Immingham Green Energy Terminal Green Hydrogen Production Facility

Environmental Permit Application Duly Making Response
Application Reference: EPR/VP3425SV/A001

Air Products

Project reference: EPR/VP3425SV/A001

60673509-ACM-XX-00-RP-IGET Duly Making Response-R01

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Quality information

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1. Report Context

1.1 Introduction

This document has been prepared by AECOM Limited ('AECOM') on behalf of Air Products (BR) Limited ('APBRL'), referred to as 'the Operator', in support of an Environmental Permit application for the proposed Green Hydrogen (H_2) Production Facility ('proposed installation') which forms part of the wider Immingham Green Energy Terminal ('IGET') Nationally Significant Infrastructure Project (NSIP) being developed by Associated British Ports ('ABP') on the eastern side of the Port of Immingham, situated in northeast Lincolnshire on the south bank of the Humber Estuary.

1.2 Site Description

The proposed installation comprises the development of a green H_2 production facility which includes infrastructure for the offloading and transfer of green ammonia (NH_3) from ships to ammonia storage facilities, the main H_2 production facility and vehicle and trailer H_2 refuelling facilities.

The proposed installation will be located in North East Lincolnshire on the south bank of the Humber Estuary on the eastern side of the Port of Immingham. The installation location will be approximately centred on National Grid Reference (NGR) E520783 N415271.

1.3 Scope of this Response

The application for an environmental permit was submitted on 24th May 2024 to the Environment Agency, and pre-application fee was paid on 29th May 2024

As a result of the determination process the Environment Agency has issued a request for additional information (ref Letter dated 21/08/2024) under the Environmental Permitting Regulations 2016, as amended.

This document addresses Duly Making requests in relation to the environmental permit application for an H_2 production facility. It has been set out to address each question/request and signpost to the relevant application documents that have been provided or updated. The updated documents should supersede the previously submitted versions of the documents.

1.4 Activity Charging

The table below lists the anticipated charges.

Charge Ref	Activity	Fee paid	Calculated Fee value	Details
1.10.1	S1.1	-	£19,103	Combustion activities Aggregated to 60MW for the operation of onshore HPU's (using natural gas).
1.4.4	S4.2	£13,209	£13,209	Hydrogen Production - The application is for 6 activities (6 HPUs)
Habitats Fee		£779	£779	
Odour assessment		£1,246	£1,246	

Noise assessment	£1,246	£1,246
Total	**£16,480**	**£35,583**

2. Responses to Duly Making Questions

2.1 Question 1 - Application Documentation

The application has been amalgamated with documentation for planning. Whilst we can accept such documentation (in support of the application for an Environmental Permit) we require you to separate out these documents, so far as matters relating to the "Environment Permit" (i.e. the "operational phase" of the proposed facility) are clear, and not combined with planning aspects (such as construction, offsite traffic etc) that are not within the remit of the Environmental Permit.

As we are required to consult on this permit application (with enhanced consultation likely due to classification as "a site of high public interest" by the local Environment Agency regulatory team) it is important that documentation solely relating to this application is supplied to allow for effective consultation. Currently this cannot be achieved whilst assessments including Air Impacts are combined with aspects outside of the remit of this decision.

Please re-supply with clear documentation for the sole purpose of this application scope.

Response

An updated Air Dispersion Modelling Report dated September 2024 has been produced to address this and identifies the separated site operation emissions and vessels emissions. This is in Appendix B of this report.

2.2 Question 2 – Scope of Installation

The application, as provided, suggests that the installation boundary covers Hydrogen production, but not subsequent activities (as identified in the above diagram including refuelling and H_2 consumer). Further explanation is required to confirm that these activities are not part of the Installation.

a) Provide ratio's for the Hydrogen supply (considering full operation utilising 6 hydrogen generation units) for:

i. the refuelling activities, and

ii. the H_2 consumer

Response

Each hydrogen production unit (HPU) has a capacity of 6 TPD therefore overall production capacity once the installation is fully operational is:

Hydrogen generation capacity = 35 x 6 = 210 TPD (Tonnes per day).

In terms of hydrogen consumers once the facility is fully operational, the distribution of hydrogen consumption is as follows:

1. Liquid hydrogen export via. trailers = 156 TPD or 74.28%

(Hydrogen generated in the HPU's will be liquefied using hydrogen liquefaction units to facilitate export via trailers).

2. Bulk hydrogen gas tube trailer filling = 6 TPD or 2.86%

3. Hydrogen refuelling stations = 6 TPD or 2.86%

4. Filling of liquid hydrogen tanks on site = 7 TPD or 3.33%

5. Hydrogen gas export to future pipeline customers when available = 35 TPD or 16.67%

Note: When demand for hydrogen decreases/reduces, process units can be safely turned down to operate at a lower throughput or a few process units can be shutdown. When a future pipeline network becomes available there will also be potential to increase export by pipeline to more than 35 TPD. This means the installation will be constructed to provide flexibility in operations.

b) Provide further information on the H_2 consumer, and justify why this is not part of the Installation, with consideration for guidance RGN2, including but not limited to:-

- *Technical Connection with the activity.*
- *Principal User of the activity*

Notes: In the application it is stated that to the West of the proposed Installation will be a gas fired power generator proposed installation, and to the east and south-eastern boundary, another gas fired power generator proposed installation.

- *A technical connection would include supply and use of Hydrogen within the power generation plants*
- *Primary user situation would arise whereby the generators are the main consumer of the Hydrogen produced (and using the Hydrogen as a primary fuel within their power generation process).*

You should consider this alongside Q3a below.

Response

In accordance with RGN2, the current application covers:

- The hydrogen production units as the stationary technical unit (STU); and
- Directly associated activities such as ammonia storage, hydrogen storage, hydrogen filling and refuelling operations which are located on the same site and are technically connected to the STU.

The installation will be constructed to be hydrogen export-ready such that when any external hydrogen network becomes available, the installation can connect and supply to such a network.

Any future hydrogen network would comprise of a number of external pipelines to facilitate the supply of hydrogen to end-users. The pipeline would be constructed and operated in accordance with the requirements of the Pipeline Safety Regulations 1996. At the time such a network would become available, the Operator would engage with the Environment Agency regarding connecting as a supplier to such a network and if necessary, would apply to vary the permit at that time.

The two potential power generation plants mentioned in the Supporting Statement are acknowledged as two potential future receptors that may be constructed in the neighbouring areas which we need to be aware of. While these facilities may be an end user as part of a future hydrogen network, they are separate facilities being designed, constructed and operated by different operating organisations who will be required to obtain the necessary separate permits for those plants.

These references to the power plants as end-users have been removed from the application since the technical connection for a hydrogen network and associated end party users is not part of this Installation and its associated application. The information was originally provided for reference only.

2.3 Question 3 – Impacts from the Proposed Installation

The application, as provided, refers to cumulative effects assessment.

a) How have the cumulative effects of the "proposed" gas fired power generators (as referred to in Q2) been considered within the cumulative effects of Air Emissions and Noise for this proposal?

- *In the event that there is a technical connection with the proposed gas fired power generators, and fall within the scope of installation (e.g. same operator, or multi-operator installation) then these would be considered together as a single installation / combined impacts.*
- *In the event that there is not a technical connection (and not part of the Installation) these would be separately permitted sites. You should justify the cumulative effects (such as assessment of in-combination effects, including air emissions and noise) whereby these are proposed facilities (i.e. none operational) and their emissions will not form part of background data.*

Response

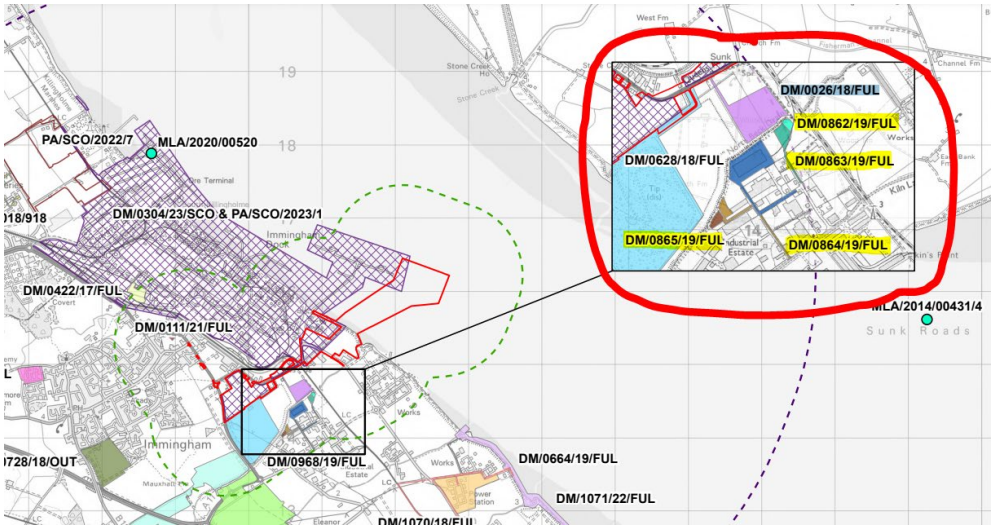
References to technical connections have been removed and section 1.3.9 has been added to the supporting statement to re-iterate that there are no plans for technical connection under this permit and an updated permit will be submitted in the future should circumstances change.

The cumulative effects and in-combination assessment has been undertaken as part of the DCO, referred to as the Cumulative Effects Assessment ("CEA").

Air Quality

This was considered during the DCO Environmental Statement. The peaking plant sites are highlighted in the image and the cumulative assessment text is presented below.

The contribution of the peaking plant sites is minimal at the sensitive habitats and the in-combination effect <1% of the Critical Load at the worst affected location.



All four peaking plant sites were considered in the same assessment reports that were submitted for the planning applications of these sites, one of which considered impacts on human health and the other considered impacts on nature conservation.

Impacts of less than 0.6 µg/m3 of NO2 (i.e. rounded to 1% or less of the air quality objective) identified in ID9's air quality assessment were predicted at receptors on the eastern fringe of Immingham town. Given the limited impact of ID9 at the human health sensitive receptors shared with the Project (receptors O_R1 to O_R5), and the limited impact of the Project's operational phase emissions at those locations, the potential for cumulative effect on human health sensitive receptors is limited.

The second air quality assessment reported impacts that accounted for 0.15% of the current lower Critical Load for nitrogen deposition at the worst affect area of saltmarsh habitat. Operational phase emissions of the Project and IERRT emissions impact at this same location (receptor O-E5), account for up to 0.4% of the same lower Critical Load threshold assuming MARPOL Regulation 13 Tier II emission standards and 0.3% assuming Tier III standards.

In addition to the energy generation sites, the following were also considered:

- DM/0628/18/FUL (includes variation of conditions DM/0274/20/FUL) - Partially demolish existing building and erect 20MWE waste to energy power generation facility, 65m stack and associated plant, machinery
- DM/0026/18/FUL - Erect an Energy Recovery Facility with an electricity export capacity of up to 49.5MW and associated infrastructure including a stack to 90m high.

Noise

The assessment of cumulative effects of operational noise from the Project, together with the predicted noise levels presented in the noise assessment submitted with development applications for the other scoped in, shortlisted developments as identified in Table 4 of Appendix 25.C: Cumulative Effects Assessment found in in the Environmental Statement.

The assessment presented is a worst-case scenario based on all of the scoped in, shortlisted developments operating during the night-time period when ambient sound levels are lower and there are likely to be greater impacts on residential NSRs. Additionally, the highest of the operational noise levels predicted have been chosen for each development. This assessment assumes that all of the shortlisted developments are completed and operational. Furthermore, as not all of the other developments included are consented yet so are not certain to go

ahead, the outcome of the assessment presents a potentially exaggerated worst case, as it assumes that all shortlisted schemes are operational.

In conclusion, cumulative noise and vibration effects would be of the same level of significance as the effects from the Project alone both during construction and operation, therefore there will be no residual cumulative effects as a result of the Project and Proposed Developments

Overall , it was concluded that there would be no significant cumulative effects relating to air quality, noise and vibration, nature conservation (terrestrial), nature conservation (marine ecology), ornithology, marine transport and navigation, historic environment (terrestrial and marine), physical processes, marine water quality, water use, water quality, coastal protection, flood risk and drainage, ground conditions and land quality and major accidents and disasters, and no significant residual in-combination effects have been identified for the operational phase of the Project.

b) *The assessment appears to include emissions from the vessel combined with emissions from proposed operations on site.*

- *Where the vessel is not part of the Installation this should be amended. So that we are just looking at the process contribution from the installation operations.*
- *You should consider cumulative impacts from the vessel separately, such as contributions within the background data / predicted environmental concentration.*

Response

See revised Air Dispersion Modelling Report dated September 2024 in Appendix B of this report.

c) *It is stated that the hydrogen production units will initially be fuelled by natural gas.*

- *If the applicant is wishing to consider use of Hydrogen fuel in the future (within this application scope) then the application needs to be amended to ensure that emissions cover this alternative fuel (so that worst case impacts are considered e.g. changes to NOx emissions by combustion of Hydrogen compared to natural gas).*

Alternatively, the application can be amended to remove this reference, and then any future changes would be subject to separate determination (i.e. future request by application for variation).

Response

Clarification added in section 3.3.8 of Supporting Statement to say " Any future changes in fuel at the site will be subject to separate determination and a request for variation will be submitted at the time."

2.4 Question 4 – Back-up diesel generators

The use of diesel generators for emergency / back-up power on installations which fall under the Industrial Emissions Directive (IED) that are not expected to operate for more than 500 hours per annum in normal operation are classed as new medium combustion plant, operating up to 500 hours a year that are exempt from emission limit values (ELVs).

a) *Provide the specific information required for each MCP according to Application Form Part B3, Appendix 1 – 13. This should be provided using the Environment Agency's MCP spreadsheet: https://assets.publishing.service.gov.uk/media/64ff30891886eb000d9770d9/MCP-generator-list-v3.ods*

b) *Provide a signed declaration for each MCP intended to be operated for less than 500 hours per year as a rolling average over a period of three years, as required by Application Form Part B-3 Appendix 1 – 13 'Where the option of exemption under Article 6(8) is used the operator (as identified on Form A) should sign a declaration here that the MCP will not be operated more than the number of hours referred to in this paragraph'. This is essential to determine which pieces of combustion equipment are exempted from MCPD emissions limits*

Response (a&b)

EA MCP Spreadsheet has been populated and can be found in Appendix A. Application form part B3 is now included in the application form pack in Appendix A. This includes a signed declaration for each MCP unit.

c) *Confirm the impacts from the generator (as back-up use) haven't been included as part of the impact assessment of normal operations.*

Response

The Impact Assessment has been updated to confirm the impacts from the generator (as back-up use) haven't been included as part of the impact assessment of normal operations. See section 7.5.4 of VP3425SV/APP/SS.

d) *Where over 500 hours there is no exemption, in which case you must demonstrate compliance to the Medium Combustion Plant Directive (and relevant requirements including ELVs).*

Response

Air Products confirms that back-up generators will not be operated for over 500 hours per year. AP will record hours of operation as part of the management systems and procedures.

2.5 Question 5 – Waste-water treatment package

You have mentioned 'water will be pumped into wastewater treatment package to remove dosed chemicals and become non-potable water, the residual wastewater from this blowdown will be sent to Anglian water for further treatment.

This question also relates to the charges identified above (i.e. potential S5.4 activity).

a) *The application states: 'water will be pumped into wastewater treatment package to remove dosed chemicals and become non-potable water, the residual wastewater from this blowdown will be sent to Anglian water for further treatment.*

- *What does the wastewater treatment package consist of? Is this a biological treatment method – which will entail additional S5.4 listed activity as presented within charges section above.*

Response

Nalco water has been employed to design blowdown water treatment package. Based on their strong experience they have proposed blowdown recycling through reverse osmosis (RO) combined with multi media filtration (MMF) and ultrafiltration (UF). Thus this is not a biological treatment method this is for water reuse only. Refer treatment package sketch from Vendor (in evidence column).

b) *Confirm that sewage from the welfare facilities aren't included in the H1 assessment, or re-provide where this has been included.*

The sewage from the welfare facilities aren't included in the H1 assessment and will be discharged directly to Anglian Water foul sewer.

c) *What is the quantity of water being disposed off to Anglian Water?*

Paragraph 3.2.29 of the supporting statement shows reject stream will be a continuous flow of <9.6m3/hr upon completion of the build.

d) *Provide further information (including MSDS) of the anti-scalant and other chemicals that are dosed / added, and their quantities.*

MSDS of chemicals used in the blowdown treatment package have been provided and can be found in Appendix C. Otherwise below are the chemicals and preliminary chemical consumption estimates.

- Antiscalant = 320 kg/y
- Sodium hydpochlorite = 530 kg/y
- Cleaners = 130 kg/y
- Ferric chloride (38%) = 1100 kg/y
- Sulfuric acid (33%) = 26 kg/y

- Sodium metabisulfite (SMBS) = 490 kg/y

e) Provide further information to demonstrate that each of the parameters (present in the waste-water discharge to Anglian Water) will be subject to a method of treatment at Immingham WwTW prior to release.

Note : If no treatment is provided for specific parameters at the WwTW, then these parameters will be considered as direct discharges, and will require modelling and further assessment. For example, total phosphorous is above the BAT-AEL, so we need assurances that there is a treatment method taking place for phosphorous at the WwTW, otherwise its release would be considered a direct discharge, and further information plus modelling would be required.

Response

AP has sought preliminary confirmation from the Anglian Water that the components in the reject stream of blowdown package could be treated in the WwTW before it is discharged to the estuary. In the blowdown package of AP, only components that occur in the non-potable water supplied by Anglian Water for the cooling water system make-up are concentrated up in the reject stream.

For example, chloride in the non-potable water is 46.25 mg/l (received from Anglian Water) and chloride in the reject stream will be 1045.69 mg/l (from AP blowdown water treatment package).

AP evaluated the components in the reject stream based on the list of hazardous pollutants given by Anglian Water, none of the components in the reject stream from AP to Anglian Water can be declared a hazardous.

Preliminary understanding will be that all components in the reject stream from blowdown treatment package to Anglian Water WwTW can be treated and which will obviously be reconfirmed once detailed engineering of the cooling water system and blowdown water package is proceeded with specialist Vendor.

The above 'waste water parameters' table lists the reject stream water quality and the non-potable water quality provided by the Vender. In undertaking the updated H1 assessment, we have applied a conservative approach and assumed no reduction in pollutant concentration in the WwTW (see the updated H1 assessment).

2.6 Question 6 – Application for B6

Submit application form B6 which is missing from your application.

This is required for:

i) water discharge activities,

ii) point source discharges / groundwater activity, and

iii) point source emission to water or sewer from an installation..

Response

Application form B6 now included in the information pack.

2.7 Question 7 - Discharge to TrAC water via Sewer/WwTW

We need the following information to audit the H1 risk assessment:

a) Raw data to enable checks for the summary statistics used for screening. We have to audit the max and mean flows and concentrations included in the H1 by checking the raw data.

Response

The reject stream flowrates and water quality were given to us based on preliminary information received from the wastewater treatment package vendor. The maximum flow rate has been calculated using the reject stream provided (<9.6m^3/h=0.00027m^3/s) showing the estimated continuous flow during phase 2 of the project. Similarly, the reject stream for phase 1 of the project has been used for the mean flow rate in the tool (<3.34m^3/h= 0.00093m^3/s). The reject stream concentrations are in the table below:

Reject water stream quality

Total suspended substances	mg/l	15.21
Turbidity NTU	-	30.41
Calcium (Ca)	mg/l	1948.55
Magnesium (Mg)	mg/l	80.38
Sodium (Na)	mg/l	607.82
Potassium (K)	mg/l	0
Barium (Ba)	mg/l	0
Strontium (Sr)	mg/l	0
Ammonium (NH_4)	mg/l	0.79
Iron (Fe)	mg/l	15.62
Manganese (Mn)	mg/l	0
Aluminium (Al)	mg/l	0
Copper (Cu)	mg/l	0.27
Chlorides (Cl)	mg/l	1045.69
Sulphates (SO_4)	mg/l	4052.66
Nitrates (NO_3)	mg/l	0
Fluoride (F)	mg/l	3.96
Bromide (Br)	mg/l	0
Boron (B)	mg/l	0
Silicates (SiO_2)	mg/l	0
Carbon Trioxide (CO_3)	mg/l	0
Carbon Dioxide (CO_2)	mg/l	0
Total P	mg/l	4.48
Phosphates (PO_4)	mg/l	13.77
Total Dissolved Solids (TDS)	mg/l	8239.51
Conductivity, 20°C	µS/cm	10702.6
pH units	-	8.2
Alkalinity	mEq/l	7.53
Total Hardness	mEq/l	104.13

COD	ppm	<500

Background concentrations used in the tool for the Humber Estuary have been taken from the Water Quality Archive:

- Sampling Point Name: R. HUMBE COMMITTEE SITE 7702
- Point ID: AN-HUMB7702
- Location: 516900 423400
- Link: https://environment.data.gov.uk/water-quality/view/sampling-point/AN-HUMB7702?_all=true

Background concentrations for ammonia (ammoniacal nitrogen as N in this case) and copper have been taken from the latest available 12 months of monitoring data. The maximum background value for the pollutant concentration has been used, in line with government guidance on surface water pollution risk assessments (https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit#estimated-data) as the background quality can vary depending on the tide as a result of the water body being an estuary.

Water quality data for iron has recorded at this site from 2000 to 2019. The latest 12 months of data have been recorded as <100µg/l, so a worst-case scenario of 100µg/l has been used in the H1 assessment.

In absence of fluoride monitoring in the Humber Estuary, 50% of the fluoride EQS has been used in line with the above surface water pollution risk assessments guidance.

b) Confirm or provide Q95 data within the H1 report.

Response

Q95 data is not required for discharge to TrAC water, as stated on the Access tool.

c) Re-supply the emission to sewer/water parameters on Access version (previous version of H1 tool), due to current issues with excel version.

Response

See Appendix B.4 – Water (Access database version)

d) For all parameters (discharged to sewer) please confirm whether dedicated treatment methods take place (per individual parameter) within the WwTW. Where any parameters do not undergo a treatment method within the WwTW they should be considered as direct discharges, and further information may be required to demonstrate acceptable impacts, depending on the outcome from results supplied to c) above.

Response

AP has sought preliminary confirmation from the Anglian Water that the components in the reject stream of blowdown package could be treated in the WwTW before it is discharged to the estuary. In the blowdown package of AP, only components that occur in the non-potable water supplied by Anglian Water for the cooling water system make-up are concentrated up in the reject stream.

For example, chloride in the non-potable water is 46.25 mg/l (received from Anglian Water) and chloride in the reject stream will be 1045.69 mg/l (from AP blowdown water treatment package).

AP evaluated the components in the reject stream based on the list of hazardous pollutants given by Anglian Water, none of the components in the reject stream from AP to Anglian Water can be declared a hazardous.

Preliminary understanding will be that all components in the reject stream from blowdown treatment package to Anglian Water WwTW can be treated and which will obviously be reconfirmed once detailed engineering of the cooling water system and blowdown water package is proceeded with specialist Vendor.

The above 'waste water parameters' table lists the reject stream water quality and the non-potable water quality provided by the Vender. In undertaking the updated H1 assessment, we have applied a conservative approach and assumed no reduction in pollutant concentration in the WwTW (see the updated H1 assessment).

Note: Phosphate is the same quantity in the entry water (non-potable) and waste water but inside the facility AP is concentrating that up, although it will be diluted down again in the Sewage works.

e) Provide NGR for the point of discharge from the WwTW to the final surface water body.

Response

The point of discharge is located at NGR TA 52141 41560. The aerial photograph in Appendix C shows the location of the WwTW and the point of discharge.

2.8 Question 8 - Supply process flow and P & ID drawings

We need process flow / P&ID drawings for the following aspects as a minimum: -

a) The production processes (including Ammonia and Hydrogen)

Response

Process flow diagram can be found in Appendix C of this document.

b) Water balance flow chart / diagram (including outputs to drainage and effluent)

Response

Water balance diagram for normal Operation can be found in Appendix C of this document.

c) It is stated (within the BAT for Process and Technology document) that the technology licensors require commercial confidentiality of their process cycle and catalysis. No claim for commercial confidentiality has been made, please confirm there is no confidential information in the application (or information supplied in response to this request) or alternatively make a request for confidentiality.

Response

Commercial confidentiality is not required at this stage. Sentence 2.2.2 in the BAT for Process and Technology document has been removed.

2.9 Question 9 – Receptor Status

The application states "The residential use of certain properties on the west side of Queens Road would need to cease as residential use is not considered to be compatible with the operation of the hydrogen production facility on the West Site".

a) Provide a further update and clarification on these receptors ceasing as residential dwellings.

- *Clear evidence and guarantees (with dates) need to be provided for when these will cease as residential receptors, in order to be discounted from impact assessment scope (as receptors).*
- *If this cannot be guaranteed (with reassurances in advance of commencing operations) then these receptors must be considered / included within the scope of assessments as sensitive receptors.*

Response

Point CA 1 in the DCO document statement of common ground with NELC confirms that Air Products have acquired the properties and therefore they are no longer classed as residential receptors.

2.10 Question 10 – Raw Materials

Table 2 of Application Supporting Statement on page 29 presents raw materials in tabular form. Please update the inventory to include risk phrases, and also provide Material Safety Data Sheets (MSDS) for all the substances identified.

Response

Hazard statements have been added to Table 2 in the Supporting Statement. In addition, MSDS have been included in Appendix C of this document.

2.11 Question 11 – Site Condition Report

a) *Please cross check table 4-2 (site condition report) against the list of raw materials (in Table 2: Application Supporting Statement on page 29) as Propylene Glycol appears to be missing.*

Response

Table 4-2 of the SCR and table 2 of the supporting statement have both been amended and now include Propylene Glycol.

b) *Section 4.6 : 4.6.1 appears to include an incomplete reference. Please correct.*

It also states that the activities undertaken at the installation are considered to represent a negligible risk of pollution to the underlying soil and groundwater, hence no collection of baseline data is proposed. Elsewhere it is stated that site investigation was conducted from November 2022 to February 2023 to inform the design of the project, and information gathered has been used to assist the establishment of baseline conditions at the site to inform the assessment of the installations impacts and effects. Please clarify.

Response

Section 4.6 of the SCR has been updated and amended.

c) *The application refers to remedial works prior to construction. What are the remedial works?*

Response

Remedial works are detailed in:

- APP-217 Associated British Ports 6.4 Environmental Statement Appendices - Appendix 21.C: Outline Remediation Strategy
- TR030008_Immingham_Green_Energy_Terminal_6-4_Environmental_Statement_Appendices_Appendix_21-C (planninginspectorate.gov.uk)

d) *Confirm there are no active permits on land within the proposed installation boundary area (i.e. permits not surrendered).*

- *UK Power Reserve Limited hold a permit for licenced industrial activity (fuel combustion) within the Site Boundary.*
- *There are no records for radioactive substance authorisations within the Site Boundary. FCC Recycling (UK) Limited have an approved permit for keeping and use of radioactive materials and disposal of radioactive waste.*
- *Anglian Water Service Limited and Immingham Water Recycling Centre hold permits for licenced discharges to controlled waters for sewage discharges into the River Humber located within the Site Boundary.*
- *List 1 Dangerous Substance, taken from the Groundsure report GS9009838, records include Riverside Electroplaters who operate a discharge of cadmium into the River Humber located within the Site Boundary.*

The above are detailed in the Site Condition Report. The 'site area' (where beyond the installation boundary) is not within the remit of the permit, we are solely concerned with the 'Installation area'. It is not possible to apply for a permit with overlapping land boundaries to that of another active permitted site.

Response

Section 3.4.15 of the Site Condition Report has been updated to clarify that there are no active permits within the proposed installation boundary.

2.12 Question 12 – Emission Points

Confirm the emission points for the reformer stack and amend in section 5 / figures 4a and 4b.

Response

Figure 4a has been amended to reflect the emission point for the 6th reformer stack (previously labelled as an HPU). Section 5 of the Supporting Statement remains unchanged.

2.13 Question 13 – Ammonia Flare

a) What is the assist gas used in the flare?

Response

Air products confirm the assist gas used in the flare is natural gas.

b) Assessment of the flare has been performed by H1. Confirm that this assessment covers the following, or revise assessment: -

i. That the data in the H1 considers all flare emissions scenarios during 'other than normal operating conditions (OTNOC), which includes start-up, shut-down and emergencies'

ii. How the flare has been assessed, namely in terms of NOx emissions:-

- *If pilot operations have been assessed on the assist gas only e.g. natural gas, then NOx values will relate to combustion of the assist gas, and not ammonia combustion*
- *If flaring (including the OTNOC) has considered ammonia combustion (resulting in higher NOx outputs), confirm how this has been undertaken.*

The assessment should consider the higher levels of NOx from combustion of ammonia.

Notes: the EAL for NO and US EPA Acute Exposure Guidelines Levels for NO2 could be used for this assessment).

Response

The original H1 assessment was completed for pilot mode only using a very conservative value for emissions to represent a worse case. The H1 assessment in appendix B.4 for air emissions has now been updated to include 3 scenarios for the ammonia flare; pilot mode, flaring during start-up/shut-down and during an emergency. Pilot operations have assessed the use of assist gas only and the other scenarios show combustion of ammonia. Please note the H1 assessment spreadsheet both version 8 and current version 9.2 were creating errors and as such we have also redone this assessment using the Access Database version of the tool.

In updating the assessment, the pilot emissions have been amended to reflect the current design status and the operating run time reduced to reflect the periods when flaring events with ammonia take place. The flare will not be used for more than 500hrs/year, which includes the scenarios given above. To simplify this in the tool, it has been estimated that flaring for start-up/shut-down will occur for 200hrs/year and flaring in emergency scenarios will take place for up to 300hrs/year. The remaining 8,260 hours have been modelled to show a pilot mode scenario.

The overall conclusion of the assessment remains consistent with the original assessment.

2.14 Question 14 - Monitoring and reporting of flare use and leaks

The application contains information on monitoring of pipelines (e.g. leak detection) and the use of the flare.

- *Leaks experienced in the pipeline between the jetty head and the storage tank will be detected by mass balance.*
- *Continuous monitoring via the BPCS for parameters such as temperature, pressure and flow.*

It is not clear in the application how the above monitoring will be recorded, collated and reported for permit compliance. Please provide further detail and clarification.

Response

Air Products will have management systems in place to collect, record and report data to the Regulator when required per the permit conditions.

The mass balance leak detection system will have it's own dedicated PLC and PC. The process variables such as pressure, temperature and flow are continuously monitored using instruments with transmitters that allow the transmitting measured variable information to the dedicated PLC which transmits them to the control room. The measured disturbances from the 'ideal' would be flagged to Operator and logged in the system as a separate event.

Flare monitoring and recording plan is a compliance plan that will be prepared by the facility. Continuous monitoring of the flare system will be done using flowmeter on the main flare header, the flowmeter will transmit information using transmitter to the control system in the control room. Increase in measured flow value by the flare header flowmeter will be a direct indication of the flaring occurrence. All data as generated by the flowmeters will be continuously recorded by computers. The flaring incidences will be recorded and reported to the permitting authorities.

Online monitoring of the heating value of gases to flare system will be done using heating value analyser. The monitoring system will include an output compatible with a data acquisition system (DAS) or similar system that can process data generated by the analyser and record the results. A data recorded compatible with analyser output and capable of recording analyser output will be supplied by the instrument. The flaring incidences will be recorded and reported to the permitting authorities.

2.15 Question 15 – Surface Waters

Section 6.6.2 within Environmental Permit Application Supporting Statement relates to emissions to water. It is stated here that 'run-off from possible NH_3 contaminated areas will be collected in a separate ammonia treatment sump and when NH_3 is detected, valves will close, and the run-off will be chemically treated".

Provide further information on the chemical treatment taking place, and confirmation of whether this treatment will be performed onsite, or removed offsite as 'disposal' i.e. for offsite treatment.

Response

The potential for surface water to have any contamination either in the form of chemicals, oil or ammonia will be due to spillages or during an emergency only, which will trigger emergency procedures. Surface run-off water from accidental ammonia/oil contaminated areas will be routed through an oil/ammonia water sump. The sump is a conventional gravity separator for oil in water, however, in case of ammonia detection (using online analyser) in the sump, the outlet from the sump will be blocked so that ammonia contaminated water is not routed to the retention pond. The ammonia contaminated waste water will be trucked out from the sump to the third party treatment facility.

2.16 Question 16 – Noise Impacts

a) The application states that residential properties on Queens Road (known as NSR 1 and NSR 2 in the DCO ES Chapter 7 Noise and Vibration) have not been included in this noise impact assessment of the operation of the proposed development.

Consider this with question 9 above (receptor status):

- *Clear evidence and guarantees (with dates) need to be provided for when these will cease as residential receptors, in order to be discounted from impact assessment scope (as receptors).*
- *If this cannot be guaranteed (with reassurances in advance of commencing operations) then these receptors must be considered / included within the scope of assessments as sensitive receptors.*

Response

Please refer to Point CA 1 in the DCO document Statement of Common Ground with NELC which confirms Air Products has acquired the properties and therefore no longer residential receptors.

https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/TR030008

b) Considering question 2 above, provide clarification on "operational noise" – phases 1 -6 and the scope of installation i.e. if other activities are technically connected they should be considered within this assessment.

Response

See response to question 2b where the situation with respect to the scope of the regulated facility is explained. References to technically connected operations have been removed from the application since the technical connection for end party users is not part of this activity. Therefore, these activities are not included in the assessment.

c) *The application states: The following items of plant, although containing noise source information, were deemed as being "emergency items" only and were not modelled as part of the operational noise model.*

- *Flare*

Please justify why flare emissions have not been included (including short term, intermittent sound sources).

Response

Flares will operate for most of the time on pilot mode. They will be required to operate in an emergency or process upsets or operational transitions or during plant start-up or shut down (e.g. during catalyst replacement in HPU) to burn off the release of NH_3 or H_2 emissions, with flaring of the waste gases occurring no more than a few hours per year. The frequency and duration of flaring will be dictated by both scheduled and unscheduled events, such as necessary maintenance and excess pressure conditions. The cumulative maximum flaring will not exceed 500 hours per year as stated in the application. During commissioning of facilities, the flaring and venting will be kept to the lowest level that is consistent with the safe and efficient commissioning of related plants.

On the basis of the above small number of hours of waste gas flaring and the remaining use of the flares being during infrequent emergency, process disruption or start-up/ shutdown conditions flaring has not been included with the operational sound modelling and assessment.

Appendix A Revised Application Forms

Appendix B – Revised Application Documents

B.1 Updated Supporting Statement

B.2 Updated Site Condition Report

B.3 Updated Process and Technology BAT

B.4 Updated H1 Tools

B.5 Updated Figure 4a- Emission Points

Appendix C – Additional Evidence

C.1 HPU Process Flow Diagram

C.2 Water Balance Diagram

C.3 MSDS