

1. Non – Technical Summary

This document supports the Environmental Permit application submitted by VPI Immingham Energy Park A Limited ('VPI-A') under the Environmental Permitting (England and Wales) Regulations 2016, as amended ('the EP Regulations'), for the operation of a gas-fired peaking generating station on land adjacent to the existing VPI Immingham LLP's Combined Heat and Power (CHP) Power Plant ('VPI Immingham CHP Power Plant') at South Killingholme, Immingham, DN40 3DZ. The new VPI-A gas-fired peaking generating station is hereafter referred to as the 'VPI Immingham Energy Park A' or 'the Installation').

The Installation comprises a new 49.5 MWe gas-fired peaking generating station, consisting of 11 reciprocating engines having a total thermal input of approximately 108MW (MWth), with separate flue stacks. The Installation will rely on the existing VPI Immingham CHP Power Plant for some ancillary infrastructure, but will otherwise operate as a separate installation.

The VPI Immingham Energy Park A will operate as a peaking plant to supply electricity to the National Grid during periods of peak demand, operating for no more than 2,250 hours in a year (or a rolling average of 1,500 hours over five years).

An application for Planning Consent (reference: PA/2018/918) was submitted alongside an Environmental Impact Assessment (EIA) for the Installation. At the time of the Planning application, the actual gas engines to be installed were unknown and therefore it was based on either 33 smaller engines or eight larger engines to provide an electrical output of 49.5Mwe. The actual design of 11 medium sized engines, providing the same electrical output, therefore falls within the 'envelope' created for the Planning application. As a result of the change in design, the assessment of impacts from the Installation have been reviewed and updated where necessary.

Although the proposed combustion activity falls under Section 1.1 Part A(1)(a): Burning of any fuel in an appliance with a rated thermal input of 50MW or more of the Environmental Permit (England and Wales) Regulations 2016 (as amended) ("EP Regulations"), by virtue of the overall thermal input to the engines (approximately 108MWth), the engines do not comprise a Large Combustion Plant (LCP) as the gross thermal input to each engine is less than 15MW. The thermal input into each engine is approximately 10MW, therefore, in accordance with the LCP Best Available Techniques (BAT) Reference document (LCP BRef), the engines fall outside the definition of Large Combustion Plant. As the thermal input for the individual engines is >1MW and <50MW, the engines are defined as Medium Combustion Plants (MCP), and are required to comply with the requirements of Schedule 25 of the EP Regulations.

As the engines operate independently from one another, the individual flues have been designated as Emission Points A1 to A11. The air quality assessment for the Installation has been undertaken, including detailed air dispersion modelling, to demonstrate appropriate flue stack heights for the actual engines are employed and that the emissions are satisfactorily dispersed. The modelling assessed the impact of pollutants emitted from the natural gas-fired engines namely oxides of nitrogen (NOx) and carbon monoxide (CO).

The assessment results in a maximum NO₂ annual mean process contribution (PC) at the worst-case human health receptor of 2% of the Environmental Standard. The second stage of assessment compares the Predicted Environmental Concentration (PEC) to the Environmental Standard. The annual average PEC at the worst-case receptor is 15.7µg/m³, which represents 39% of the annual NO₂ Environmental Standard, and therefore is well below the Environmental Standard. It is therefore considered that the long-term impacts from the VPI Immingham Energy Park A will be very unlikely to result in any exceedance of the annual average NO₂ Environmental Standard at any human health receptor.

The maximum hourly mean process contribution of NO₂ at the worst-case human health receptor represents 9% of the Environmental Standard, and therefore is considered to be insignificant at the first stage of screening.

The maximum 1-hour and 8-hour mean process contributions of CO at maximum off-site impact locations are below the threshold for insignificance for short-term impacts, with worst-case PC of 3% of the 1-hour mean and 8% of the hourly mean Environmental Standard.

In-combination impacts with the adjacent planned VPI-B OCGT Peaking Plant have also been assessed and the results are comparable with those from the VPI Immingham Energy Park A Installation on its own. This is due to the lower stack heights of the gas engines resulting in more localised ground level impacts. Again, although at the maximum human health receptor (R2 Station House) the maximum long-term PC represents 2% of the Environmental Standard and therefore cannot be screened as insignificant at the first stage of screening, the PEC is still only $15.7\mu\text{g}/\text{m}^3$, which represents 39% of the annual NO₂ Environmental Standard, and therefore is well below the Environmental Standard.

The predicted annual average NO_x concentrations at ecological receptors are below the 1% screening threshold to demonstrate insignificance at all receptors except at E1, a designated habitat site and also the E6, E7 and E8 Local Wildlife Sites. As the PECs are less than then Environmental Standard at all these sites (68%, 57%, 58% and 60% respectively) for both the operation of the VPI-A Gas Engines only and both the VPI-A Gas Engines and VPI-B OCGT sites in-combination, the impacts are considered to be acceptable based on the EA's screening methodology.

An assessment of the potential noise generated by the Installation has been undertaken to support the planning application for the Installation. At the Planning stage it was not known what size gas engines would be used for the final VPI Immingham Energy Park A configuration, and therefore the noise assessment carried out considered either the use of 33 small gas engines, or eight large gas engines to create an 'envelope' for which the final design would fall within. The assessment presented for Planning purposes therefore considered the worst-case impacts from the two plant designs assessed (which resulted from the 33 small gas engines). The assessment concluded that noise levels likely to be generated are below the 'lowest observable adverse effect level' (LOAEL) criteria of no greater than +5dB excess of rating level over the defined representative Background Sound Level at each Noise Sensitive Receptor (NSR).

A review of the noise assessment carried out for the Planning application has been carried out compared to the noise data for the new plant design, and it is considered that the 11 gas engine configuration falls within the assessed envelope and will result in impacts no worse than those predicted in the Planning application.

The gas engines will utilise an air-cooled cooling system using a closed-circuit cooling water loop, therefore the potential for visible plume emissions from the Installation is considered to be negligible.

The Installation will not have an associated liquid fuel storage area, due to the nature of the main fuel (natural gas); and will instead be connected to the National Grid Transmission (NGT) gas network and have a small Gas Reception facility on site.

In terms of raw material storage, the Installation will have an above ground tank for storing up to 5,000 litres of lubricating oil. The tank will be double skinned and therefore internally bunded so as to contain any accidental spills.

It is expected that water usage for the Installation will be minimal, and limited to the replacement or replenishment of water within the cooling water circuit. As the circuit is a closed loop system, the potential for loss of cooling water (which will have a small proportion of anti-freeze) is negligible. Any contaminated process effluent generated on site, e.g. from maintenance activities, will be stored in a dedicated tank on site, prior to being taken off-site by licenced contractors for appropriate disposal.

Due to the inherent nature of the proposed technology and the fuel employed, the likelihood of the generation of process wastewater is minimal, therefore, no discharge of process water to controlled waters is proposed from the Installation.

Due to the inherent nature of natural gas which will fuel the gas engines, there will be no residue following its combustion. Consequently, the Installation is expected to produce insignificant quantities of process waste. There may be small quantities of waste generated from maintenance and welfare activities, which will be stored, managed and disposed of appropriately. The key process waste is anticipated to be waste lubricating oil, which will be stored in a dedicated above ground tank. The tank will be double skinned and have a maximum capacity of 5,000 litres.

The tanker connection for delivery of lubricating oil will be housed within the bulk tank container (within the double skin); this will be accessed via a lockable drop-down access hatch. Therefore, any spillage that may occur during coupling or uncoupling hoses during oil delivery will be maintained within the bunded design of the tank.

The Installation will develop an Environmental Management System (EMS), in line with the requirements of the ISO14001 standard.