical Connection (options 1 and 2)

Construction

4.9.12 During Construction, there would be an increase in the number of vehicle movements associated with main construction works (e.g. excavation of the trenches for laying the electrical cable or erection of pylons to support the overhead line). This may also have an impact on

the local road networks although due to the relatively small nature of the construction works for the electrical connection, this is likely to be minor.

Operation

4.9.13 Operation of the electrical connection would not create any impacts as the only traffic movements would be associated with maintenance visits by one or two engineers very infrequently.

Decommissioning

4.9.14 During decommissioning, similar impacts to those predicted during construction may be experienced.

Conclusions

4.9.15 The construction phase of the Project has the potential to generate traffic impacts through the increase in construction staff, plant and equipment. Impacts could include the temporary closure of highways whilst large plant is delivered to the Power Generation Plant Site and increased congestion on the road network in the vicinity of the Power Generation Plant Site. However, this impact would be temporary and, through the use of mitigation measures would not be significant.

4.9.16 The operational phase of the Project is not anticipated to generate any traffic impacts as levels of permanent staff would be similar to those currently experienced at the Power Generation Plant Site.

Next Steps

4.9.17 Further assessment and more detail of construction traffic, including a breakdown of construction vehicles will be provided.

4.10 Cultural Heritage and Archaeology

Introduction

4.10.1 The construction, operation and decommissioning of the Project has the potential to impact upon both above ground and buried archaeological assets, as well as having an impact upon the setting and appreciation of assets of Cultural Heritage importance, including surrounding Listed Buildings, Scheduled Monuments and Conservation Areas.

4.10.2 An archaeological desk based assessment and preliminary site visit were carried out as part of the archaeological assessment.

4.10.3 The assessment identified 16 heritage assets: 3 within the Project Site (HA06, HA08, HA09) and one within the proposed Power Generation Plant Site (HA06). These assets are as follows:

- HA06 – Site of former Royal Ordnance Factory;
- HA08 – Tappenden's Tramroad West; and
- HA09 – Hirwaun Toll House.

4.10.4 Preliminary Assessment of Potential Impacts

Power Generation Plant

Construction

4.10.5 As Hirwaun Industrial Estate was originally a WWII Royal Ordnance munitions factory, it is likely that any buried remains were disturbed during its construction. Therefore, there are not anticipated to be any impacts on buried archaeology from the construction of the Power Generation Plant.

Operation

4.10.6 During operation, the introduction of the Power Generation Plant including the associated stack(s) has the potential to have minor impacts on surrounding cultural heritage assets such as listed buildings, although none of these impacts are considered likely to be significant.

Decommissioning

4.10.7 During decommissioning, as for construction, no impacts are predicted.

Gas Connection

Construction (route corridor options 1 and 2)

4.10.8 Land under which Gas Connection route corridor option 1has remained as undeveloped agricultural land as far as the earliest maps go back. The land was formerly part of Hirwaun Common. There is potential, therefore, for the survival of buried archaeology in these areas, particularly relating to mineral extraction, as this has not been disturbed. Any groundworks associated with development have the potential to impact directly on these assets.

4.10.9 The majority of Gas Connection route corridor option 2 runs alongside roads, which may have previously impacted on any buried archaeology present. However, the roads are a relatively recent addition to the landscape (approximately 1940s to 1950s). Prior to these roads the land was agricultural and also part of the Hirwaun Common. There is potential, therefore, for the survival of buried archaeology in these areas, particularly relating to mineral extraction, as this has not been disturbed. Any groundworks associated with development have the potential to impact directly on these assets.

Operation

4.10.10 During operation, there will be no impacts on archaeology from the Gas Connection (no matter which option is chosen).

Decommissioning

4.10.11 During decommissioning, no impacts are predicted as the Gas Connection will be left in situ.

Electrical Connection (route corridor options 1 and 2)

Construction

4.10.12 Land under which Electrical Connection route corridor option 1 is situated has not previously been the subject of any development. However, as this connection option will be an overhead line, and the only ground disturbance will be within the Power Generation Plant Site / Rhigos Substation there is not considered to be any potential to impact on buried archaeology. As with the Power Generation Plant, Electrical Connection route corridor option 2 is situated within the Hirwaun Industrial Estate and will be buried beneath hardstanding and areas which would have previously been impacted by development. Therefore, there is not considered to be any impact on buried archaeology.

Operation

4.10.13 During operation, there may be minor impacts on above ground heritage assets such as listed buildings from Electrical Connection option 1 as it will be an overhead line. However, these impacts will be seen as part of the Power Generation Plant given their close proximity and similar landscape setting.

4.10.14 There will be no operational impacts on archaeology from the electrical Connection option 2 as it will be a buried underground cable.

Decommissioning

4.10.15 During decommissioning, as for construction, no impacts are predicted.

Conclusions

4.10.16 The development of the Project is not anticipated to have any impacts on buried archaeology given the previous Power Generation Plant Site uses. The operational phase of the Project is also unlikely to have any impacts on above ground archaeology, given the already industrial nature of the Project Site and the lack of intervisibility between the Power Generation Plant Site and important heritage assets.

Next Steps

4.10.17 A photographic and interpretative survey of any buildings relating to the Royal Ordnance Factory will be undertaken to a sufficient level to allow a descriptive record and interpretation to be compiled. The Heritage Assets that lie within the Project Site may also be affected by the proposed development and it is recommended that a low-level of building investigation should be carried out on them.

4.10.18 The most appropriate mitigation strategy will be discussed with the GGAT Planning Archaeologist as part of further ongoing consultations.

4.11 Socio-economics

Introduction

4.11.2 The construction, operation and decommissioning phases of the Project have the potential to impact on the area's labour markets, community facilities and tourism sector.

4.11.3 The baseline socio-economic status of the local area surrounding the Project is characterised by a pattern of population increase which is expected to continue until 2021. The area has a declining work age population with more than one fifth of the population expected to be at retirement age by 2021. This is also coupled with low economic activity which is lower than the UK average. Health and social work is the main employment category in the local area, and is above the national average.

4.11.4 One of the top ten paid and unpaid visitor's attractions in Wales is located within 15 km of the Project: Cyfarthfa Castle. Further attractions within 15 km include: Dare Valley County Park, Penderyn Distillery, Garwnant Visitors Centre, Cynon Valley Museum and Gallery and Brecon Mountain Railway. Services within 5 km of the Project

include but are not limited to: 1 hospital, 3 GP surgeries, 1 community sports hall, 2 parks, 1 library, 6 local bus routes, 7 primary schools and 2 special schools.

Preliminary Assessment of Potential Impacts

Power Generation Plant

Construction

4.11.5 The Project will have minor positive impacts on the socio-economic status of the area through both employment creation and capital expenditure and worker spending in the local economy. It is anticipated that up to 250 construction workers would be required at the Project Site during peak periods. These workers would not only benefit the economy directly, but would also have knock on effects on other businesses (e.g. guest houses and bakeries).

4.11.6 Impacts on tourism and community infrastructure are predicted as a result of visual, noise, traffic and accessibility and air quality impacts. Visual impacts will likely decrease with distance from the Project Site and thus are predicted to be minor. Noise / Air Quality impacts will be minor. The effects of noise emissions from construction equipment and air emissions such as dust will be restricted to the immediate area. There are no significant clusters of tourism attractions or community infrastructure in the area.

4.11.7 Traffic / accessibility impacts resulting from an increase in construction traffic will be temporary during the construction phase and will be effectively managed by a Traffic Management Plan thus impacts are predicted to be minor.

Operation

4.11.8 Impacts on tourism and community infrastructure are predicted as a result of visual, noise, traffic and accessibility and air quality impacts. Visual impacts will likely decrease with distance from the Power Generation Plant Site and thus are predicted to be minor. Noise / Air Quality impacts will be minor. Noise emissions and air emissions from operation will only impact the immediate area and there are no significant clusters of tourism attractions or community infrastructure in the area.

4.11.9 Traffic / accessibility impacts as a result of operational traffic are predicted to be minor as operational traffic will be lower than

construction and it will be effectively managed by a Traffic Management Plan.

Decommissioning

4.11.10 During decommissioning, similar impacts to those predicted during construction may be experienced.

Gas Connection (route corridor options 1 and 2)

Construction

4.11.11 During construction there are likely to be minor positive socioeconomic impacts due to employment creation and capital expenditure and worker spending in the local economy.

4.11.12 Minor negative impacts will be felt on tourism and community infrastructure in the local area as a result of visual, noise, traffic and accessibility and air quality impacts.

Operation

4.11.13 The operation of the Gas Connection will be buried underground. It will not generate any perceptible noise or air emissions and will generate very infrequent vehicle trips. Therefore the Gas Connection will have no further impacts on the socio-economics of the local area, tourism or community infrastructure.

Decommissioning

4.11.14 During decommissioning, no impacts are anticipated as the Gas Connection will be left in situ.

Electrical Connection (route corridor options 1 and 2)

Construction

4.11.15 During construction there are likely to be minor positive socio-economic impacts due to employment creation and capital expenditure and worker spending in the local economy.

4.11.16 Minor negative impacts will be felt on tourism and community infrastructure in the local area as a result of visual, noise, traffic and accessibility and air quality impacts.

Operation

4.11.17 Although Electrical Connection route corridor option 1 is an overhead line, it will have negligible noise and emissions impacts and only minor traffic impacts. It will be a noticeable, above ground structure, although it will be viewed in the context of the Power Generation Plant, Rhigos substation and the existing industrial nature of the Power Generation Plant Site, therefore, landscape and visual impacts are not considered to be significant. It is therefore not anticipated that Electrical Connection option 1 will have further impacts on the socioeconomics of the local area, tourism or community infrastructure.

4.11.18 Electrical Connection route corridor option 2 will be a buried underground cable. It will not generate noise or air emissions and will generate very infrequent vehicle trips. Therefore the Electrical Connection will have no further impacts on the socio-economics of the local area, tourism or community infrastructure.

Decommissioning

4.11.19 During decommissioning, similar impacts to those predicted during construction may be experienced.

Conclusions

4.11.20 The Project is likely to generate minor positive socio-economic benefits during construction, operation and decommissioning due to the potential to use local workforce and resources.

Next Steps

4.11.21 The following steps will be undertaken in the next phase of socio-economic analysis:

- A mapping of the ZTV analysis against tourism and recreational receptors in the area to gain a better understanding of the potential visual impact of the assessment;
- Detailed estimates of the economic impact of the construction and operation of the proposed Project and the construction of the gas and electricity components.
- An impact assessment of the community facilities

4.12 Cumulative Impacts

4.12.1 Cumulative impacts can be either:

- **Type 1 Cumulative Impacts**: These are combined effects of different types of impact on a single receptor. For example: dust, noise and visual impacts resulting from construction and operation of the proposed Project and other reasonably foreseeable future developments; or

- **Type 2 Cumulative Impacts:** These are the same type of impact from the Project and current or reasonably foreseeable future developments which may individually be insignificant, but could be cumulatively significant. For example: cumulative traffic impacts during construction.

4.12.2 As part of the preliminary cumulative impact assessment, three reasonably foreseeable future developments have been considered as part of the cumulative impacts, these are:

- Enviroparks Hirwaun Energy from Waste plant (located to the north of the Power Generation Plant Site);

- Hirwaun Energy Centre; and .

- Rhigos Substation.

4.12.3 Based on the assessment work done to date, it is predicted that there will be no significant cumulative impacts arising from these developments.