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## **4. THE PROPOSED DEVELOPMENT**

### **4.1 Introduction**

- 4.1.1 The Proposed Development comprises the construction and operation of a gas-fired Open Cycle Gas Turbine (OCGT) power station with a gross electrical output of up to 299MW.
- 4.1.2 The Proposed Development would not run continuously but would operate intermittently. It would, however, need to be permanently on standby and available at all times. It is most likely to run during periods of low electricity supply or high demand on the transmission network, or when required to provide technical services to support the National Grid. This is expected to be weighted towards the winter period, for a few hours at a time. However, as the operation of the plant is driven by the dynamics of the energy market, the plant could run for longer periods, at any time of day, up to the maximum allowed under its Environmental Permit.
- 4.1.3 At this stage in the Project, the final manufacturer selection cannot yet be made, as it will be determined by various technical and economic considerations. The design of the Proposed Development therefore incorporates a necessary degree of flexibility in the choice of manufacturer, and plant dimensions and configuration of any enclosures or buildings, if installed, to allow for the future selection of the preferred equipment manufacturer and construction contractor.
- 4.1.4 In order to ensure a robust assessment of the likely significant environmental effects of the Proposed Development, the Environmental Impact Assessment (EIA) has been undertaken adopting the principles of the 'Rochdale Envelope' where appropriate, as described in the PINS advice note 9 (Ref 4-1). This involves assessing the maximum (and where relevant, minimum) parameters for the elements where flexibility needs to be retained. Where this approach is applied to the specific aspects of the EIA, this has been confirmed within the relevant chapters of this Preliminary Environmental Information (PEI) Report. Justification for the need to retain flexibility in certain parameters is also outlined.
- 4.1.5 Figure 3.2 (PEI Report Volume II) shows the areas within which each element of the Proposed Development is anticipated to be constructed. It is likely that the stack will remain positioned in the location indicated.
- 4.1.6 Outline timescales for the construction and operation of the Proposed Development assumed for the purposes of assessment are as follows:
- Subject to the necessary consents being granted and a final investment decision being made, it is envisaged that construction work would commence in Q1 2021 and take approximately 21 months; and
  - Commencement of commercial operation could take place from Q4 2022.
- 4.1.7 It is envisaged that the Proposed Development would have a design and operational life of at least 40 years, therefore decommissioning activities are currently anticipated to commence after 2062.

4.1.8 This chapter is supported by Figures 4.1a and b and Figures 4.2a and b (Volume II of this PEI Report) illustrating the potential indicative layouts of the Proposed Development.

## **4.2 Components of the Proposed Development**

4.2.1 This section provides further detail on the components of the Proposed Development within the anticipated DCO Order limits, referred to in this PEI Report as 'the Site'.

4.2.2 The Proposed Development will comprise the construction and operation of an Open Cycle Gas Turbine (OCGT) power station with a gross electrical output of up to 299MW, including:

- A single OCGT unit comprising a gas turbine, electrical generator, a stack and main transformer;
- Switchyard, associated switch gear and ancillary equipment;
- Gas receiving area, gas treatment control facilities, gas reception building and gas pipeline to a new Above Ground Installation;
- Electrical connection to the National Grid Substation on the CHP power plant site ;
- Auxiliary generator and liquid fuel tank for emergency electrical supplies;
- Lubricating oil, hydraulic oil and chemical storage tanks and equipment;
- Workshops and stores;
- Electrical, control, administration and welfare buildings;
- Above ground raw water and fire water storage tanks;
- Storm water attenuation system or similar;
- Internal access roads and car parking;
- Landscaping and fencing;
- Auxiliary cooling equipment/system and cooling water supply; and
- Other infrastructure and auxiliaries/services.

### **OCGT Power Generation Equipment**

4.2.3 In an OCGT, natural gas fuel is mixed and combusted with air from the compressor section of the gas turbine (GT) and the hot gases are expanded through the power turbine section of the GT which drives a generator to produce electricity for export to the National Grid electricity transmission system.

- 4.2.4 Gas turbines are widely used in the power industry as they have multiple advantages when compared to other power plants, such as their flexibility of operation, ease of use, relatively low weight and compactness. They are ideally suited to the planned operation of the power station as they can be started and shut down quickly, and operate flexibly across a range of loads.
- 4.2.5 In this instance, a single large OCGT has been selected for the Proposed Development. The OCGT building dimensions are presented in the table below with a single stack with a height in the range of 35-45m.
- 4.2.6 The plant would be supported by suitably rated switchgear and ancillary electrical equipment to allow operation of the power plant and export of electricity through the existing National Grid Electricity Transmission equipment located on the adjoining CHP plant site.
- 4.2.7 The use of natural gas means that emissions of sulphur dioxide (SO<sub>2</sub>) and particulate matter (PM) from the OCGT will be negligible. Emissions of nitrogen oxides (NO<sub>x</sub>) will be controlled by primary means and the use of dry low NO<sub>x</sub> burners operated and controlled through an automated process control system in accordance with Best Available Techniques (BAT).
- 4.2.8 In this way, emissions will be controlled to meet the requirements of the Industrial Emissions Directive (Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control), IED) and the European Large Combustion Plant BAT Reference document (Ref 4-2) which was finalised in 2017 and contained lower emission limits than were included in the IED.
- 4.2.9 Only limited cooling is required for this type of plant and this would be achieved through a closed loop system utilising fin-fan coolers which require a small supply of water.
- 4.2.10 A number of auxiliary operations are required to support the operation of the OCGT including a gas pressure control station, demineralised water treatment plant, water and lubricating oil storage tanks, air intake filters, generator transformers, unit transformer(s), and chemical sampling/ dosing plant. The location of these are shown on Figures 4.1a and 4.1b, noting that the concept layout is indicative only at this stage.

#### **Auxiliary Generator**

- 4.2.11 An auxiliary generator would be required for the safe shut-down of the plant in the event of emergency shutdown or loss of power. The generator would be liquid fuelled (diesel) and the fuel would be stored in above ground storage tanks (AST) of less than 30m<sup>3</sup> capacity.

#### **Gas Pipeline Infrastructure**

- 4.2.12 Gas would be supplied to the Proposed Development by means of new and existing gas connection pipelines, as described in Chapter 3 of this ES.
- 4.2.13 The new gas connection pipeline would link into the existing high pressure gas main located south of the existing VPI CHP plant via a new Above Ground Installation

(AGI). The gas would be conveyed by a new c.800m length pipeline around the east or to the west of the existing VPI CHP plant.

- 4.2.14 The existing pipeline is currently used for fuelling of the existing CHP plant. The Applicant is not seeking consent for any works to the existing pipeline, and is included within the DCO Application as the Applicant is seeking compulsory acquisition powers over it, to ensure that the Applicant can use and maintain the pipeline.
- 4.2.15 The pipeline was originally constructed pursuant to, and benefits from, a planning permission, and the application does not seek development consent for any works associated with the pipeline. The pipeline has an expected design life of 50 years from its construction in 2003, which is sufficient for the Project, and it is expected that any maintenance works to the pipeline would be carried out by VPI Immingham LLP, the owner of the pipeline and CHP plant.
- 4.2.16 Whilst the future works to the pipeline are not known with absolute certainty, it is expected that similar levels of maintenance works may be required in coming years, and that it is not expected that the pipeline will require replacement or major interventions.
- 4.2.17 As no works to the existing gas pipeline are proposed, known or likely, this PEI Report does not assess any potential effects arising in relation to it.

#### **Gas Reception Facility**

- 4.2.18 A gas receiving station will be installed on the Main OCGT Power Plant Site. This is required to receive the natural gas fuel from the Proposed Gas Connection pipeline and to treat and depressurise it in advance of using it as fuel in the Proposed Development. Treatment will include dehydration, filtering and odourising of the natural gas. A 'pigging' facility will also be included, which allows a 'Pipeline Inspection Gauge' (PIG) to be passed along the pipeline for periodic cleaning and maintenance checks.

#### **Electricity Grid Connection**

- 4.2.19 The Proposed Development would connect to the existing NG substation within the existing VPI CHP plant power station.
- 4.2.20 The connection between the Proposed Development and NG would comprise either overhead or below ground cables, or a combination of both with a total length of approximately 300m.

#### **Services Connections**

- 4.2.21 Additional essential services and control connections will be made between the Proposed Development and the existing VPI CHP plant. These are necessary to ensure safe operation and control and include water and compressed air, electrical and control cable connections, telecoms, and fire and security systems.
- 4.2.22 Foul drainage will be treated on site and discharged to surface water.

#### **Water Treatment Plant and Demineralised Water Storage Tank**

- 4.2.23 Operation of the Proposed Development will require a supply of demineralised water. This will require a plant for the treatment of towns water in a water treatment plant to demineralise the water suitable for use in the cooling systems, gas turbine cleaning and other uses. There are various treatment plant possibilities, the choice being made by the chosen Contractor.

#### **Fire Fighting Equipment and Fire/ Raw Water Storage Tanks**

- 4.2.24 The fire protection strategy for the Proposed Development will be developed to comply with the requirements of the Building Regulations 2010 and the Building Regulations and Fire Safety Procedural Guidelines (Ref 4-3). Appropriate standards will also be referenced to provide the necessary fire safety design. Additional fire protection will be provided with reference to British Standards.
- 4.2.25 Firefighting equipment will be housed in a dedicated building/ container. In case of a fire, the connection to the surface water drainage system will be closed and surface run-off (firefighting and rain water) will be contained within the Site. Water from the fire water tank will be used to suppress the fire until the arrival of the emergency services.

#### **Administration/ Control Building(s)**

- 4.2.26 The administration/ control building(s) will contain the main reception, offices, control room, station electrical equipment and staff welfare facilities.

#### **Gatehouse**

- 4.2.27 Gatehouses will be located at the entrances to the Proposed Power Plant Site.

#### **Car Parking and Cycle Storage**

- 4.2.28 The Proposed Development parking arrangements consist of dedicated staff/ visitor and operatives car parks accessed via existing access off Rosper Road. Car parks will be surfaced and provided with oil interceptors.

#### **Workshop and Stores Building(s)**

- 4.2.29 Workshop and stores building(s) will be required for operation and maintenance activities and storage of materials.

#### **Permanent Plant Laydown**

- 4.2.30 A permanent laydown area will be required for operation and maintenance activities.

#### **Internal Roadways**

- 4.2.31 Internal roadways will be required for access within the Site. These will be hard surfaced with appropriate drainage systems to manage surface water runoff and pollution risk.

### **Surface Water Drainage and Stormwater Attenuation**

- 4.2.32 An Conceptual Drainage Strategy is included as part of Appendix 12A Flood Risk Assessment (PEI Report Volume III).

### **Electrical/ Administration/ Control/ Welfare Building(s)**

- 4.2.33 The administration/control building(s) would contain the main reception, offices, control room, electrical equipment and staff welfare facilities.

### **Workshop and Stores Building(s)**

- 4.2.34 Workshop and stores building(s) would be required for operation and maintenance activities and storage of materials.

### **Security Fencing**

- 4.2.35 Security systems will be provided in respect of the Main OCGT Power Plant Site and Proposed AGI Site. This will include paladin (or similar) fencing, intruder alarms and turnstiles for the Proposed Power Plant Site to manage people access.

### **Landscaping**

- 4.2.36 A Biodiversity and Landscape Strategy will accompany the DCO application. This document will set out the principles of habitat creation, management and enhancement, and landscape design that will be adopted in the detailed design process, as well as the areas of the Site retained for landscaping purposes.

### **Construction Laydown Area and Contractors' Compound**

- 4.2.37 Figure 3.1 (PEI Report Volume II) shows the area of land to be used for construction laydown and the contractors' compound. This area would be used for the unloading and storage of construction materials, construction site offices and construction contractor welfare facilities and parking, notwithstanding that plant and equipment would also be used where necessary to support the construction of the infrastructure and power station. Some pre-fabrication of materials and components may also be undertaken.
- 4.2.38 The area would be underlain by semi-permeable surfacing such that it is a level surface that allows surface water and rainwater to percolate through it. No hazardous materials would be stored unbunded within the laydown area.

### **Construction access**

- 4.2.39 Access to the Site for construction vehicles would be by way of a new temporary internal road connected to an existing main access off Rosper Road.

### **Carbon Capture Readiness**

- 4.2.40 As the output capacity of the Proposed Development is less than 300MW, the power station does not fall under the provisions of the Carbon Capture Readiness (CCR) (Electricity Generating Stations) Regulations 2013, which transposed Article 36 of the IED into UK legislation.

- 4.2.41 The CCR Regulations provide that no order for development consent (in England and Wales) may be made in relation to a combustion plant with a capacity at or over 300MWe unless the relevant authority has determined (on the basis of an assessment carried out by an applicant) whether it is technically and economically feasible to retrofit the equipment necessary to capture the carbon dioxide that would otherwise be emitted from the plant, and to transport and store such carbon dioxide from the site.
- 4.2.42 As the CCR Regulations do not apply to the Proposed Development, no space allocation for future retrofit of carbon capture technology has been included within the Site.

#### **External Lighting and CCTV**

- 4.2.43 Lighting would be required for the safe construction and operation of the Proposed Development, during the hours of darkness.
- 4.2.44 At the time of submission of the application for development consent, a contractor will not have been appointed; therefore, detailed design work on lighting for the Proposed Development will not have been completed. Therefore, an indicative Lighting Strategy will be included in the application for development consent, providing some definition of the type and level of lighting that would be employed in exterior areas of the Proposed Development. It is expected that the lighting levels would be comparable to those on the adjacent CHP plant.
- 4.2.45 CCTV and other security measures are anticipated to be required for security purposes at the Site.

### **4.3 Design Parameters**

- 4.3.1 The design of the Proposed Development is following an iterative process, based on preliminary environmental assessments and consultation with statutory and non-statutory consultees. Section 4.7: Alternatives and Design Evolution below describes this process further, including options that have been considered and discounted or amendments made to the concept design to date.
- 4.3.2 A number of the design aspects and features of the Proposed Development cannot be confirmed until the tendering process for the design and construction of the generating station has been completed. For example, the enclosure or building sizes may vary, depending on the contractor selected and their specific configuration and selection of plant. Focussed use of the Rochdale Envelope approach is therefore being adopted to present a worst case assessment of potential environmental effects of the different parameters of the Proposed Development that cannot yet be fixed. These include the specific locations of emission points within the proposed power station site and the size of structures and buildings (to allow flexibility in selection of preferred technology) and the final stack heights. Wherever an element of flexibility is maintained, alternatives have been assessed and the worst case impacts have been reported in the PEI. Feasibility work will continue to further refine the proposed options prior to submission of the DCO application where possible.

- 4.3.3 **Error! Reference source not found.** below sets out the maximum building and fixed designed parameters that have been assessed within this PEI Report. Maximum building heights are given in mAOD, based on the upper limit finished ground level (assumed to be 6m AOD).

**Table 4.1. Main Structure Dimensions**

Component	Maximum length (m)	Maximum width (m)	Maximum height (m)	Maximum footprint (m <sup>2</sup> )
Single Gas Turbine and Generator	30	20	20	600
Gas Turbine building	46	25	29	1,150
Exhaust Stack(s)	Up to 12m in diameter		Up to 51m	112
Air Intakes	24	16	40	384
Fin-fan cooler	30	15	17	450
Control room, workshops, stores	35	20	16	700
Kiosks within AGI compound	7	5	9	35
Demin tank, firewater tank	24m (i.e. diameter)		32	450

## 4.4 Proposed Development Construction

### Construction Programme and Methods

- 4.4.1 The Applicant would appoint a contractor for the main works phase. That contractor is likely to appoint sub-contractors to undertake all of the associated civil works.
- 4.4.2 A Construction Environmental Management Plan (CEMP) would be prepared by the contractor, with a framework CEMP submitted in support of the application for development consent. The framework CEMP will set out the key measures to be employed during the main works phase to control and minimise the impacts on the environment. It will describe how monitoring and auditing activities would be undertaken, in order to ensure that mitigation measures are carried out and are effective.
- 4.4.3 Construction of the Proposed Development could start as early as Q1 2021. As outlined previously, the shortest construction programme would be circa. 21 months.

Table 4.2 below **Error! Reference source not found.** gives an indication of the onstruction programme.

**Table 4.2. Indicative Construction Programme**

	2021				2022			
	1	2	3	4	1	2	3	4
OCGT Site Preparation	■	■						
Main civil works		■	■	■				
Plant installation				■	■	■		
Gas and electrical connections					■	■		
Commissioning							■	■

### Earthworks

- 4.4.4 Earthworks may be required to re-profile the Site, to produce a level platform for the Proposed Development, excavate foundations and/or remove surplus material or remediate contaminated soils.

### Construction Laydown Area

- 4.4.5 The contractor would provide temporary site facilities within the designated part of the Site (the proposed Construction Laydown Area). Owing to the current nature of ground conditions in this area, it is envisaged that minimal work would be needed to create a usable surface that can accommodate storage of non-hazardous materials and placement of contractor cabins, but allows uncontaminated rainwater to percolate to ground. Any hazardous or potentially polluting materials or chemicals would be stored in separate bunded and controlled areas in accordance with requirements of the CEMP and relevant Environment Agency and DEFRA pollution prevention guidelines (Ref 4-4).

### Spoil Storage

- 4.4.6 If any excess spoil material is generated during construction, it would be stored temporarily within the Site and then reused as part of the construction works in accordance with the CEMP and best practice.
- 4.4.7 Soils would be managed in accordance with the Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Ref 4-5) to minimise impacts on soil structure and quality. Appropriate measures to minimise short-term and long-term impacts on land drainage would be included in the framework CEMP.
- 4.4.8 The framework CEMP will incorporate measures to prevent an increase in flood risk during the construction works. For example, topsoil and other construction materials would be stored outside of the 1 in 100 year floodplain extent and only moved to the temporary works area immediately prior to use.

### **Main Civil and Process Works**

- 4.4.9 The contractor would prepare and level the proposed power plant area, followed by piling (if required) and excavation for main foundations. The lighter buildings may be piled or have raft foundations.
- 4.4.10 Once the buildings are erected, the contractor would commence the erection of plant (e.g. gas turbine, generator and stack(s)) on a phased programme of approximately 9 months.

### **Construction of Proposed Gas Pipeline**

- 4.4.11 A new gas pipeline is proposed to fuel the Proposed Development. Dependent on the route chosen, this new pipeline could be constructed using a partially or wholly open cut method whereby the spoil would be excavated from the pipeline route and stored adjacent to it, while the pipeline is laid, before being reinstated. Alternative techniques involve burying the pipe underground using a horizontal drilling technique and / or construction above ground.
- 4.4.12 The pipeline is likely to be installed to a depth of circa 1.2m to the top of the pipe, which would be circa 500mm in diameter. The new pipeline would link to the existing pipeline south of the existing CHP plant by way of a new above ground installation.

### **Construction Staff**

- 4.4.13 Construction of the Proposed Development is anticipated to create approximately 150 temporary construction jobs at peak. Construction staff are anticipated to travel to the Site via the existing trunk road and local networks. Whilst the Applicant will seek to promote sustainable transport options, such as public transport, cycling and car share, the location of the Site as remote from public transport networks and the lack of footpaths in the area, means that transport options other than private car are limited.

### **Construction Hours of Work**

- 4.4.14 Anticipated normal construction hours would be Monday – Friday 07:00 – 19:00 and Saturday 08:00 – 18:00. Should on-site construction works be required outside of these normal construction working hours, they would comply with any restrictions agreed with the planning authorities through the DCO process, and in particular regarding control of noise and traffic.

### **Construction Traffic/Site Access**

- 4.4.15 Access to the site for Construction vehicles is proposed by a new temporary access off the existing entrance from Rosper Road. In this way the construction traffic for the Proposed Development will have minimal impact on the operation of the existing CHP plant or the adjacent Lindsey Oil Refinery.

### **Storage of Construction Plant and Materials**

- 4.4.16 Storage areas for hazardous or potentially polluting materials would be located in a separate, locked, where appropriate bunded and secure area. Material data sheets

would be available for all these materials and the Control of Substances Hazardous to Health (COSHH) assessments kept within the relevant risk assessment for the task.

- 4.4.17 Site based mobile plant would be kept in a secure overnight plant storage area, where drip trays can be utilised under the various types of plant, if needed.

### **Lighting**

- 4.4.18 Temporary construction site lighting is proposed to enable safe working during construction in hours of darkness. Temporary construction lighting would be arranged so that glare is minimised outside the Site. A Lighting Strategy will be included as part of the Consent Application.

### **Construction Environmental Management Plan (CEMP) and Site Waste Management Plan (SWMP)**

- 4.4.19 Construction of the Proposed Development will be supported by a framework CEMP, which will describe the specific mitigation measures to be followed by the appointed construction contractor to reduce potential nuisance impacts from:
- Use of land within the Site for temporary laydown areas, contractor facilities and offices, etc.;
  - Construction traffic (including parking and access requirements);
  - Earthworks;
  - Noise and vibration;
  - Dust generation; and
  - Waste generation.
- 4.4.20 The framework CEMP will identify all the procedures to be adhered to throughout construction; this framework will then be adopted by the appointed contractor in the drafting of their more detailed CEMP prior to commencement of construction.
- 4.4.21 Contracts with companies involved in the construction works will incorporate environmental control, health and safety regulations and current guidance, with the intention that construction activities are sustainable. All contractors involved with the construction stages would be required to meet agreed best practice and all relevant environmental legislation including: Control of Pollution Act 1974 (COPA, as amended), Environment Act 1995, and Hazardous Waste (England and Wales) Regulations 2005.
- 4.4.22 All construction works would adhere to the Health and Safety, the Construction (Design and Management) Regulations 2015 (The CDM Regulations).
- 4.4.23 In accordance with policy requirements, through the ongoing design, the Applicant would seek to ensure that the Proposed Development is designed, constructed and implemented to minimise the creation of waste, maximise the use of recycled

materials and assist the collection, separation, sorting, recycling and recovery of waste arisings, as far as practicable.

- 4.4.24 In order to manage and monitor waste generated on Site, a framework SWMP will be developed as part of the framework CEMP. It would allow for waste streams to be estimated and monitored and goals set with regards to the waste produced. The CEMP and SWMP would be secured through a Requirement imposed on the DCO.
- 4.4.25 The Applicant would require that the contractor separates the waste streams on Site, prior to them being taken to a waste facility for recycling or disposal. All waste removal from Site would be undertaken by licensed waste carriers and taken to licensed waste facilities.

## **4.5 Proposed Development Operation**

### **Hours of Operation**

- 4.5.1 The Proposed Development would be on standby and needs to be available at all times. It is most likely to run during periods of low electricity supply or high demand on the transmission network, or when required to provide technical services to support the National Grid. This is expected to be weighted towards the winter period, for a few hours at a time. However, as the operation of the plant is driven by the dynamics of the energy market, the plant could run for longer periods, at any time of day, up to the maximum allowed under its Environmental Permit.

### **Site Staff**

- 4.5.2 Operation of the Proposed Development is anticipated to create up to 15 permanent operational roles. Depending on the degree of integration with the existing VPI CHP plant and VPI Energy Park A, these may be new jobs or roles undertaken by personnel from the existing VPI CHP plant.

### **Maintenance**

- 4.5.3 Maintenance would be undertaken in accordance with the original manufacturer's recommendations and/or industry best practice as dictated by the number of running hours or condition/age of the plant. Due to the predicted low annual running hours, it is likely that there would be several years between each significant plant overhaul period. It should be noted that the effects of any major overhaul would be significantly less than the effects of construction.

### **Hazard Prevention and Emergency Planning**

- 4.5.4 The Applicant aims to protect human health by safely and responsibly managing site activity. A Health and Safety Plan covering the works, commissioning and operation of the Proposed Development would be written. Competent and adequately resourced duty holders as defined in the CDM Regulations would be appointed, such as Principal Designer and Principal Contractor. The Applicant would ensure that its own staff, its designers and contractors follow the Approved Code of Practice (ACoP) laid down by the CDM Regulations.

- 4.5.5 Written procedures clearly describing responsibilities, actions and communication channels would be available for operational personnel dealing with emergencies.
- 4.5.6 Management of the gas supply would be carefully controlled in accordance with UK requirements. The Environmental Permit for the proposed generating station would consider potential abnormal operation scenarios and prevention or minimisation of accidents through management procedures. A Hazard Identification (HAZID) and Hazard and Operability (HAZOP) study would also be undertaken during the design phase of the Proposed Development to identify and mitigate potential hazards.

### **Environmental Management**

- 4.5.7 The Proposed Development would comply with the IED so that the impact of emissions to air, soil, surface and groundwater, the environment and human health would be minimised. Specific details regarding control of air emissions and a summary of emission limit values for the Proposed Development are set out in Chapter 6: Air Quality. The operation of the site would be subject to control through an Environmental Permit.

## **4.6 Decommissioning**

- 4.6.1 The plant is capable of a life expectancy of 40 years or more, depending on running hours. Eventually decommissioning would involve the removal of the plant. The gas and electricity connections would be disconnected and made safe. The OCGT could either be removed as a unit for reuse elsewhere (depending on its condition) or alternatively dismantled on site and removed.

## **4.7 Design Evolution and Alternatives**

- 4.7.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations') state an environmental statement accompanying an application for development consent should include:

*“A description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment”.*

- 4.7.2 Under the EIA Regulations there is currently no requirement to assess alternatives, only a requirement to provide information regarding the alternatives that have been considered.
- 4.7.3 On the matter of alternatives, National Policy Statement (NPS) EN-1 (Ref 4-6) states that there is no “general requirement to consider alternatives or to establish whether the proposed project represents the best option. However, applicants are obliged to include in their ES, as a matter of fact, information about the main alternatives they have studied. This should include an indication of the main reasons for the applicant’s choice, taking into account the environmental, social and economic effects and including, where relevant, technical and commercial feasibility’.
- 4.7.4 EN-1 and the NPS for Fossil Fuel Electricity Generating Infrastructure EN-2 (Ref 4-7) provide the primary basis for decisions on applications for fossil fuels electricity

generating stations, including gas-fired power stations such as the Proposed Development (as per section 104 of the Planning Act 2008). Section 2.2 of EN-2 outlines the factors influencing site selection for fossil fuel power stations. These include land use and size of site; transport infrastructure for the delivery and removal or construction materials, fuel, waste and equipment; and water resources. In outlining such factors, paragraph 2.2.1 states that;

*“...it is for energy companies to decide what application to bring forward and the Government does not seek to direct applicants to particular sites for fossil fuel generating stations.”*

4.7.5 The Site has been selected by the Applicant for the development of a generating station, as opposed to other potentially available sites for the following reasons:

- The Site is currently vacant and is situated in an area immediately surrounded by major industry and power generation;
- The Site has excellent electrical grid, gas, water and transport links and is a brownfield site which is considered more attractive to redevelop for large scale power generation than a greenfield one;
- The Applicant has the benefit of an options agreement permitting the Applicant to obtain a lease that permits construction and operation of the Proposed Development; and
- The Site is adjacent to VPI's existing CHP power station providing synergies with the existing workforce, services and utilities.

4.7.6 The consideration of alternatives and design evolution is being undertaken with the aims of preventing or reducing adverse environmental effects (following the mitigation hierarchy of avoid, reduce and, if possible, remedy) while maintaining operational efficiency and cost-effectiveness. The design continues to evolve in response to consultation feedback and the ongoing surveys and technical studies. Mitigation measures that have been included within the design of the Proposed Development are referenced in each technical chapter (Chapters 6 – 16).

4.7.7 A number of alternatives have been considered for the Proposed Development, including:

- Alternative technologies;
- Alternative fuel;
- Alternative design options and design evolutions; and.
- Alternative routes for the proposed new gas connection.

### **Alternative Technologies**

4.7.8 The Applicant has conducted a technical and commercial evaluation of the available technologies and has determined that a single turbine represents the optimum configuration to meet the commercial and operational objectives of the Proposed

Development. As such alternate technologies such as multiple OCGTs, aero-derivative turbines or gas engines have been considered and excluded in relation to the Proposed Development. The difference in environmental effects of these options is not considered to be significant.

- 4.7.9 Whilst this fixes a number of key facets of the design, the exact size and location of the components of the Proposed Development will be dependent on the selection of the Original Equipment Manufacturer (OEM). Where this selection has the potential to materially change the environmental effects of the Proposed Development (i.e. air quality and noise emissions and landscape and visual impact), the various options have been considered in this PEI Report and a worst-case is presented – see Chapter 6: Air Quality, Chapter 8: Noise and Vibration and Chapter 10: Landscape and Visual Assessment (PEI Report volume II).

#### **Alternative Fuel**

- 4.7.10 Diesel (or similar petroleum distillate) is a potential alternative fuel for the OCGT, However, natural gas is proposed to be the fuel for the Proposed Development primarily for reasons of cost and availability, however, environmental considerations are a factor, in particular the potential for air quality impacts on the nearby nature conservation sites (potential more pronounced for the combustion of liquid fuels). In addition, the requirement to store large volumes of liquid fuel, which would increase the overall environmental risk.

#### **Alternative Design Options and Design Evolution**

- 4.7.11 As discussed above, the selection of a single gas turbine as the preferred technology reduces the number of potential configurations. However, there is still some variability in the layout and size of the components of the Proposed Development. Where the design and siting of these components has the potential to influence the environmental impact, this will be considered through the design process with the final selection informed by environmental appraisal and assessment work and by consultation with stakeholders.
- 4.7.12 Accordingly, aspects of design that have already been determined include:
- Selection of a design incorporating a single gas turbine;
  - Electricity grid and service connections (through the existing infrastructure on the adjacent CHP Plant site); and
  - The location of the AGI and intersection point of the new and existing gas pipelines.
- 4.7.13 These aspects have not yet been determined, so options have been included and assessed within this PEI Report:
- The OEM of the turbine, therefore the final dimensions of the proposed structures and buildings;
  - Final stack heights and locations;

- Major building dimensions and layout
- The route of the new gas pipeline (either east or west around the existing CHP plant); and
- The final areas selected for ecological mitigation.

4.7.14 The Rochdale Envelope approach (Ref 4-1) has been applied to address these options and will be reviewed throughout the pre-application stage. The final Rochdale Envelope will be detailed in the application for development consent.

#### **4.8 References**

- Ref 4-1 Planning Inspectorate (2018) *Using the Rochdale Envelope Advice Note Nine: Rochdale Envelope*, Version 3, July 2018.
- Ref 4-2 European Commission (2017) *Best Available Techniques (BAT) Reference Document for Large Combustion Plants*, 2017.
- Ref 4-3 Local Authority Building Control (2015) Building Regulations and Fire Safety Procedural Guidelines. August 2015. (Available at: <https://www.labc.co.uk/guidance/resource-library/technical-guide-building-regulations-fire-safety-procedural-guidance> [Accessed August 2018]).
- Ref 4-4 Defra/ Environment Agency (2016) *Pollution Prevention for Businesses* (available at: <https://www.gov.uk/guidance/pollution-prevention-for-businesses#storing-materials-products-and-waste> [Accessed August 2018]).
- Ref 4-5 Defra (2009) *Construction Code of Practice for the Sustainable Use of Soil on Development Sites*. In force 16<sup>th</sup> July 2005.
- Ref 4-6 Department of Energy and Climate Change (2011), *Overarching National Policy Statement for Energy* (EN-1), July 2011.
- Ref 4-7 Department of Energy and Climate Change (2011), *National Policy Statement for Fossil Fuel Electricity Generating Infrastructure* (EN-2)