

Project title Net Zero Teesside Power Limited
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EPR/PP3501LR

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1. Introduction

Net Zero Teesside Power Limited submitted a variation application for their Environmental Permit (reference EPR/PP3501LR/V002) on 24th March 2026. Following Duly Making checks, the Environment Agency issued an email on 13th May 2026 requesting further information, in order to facilitate the Duly Making process. This note provides the additional information requested by the Environment Agency.

2. Further Information Responses

Point 1 **Submit a written in-combination assessment to accompany your Air Quality Impact Assessment (AQIA) where you consider the ‘in combination’ (combined) impact of all permissions, plans or projects that could also affect Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites within the relevant screening distance.**

The Environment Agency’s [Air emissions risk assessment for your environmental permit - GOV.UK](#) guidance requires an in-combination assessment where there are other plans or projects that could affect SPA, SAC or Ramsar sites. Although not stated explicitly in the guidance, through discussions with the Environment Agency, this is required where the Air Quality Impact Assessment predicts impacts for an individual Installation alone cannot be screened as insignificant.

The relevant designated sites for the Installation include:

- Teesmouth and Cleveland Coast Ramsar and SPA;
- North York Moors SAC and SPA;
- Northumbrian Coast SPA and Ramsar; and,
- Durham Cost SAC.

The later three sites are all greater than 11.5km from the Installation and therefore are a significant distance from the emission point source. As a result, the predicted impacts at these sites were screened as being insignificant at the first stage of assessment for annual and daily average NOx, annual

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average ammonia, nitrogen and acid deposition. It is therefore considered that no in-combination assessment is required for these sites.

The Teesmouth and Cleveland Coast Ramsar and SPA is adjacent to the north of the Installation, and consequently the predicted impacts at this site are higher. That said, annual and daily average NOx were still screened as insignificant at the second stage of assessment and annual average ammonia and acid deposition were screened at the first stage of assessment. It is therefore considered that no in-combination assessment is required for these pollutant species.

The nitrogen deposition impacts were not screened as being insignificant for the extreme worst case operational scenario, which assumed operation at emission limits and continual operation throughout the year. As this is not considered a realistic operational scenario (due to the Installation being operated as a dispatchable plant, and potentially capable of achieving emission concentrations below the proposed emission limits) a more realistic operational scenario was also assessed, which enabled the nitrogen deposition impacts to be screened as insignificant. As such, it is therefore considered that no in-combination assessment is required for these pollutant species.

In addition to the above, it should be noted that the impact of nitrogen deposition are lower than those presented in the original Environmental Permit application for the Installation.

Point 2 Submit a written Best Available Techniques (BAT) assessment against the following BAT Reference Document (BREF) and BAT guidance:

- 1. Emergency backup diesel engines on installations: best available techniques (BAT) – Provides BAT requirements for emergency diesel engines, including emission controls, stack design, and operational standards to minimise environmental impact.**

The Environment Agency’s guidance provides a framework for demonstrating BAT for the proposed Emergency Diesel Generators (EDGs). This guidance is applicable to the current permit variation application as the Installation includes a total of six EDGs, two approximately 5 MWth, two approximately 4 MWth, one approximately 3.2 MWth and one approximately 2.5 MWth. The purpose of the EDGs is to enable safe shut-down of the Installation in the event of loss of power to the Site.

Table 2-1 presents the Operators response to each of the BAT requirements detailed in the guidance.

Table 2-1 EDG BAT Review

BAT Requirement	Operator Response
Regulatory Requirements	
Meet, as a minimum, the requirements of Schedule 25A of the Medium Combustion Plant Directive and Schedule 25B of the Specified Generators Regulations where applicable.	The EDGs will meet the requirements of the relevant directives and regulations.
Build Standards	

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BAT Requirement	Operator Response
<p>Engines must be optimised to reduce emissions ('emissions optimised'). Engines that are optimised to reduce fuel ('fuel optimised') have greater emissions and will not meet BAT unless they have secondary abatement.</p> <p>Combustion plant specification sheets that keep to one or more of the former 2g TA Luft and United States Environment Protection Agency (EPA) Tier 2 (or equivalent) standards are acceptable proof of BAT plant. These do not need on-site exhaust emission monitoring.</p> <p>If you can show your engine achieves the following guidance level (which is not an ELV compliance requirement), it can be considered emissions optimised.</p> <p>Approximately 750mg/m³ NO_x (as NO₂) at 15% O₂ standard temperature and pressure, dry, 273K and 101.3kPa (equivalent to 2,000mg/m³ at 5% O₂ – commonly termed '2g') at a typical emergency load (usually greater than 67% of standby power rating)</p>	<p>Each of the six EDGs will comply with the EA's BAT guidance on EDGs and, as outlined in Section 4.3.2 of the Main Supporting Document, will be optimised to reduce emissions ('emissions optimised'), with NO_x emissions meeting the 2g TA Luft or US EPA Tier 2 (or equivalent) standards.</p> <p>As stated in Section 4.3.2 of the Main Supporting Document it is anticipated that the Environment Agency will require the submission of EDG datasheets as a PO measure in the varied Permit, to demonstrate compliance with BAT.</p>
<p>Your stack design should ensure good flue gas dispersion. Stacks should be vertical and emissions should not be obstructed by caps or cowls</p>	<p>The stack for each of the EDGs will be vertical with a height of approximately 5m and will not be fitted with a cap or cowl. As shown in Annex B of Appendix E (Air Quality Impact Assessment), the results of the SCAIL screening assessment showed that the impact on human and ecological receptors was found to be insignificant.</p>
Operational Controls	
<p>Minimise testing hours to less than 50 hours per year.</p>	<p>As outlined in Section 4.3.2 of the Main Supporting Document, the number of operational hours per annum per EDG is 12 hours.</p>
<p>Avoid testing during periods of poor air quality.</p>	<p>The Operator will not undertake testing during periods of poor air quality.</p>
<p>Do not test more than one engine at a time unless justified.</p>	<p>The existing Environmental Permit for the Installation already contains a condition requiring the Operator to not test more than one EDG at a time.</p>
<p>Manage operation of backup generators to minimise impacts on air quality and human health.</p>	<p>The assessment of the emissions from the EDGs is presented in the Air Quality Impact Assessment provided in Appendix E of the Main Supporting Document. The assessment considered both testing and potential emergency scenarios. The results showed that the impact on human receptors is considered to be insignificant. For ecological receptors the results of the assessment showed that their operation (emergency and testing) would not lead to any exceedance of an environmental standard, critical level or critical load for NO_x for both emergency and testing scenarios. The</p>

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BAT Requirement	Operator Response
	<p>overall effect of the EDGs in relation to air quality is therefore considered to be insignificant.</p> <p>The operation of each EDG will be 12 hours per annum (one hour per month) and will be optimised to reduce emissions with NOx emissions meeting the 2g TA Luft and United States Environment Protection Agency (EPA) Tier 2 (or equivalent) standards.</p>

The EDG BAT assessment demonstrates that the proposed units will be compliant with the Environment Agency’s BAT guidance for emergency backup diesel engines and meet the relevant regulatory requirements. The proposed design and operational controls meet BAT, including the use of emissions optimised engines, appropriate stack design to support dispersion, and restricted testing regimes. The supporting Air Quality Impact Assessment confirms that emissions from the EDGs will result in insignificant effects on human and ecological receptors. On this basis, the proposed emergency diesel generators are considered to represent BAT for the Installation.

Point 2 **Submit a written Best Available Techniques (BAT) assessment against the following BAT Reference Document (BREF) and BAT guidance:**

2. ***2006 BREF – Emissions from Storage – A horizontal BAT reference document covering techniques to reduce emissions from the storage and handling of liquids, gases, and solids.***

It is considered that the main potential for emission from storage from the Installation is from the bulk storage of the CANSOLV DC-103 solvent for the Post-combustion Carbon Capture (PCC) Plant, the ammonia for use in the Selective Catalytic Reduction (SCR) abatement and diesel for the generators.

Table 2-2 presents the Operators response to each of the BAT requirements detailed in the guidance.

Table 2-2 Emissions from Storage BAT Review

BAT No.	Conclusions on BAT	Applicability	Operator Response
Tanks			
General principles to prevent and reduce emissions			
BAT 1	<p>Tank design BAT for a proper design is to take into account at least the following:</p> <ul style="list-style-type: none"> • the physico-chemical properties of the substance being stored • how the storage is operated, what level of instrumentation is needed, how many operators are required, and what their workload will be • how the operators are informed of deviations from normal process conditions (alarms) • how the storage is protected against deviations from normal process conditions (safety instructions, interlock systems, pressure relief devices, leak detection and containment, etc.) • what equipment has to be installed, largely taking account of past experiences of the product (construction materials, valve quality, etc.) • which maintenance and inspection plan needs to be implemented and how to ease the maintenance and inspection work (access, layout, etc.) • how to deal with emergency situations (distances to other tanks, facilities and to the boundary, fire protection, access for emergency services such as the fire brigade, etc.). 	Yes	<p>As stated in the Main Supporting Document, Section 4.7 (Raw Materials), storage has been designed to reflect the properties of the substances stored.</p> <p>Section 4.7.1 details that CANSOLV DC-103 has a low volatility. Its boiling point is 105°C, i.e. higher than water, and it has a very low vapour pressure of <0.013 kPa at 20°C. As such, it is not considered that abatement is required on the breather vent for the storage tank, nor that back venting for tanker deliveries will be required.</p> <p>The vapour pressure of CANSOLV DC-103 is only just over 0.01 kPa, which is used for the definition of a Volatile Organic Compound (VOC) in the Industrial Emissions Directive (IED). The vapour pressure of CANSOLV DC-103 is therefore much lower than that of MEA (0.05 kPa at 20°C). Unlike MEA, CANSOLV DC-103 does not degrade/ decompose when exposed to atmospheric O₂ and therefore does not need to be stored under nitrogen to prevent degradation.</p> <p>The tank will be designed to relevant industry codes (API 650) and standards (BSEN 14015). The tank will be an atmospheric pressure fixed roof tank, constructed of stainless steel with 40 mm of external insulation and will be painted white, which is considered BAT in the Emissions from Storage BRef for tanks where nitrogen blanketing is not required.</p> <p>The ammonia storage for the SCR is an approximately 180 m³ atmospheric pressure fixed roof tank designed to API 650 and BS EN 14015. It is nitrogen blanketed, has vapour balancing for unloading, and the vent to atmosphere is fitted with carbon filters. The tank will also be painted white.</p> <p>As stated in the Main Supporting Document, Section 4.7.3 diesel for the EDGs will be stored in individual day tanks of double walled carbon steel design. The 2.5 MWth and 3.2 MWth EDGs will each have an approximately 3,000 litre day tank within the package enclosure, and the two 5 MWth and two 4 MWth EDGs will each have an approximately 5,000 litre day tank mounted outside the diesel enclosure.</p> <p>As stated in Annex 2 Stage 1 - 3 Assessment, Table 2, bunds will be designed in accordance with CIRIA C736, constructed of impermeable materials on impermeable ground, and pipework will be routed over the bund and not through</p>

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BAT No.	Conclusions on BAT	Applicability	Operator Response
			it. The EMS and the maintenance strategy are described in Main Supporting Document Sections 4.5 and 4.6.
BAT 2	<p>Inspection and maintenance BAT is to apply a tool to determine proactive maintenance plans and to develop risk-based inspection plans such as the risk and reliability based maintenance approach.</p>	Yes	<p>As stated in the Main Supporting Document, Section 4.6 (General Maintenance), the objective of plant maintenance is to ensure that the Installation operates safely and reliably. Routine maintenance will be planned and scheduled via a maintenance management system, including major overhauls, and the maintenance and inspection strategy will encompass all aspects of maintaining integrity and reliability.</p> <p>As stated in the Main Supporting Document, Section 4.5 (Management Systems), written procedures describing responsibilities, training, monitoring, document control, maintenance programmes and emergency preparedness will be available for operational personnel, with internal audits and reviews undertaken periodically.</p>
BAT 3	<p>Location and layout BAT is to locate a tank operating at, or close to, atmospheric pressure aboveground. However, for storing flammable liquids on a site with restricted space, underground tanks can also be considered. For liquefied gases, underground, mounded storage or spherescan be considered, depending on storage volume.</p>	Yes	All tanks will be at atmospheric pressure and above ground.
BAT 4	<p>Tank colour BAT is to apply either a tank colour with a reflectivity of thermal or light radiation of at least 70 %, or a solar shield on aboveground tanks which contain volatile substances, see Section 4.1.3.6 and 4.1.3.7 respectively.</p>	Yes	As stated in the Main Supporting Document, Section 4.7.1, the Amine Storage will be painted white to reflect light radiation. The ammonia tank will also be painted white.
BAT 5	<p>Emissions minimisation principle in tank storage BAT is to abate emissions from tank storage, transfer and handling that have a significant negative environmental effect, as described in Section 4.1.3.1.</p>	Yes	<p>Main Supporting Document, Section 4.7.3 outlines that CANSOLV DC-103 has a very low vapour pressure and the document concludes that abatement is not required on the breather vent for the storage tank and that back venting for tanker deliveries is not required.</p> <p>As stated in the Main Supporting Document, Section 4.7.2 the ammonia tank will be nitrogen blanketed, will have vapour balancing for unloading, and the vent to atmosphere will be fitted with carbon filters to prevent ammonia emissions.</p>

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BAT No.	Conclusions on BAT	Applicability	Operator Response
			Section 4.7.3 and Annex 2 Stage 1 - 3 Assessment, Table 2, also states diesel will be stored in double walled day tanks with leak detection, overfill prevention, drip trays during filling, and storage on concrete surfacing with oil interceptors.
BAT 6	Monitoring of VOC On sites where significant VOC emissions are to be expected, BAT includes calculating the VOC emissions regularly. The calculation model may occasionally need to be validated by applying a measurement method.	Yes	Not applicable. As stated in the Main Supporting Document Section 4.7.3, CANSOLV DC-103 has a very low vapour pressure therefore breather vent abatement and back venting are not required.
BAT 7	Dedicated systems BAT is to apply dedicated systems. Dedicated systems are generally not applicable on sites where tanks are used for short to medium-term storage of different products.	Yes	As stated in Annex 2 Stage 1 - 3 Assessment, Table 2, dedicated systems are proposed for the main substances. The ammonia for the SCR is stored in a dedicated storage tank. Diesel for the EDGs is stored in individual day tanks for each unit. CANSOLV DC-103 is delivered directly into the lean solvent tank. Other chemicals are stored in dedicated Chemical Storage Areas or within the Chemical Storage Building.
Tank Specific considerations			
BAT 8	Open top tanks	No	Not applicable.
BAT 9	External floating roof tank	No	Not applicable.
BAT 10	Fixed roof tanks For the storage of volatile substances which are toxic (T), very toxic (T+), or carcinogenic, mutagenic and reproductive toxic (CMR) categories 1 and 2 in a fixed roof tank, BAT is to apply a vapour treatment installation	Yes	As stated in the Main Supporting Document, Section 4.7.3 the lean solvent tank is an atmospheric pressure fixed roof tank. CANSOLV DC-103 has very low volatility and that abatement is not required on the breather vent, nor is back venting for tanker deliveries required. The tank is also stated to be painted white and designed to API 650 and BS EN 14015.
BAT 11	For other substances, BAT is to apply a vapour treatment installation or to install an internal floating roof (see Sections 4.1.3.15 and 4.1.3.10 respectively).		On that basis, the application does not propose a vapour treatment installation or internal floating roof for this tank because the stored solvent is not considered to require it. As stated in the Main Supporting Document, Section 4.7.2 the ammonia will be stored in an atmospheric pressure fixed roof tank. The tank will be nitrogen blanketed, will have vapour balancing for unloading operations, and the vent to atmosphere will be fitted with carbon filters to prevent ammonia emissions.

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BAT No.	Conclusions on BAT	Applicability	Operator Response
BAT 12	For tanks < 50 m ³ , BAT is to apply a pressure relief valve set at the highest possible value consistent with the tank design criteria.	Yes	The Installation includes a number of small ancillary storage tanks (e.g. chemical dosing and day tanks) which are designed in accordance with recognised standards (e.g. API/BS EN). These tanks are fitted with appropriately specified pressure/vacuum relief devices set in accordance with design codes to prevent unnecessary venting whilst ensuring safe operation.
BAT 13	For liquids containing a high level of particles (e.g. crude oil) BAT is to mix the stored substance to prevent deposition that would call for an additional cleaning step, see Section 4.1.5.1.	No	Not applicable.
BAT 14	Atmospheric horizontal tanks	No	Not applicable.
BAT 15	Atmospheric horizontal tanks	No	Not applicable.
BAT 16	Pressurised storage.	No	Not applicable.
BAT 17	Lifter roof tanks	No	Not applicable.
BAT 18	Underground and mounded tanks	No	Not applicable.
Preventing incidents and (major) accidents			
BAT 19	BAT in preventing incidents and accidents is to apply a safety management system as described in Section 4.1.6.1.	Yes	As stated in the Main Supporting Document, Section 4.5 (Management Systems), the Site will be operated in line with an EMS compliant with ISO 14001, the EA guidance on developing a management system, and BAT 1 of the LCP BAT Conclusions. The EMS will identify the systems and procedures that minimise the risk of pollution and harm to human health arising from operation, maintenance, accidents, incidents and non-conformances. This provides the overall safety and risk management framework for the storage systems.
BAT 20	BAT is to implement and follow adequate organisational measures and to enable training and instruction of employees for safe and responsible operation of the installation as described in Section 4.1.6.1.1.	Yes	As stated in the Main Supporting Document, Section 4.5 (Management Systems), written procedures clearly describing responsibilities, training, communication, actions, monitoring, document control, maintenance programmes and emergency preparedness and response will be available for operational personnel.

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BAT No.	Conclusions on BAT	Applicability	Operator Response
			Also Annex 2 Stage 1 - 3 Assessment, Table 2 and in the Management Procedures section states personnel handling chemicals and wastes will receive appropriate training, and access to Chemical and Waste Storage Areas will be limited to trained personnel.
BAT 21	<p>BAT is to prevent corrosion by:</p> <ul style="list-style-type: none"> - selecting construction material that is resistant to the product stored - applying proper construction methods - preventing rainwater or groundwater entering the tank and if necessary, removing water that has accumulated in the tank - applying rainwater management to bund drainage - applying preventive maintenance, and - where applicable, adding corrosion inhibitors, or applying cathodic protection on the inside of the tank. <p>Additionally for an underground tank, BAT is to apply to the outside of the tank:</p> <ul style="list-style-type: none"> - a corrosion-resistant coating, plating, and/or - a cathodic protection system. 	Yes	<p>As stated in the Main Supporting Document, Section 4.6 (General Maintenance), material selection is key to managing corrosion risk and appropriate stainless steels would be used in the amine systems to minimise corrosion. High quality coatings, corrosion protection and corrosion allowances will be provided to reduce maintenance needs.</p> <p>As stated in Annex 2 Stage 1 - 3 Assessment, Table 2, tanks and bunds will be constructed on impermeable surfaces, with rain and spill management routed to appropriate drainage or neutralisation systems as relevant.</p>
BAT 22	<p>Stress corrosion cracking (SCC) is a specific problem for spheres, semi-refrigerated tanks and some fully refrigerated tanks containing ammonia. BAT is to prevent SCC by:</p> <ul style="list-style-type: none"> - stress relieving by post-weld heat treatment, see Section 4.1.6.1.4, and - applying a risk based inspection as described in Section 4.1.2.2.1. 	No	Not applicable.
BAT 23	<p>BAT is to implement and maintain operational procedures – e.g. by means of a management system – as described in Section 4.1.6.1.5, to ensure that:</p> <ul style="list-style-type: none"> • high level or high pressure instrumentation with alarm settings and/or auto closing of valves is installed • proper operating instructions are applied to prevent overfill during a tank filling operation, and • sufficient ullage is available to receive a batch filling. 	Yes	<p>As stated in Annex 2 Stage 1 - 3 Assessment, Table 2, diesel filling will be observed by a trained, competent person, a drip tray will be present beneath the filling location, and the tank will be fitted with measures to prevent overfill. The same table states that ammonia handling areas will drain to neutralising pits fitted with instrumentation and a high level alarm to the central control room.</p> <p>In addition, Main Supporting Document, Sections 4.2 and 4.4, states that the plant will also employ a Distributed Control System with alarms and interlocks, and the gas turbine fuel system will include emergency fuel shut off systems.</p>

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BAT No.	Conclusions on BAT	Applicability	Operator Response
BAT 24	BAT is to apply leak detection on storage tanks containing liquids that can potentially cause soil pollution.	Yes	<p>As stated in Annex 2 Stage 1 - 3 Assessment, Table 2, all fuel storage will be fitted with leak detection. The same table states that ammonia gas detectors will be provided in the bund area and close to pumps handling aqueous ammonia.</p> <p>These measures provide leak detection for the storage systems identified as having potential to cause soil pollution.</p>
BAT 25	BAT is to achieve a 'negligible risk level' of soil pollution from bottom and bottom-wall connections of aboveground storage tanks. However, on a case-by-case basis, situations might be identified where an 'acceptable risk level' is sufficient.	Yes	<p>As stated in the Main Supporting Document, Section 4.7 (Amine Storage and Ammonia Storage) and Annex 2 Stage 1 - 3 Assessment, Table 2, the tanks will be located in bunds constructed of impermeable materials on impermeable ground, with pipework routed over the bund and not through it.</p> <p>This arrangement is intended to minimise the risk of release to soil from the tank base and lower connections.</p> <p>Based on the findings of the Annex 2 Stage 1 – 3 Assessment the pollution risk of all raw materials and waste is low with the exception of the thermal reclaimer waste.</p> <p>It is recommended that in accordance with Application for C2, Question 5c that baseline reference data should be collected for this substance. This information is currently not available as part of the application but can be made available following the issue of the permit variation.</p>
BAT 26	<p>BAT for aboveground tanks containing flammable liquids or liquids that pose a risk for significant soil pollution or a significant pollution of adjacent watercourses is to provide secondary containment, such as:</p> <ul style="list-style-type: none"> • tank bunds around single wall tanks; see Section 4.1.6.1.11 • double wall tanks; see Section 4.1.6.1.13 • cup-tanks; see Section 4.1.6.1.14 • double wall tanks with monitored bottom discharge; see Section 4.1.6.1.15. <p>For building new single walled tanks containing liquids that pose a risk for significant soil pollution or a significant pollution of adjacent watercourses, BAT is to apply a full, impervious, barrier in the bund, see Section 4.1.6.1.10.</p>	Yes	<p>As stated in the Main Supporting Document, Section 4.7 and Annex 2 Stage 1 - 3 Assessment, Table 2, the relevant aboveground storage will be provided with secondary containment designed in accordance with CIRIA C736. The tank bund will normally hold 110% of the capacity of the largest tank within the bund or 25% of the total capacity, whichever is greater.</p>

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BAT No.	Conclusions on BAT	Applicability	Operator Response
BAT 27	<p>For existing tanks within a bund, BAT is to apply a risk-based approach, considering the significance of risk from product spillage to the soil, to determine if and which barrier is best applicable. This risk-based approach can also be applied to determine if a partial impervious barrier in a tank bund is sufficient or if the whole bund needs to be equipped with an impervious barrier. See Section 4.1.6.1.11.</p> <p>Impervious barriers include:</p> <ul style="list-style-type: none"> • a flexible membrane, such as HDPE • a clay mat • an asphalt surface • a concrete surface. 	Yes	<p>As stated in the Main Supporting Document, Section 4.7 and Annex 2 Stage 1 - 3 Assessment, Table 2, the tank bunds will be constructed of impermeable materials on impermeable ground. In addition, areas of chemical handling will comprise concrete hardstanding of watertight construction and kerbed or bunded areas to contain spills.</p> <p>This provides the impervious barrier identified in the application documents.</p>
BAT 28	For chlorinated hydrocarbon solvents (CHC) in single walled tanks, BAT is to apply CHC-proof laminates to concrete barriers (and containments), based on phenolic or furan resins. One form of epoxy resin is also CHC-proof. See Section 4.1.6.1.12.	No	Not applicable.
BAT 29	<p>BAT for underground and mounded tanks containing products that can potentially cause soil pollution is to:</p> <ul style="list-style-type: none"> • apply a double walled tank with leak detection, see Section 4.1.6.1.16, or • to apply a single walled tank with secondary containment and leak detection, see Section 4.1.6.1.17. 	No	Not applicable.
BAT 30	For toxic, carcinogenic or other hazardous substances, BAT is to apply full containment.	Yes	As stated in the Main Supporting Document, Section 4.7 and Section 5.2, and in Annex 2 Stage 1 - 3 Assessment, Table 2, hazardous liquids are stored within primary containment and secondary containment on impermeable ground, with dedicated bunding, closed drainage where amines are present.
Storage of packaged dangerous substances			
BAT 31	<p>Safety and risk management</p> <p>BAT in preventing incidents and accidents is to apply a safety management system as described in Sections 4.1.6.1.</p> <p>The degree of detail of the system is clearly dependent on various factors such as: the quantities of substances stored, specific hazards of the</p>	Yes	As stated in the Main Supporting Document, Section 4.5 (Management Systems), the Site will be operated under an EMS that addresses operation, accidents, incidents and non-conformances. As stated in Annex 2 Stage 1 - 3 Assessment, the storage risk has also been assessed through the Stage 1 - 3 Assessment and CIRIA C736 qualitative containment assessment.

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BAT No.	Conclusions on BAT	Applicability	Operator Response
	substances and the location of the storage. However, the minimum level of BAT is to assess the risks of accidents and incidents on the site using the five steps described in Section 4.1.6.1		<p>The proposed development aligns with this BAT requirement by embedding a safety management system that includes emergency preparedness, response procedures, and contingency planning within the Environmental Management System, alongside control measures such as alarms, interlocks, and emergency shutdown systems.</p> <p>Risk assessments have been undertaken throughout the design process which has involved assessing fire and explosion hazards and design-based evaluations of hazards associated with fuels, chemicals, and plant operations, ensuring that accident and incident risks are systematically identified and managed.</p>
BAT 32	<p>Training and responsibility BAT is to appoint a person or persons who is or are responsible for the operation of the store. BAT is to provide the responsible person(s) with specific training and retraining in emergency procedures as described in Section 4.1.7.1 and to inform other staff on the site of the risks of storing packaged dangerous substances and the precautions necessary to safely store substances that have different hazards.</p>	Yes	As stated in the Main Supporting Document, Section 4.5 (Management Systems), written procedures will describe responsibilities and training for operational personnel as part of the EMS. As stated in Annex 2 Stage 1 - 3 Assessment (Management Procedures), access to Chemical and Waste Storage Areas will be limited to personnel who have received appropriate training in the handling of raw materials and waste.
BAT 33	<p>Storage area BAT is to apply a storage building and/or an outdoor storage area covered with a roof, as described in Section 4.1.7.2. For storing quantities of less than 2500 litres or kilograms dangerous substances, applying a storage cell as described in Section 4.1.7.2 is also BAT.</p>	Yes	As stated in Annex 2 Stage 1 - 3 Assessment (Control Measures, Storage) and Table 2, chemicals will be stored in a Chemical Storage Area or Chemical Storage Building, and dry and powdered materials will be stored within a dedicated Storage Area inside the building with an impermeable concrete floor.
BAT 34	<p>Separation and segregation BAT is to separate the storage area or building of packaged dangerous substances from other storage, from ignition sources and from other buildings on- and off-site by applying a sufficient distance, sometimes in combination with fire-resistant walls. MSs apply different distances between the (outdoor) storage of packaged dangerous substances and other objects on- and offsite; see Section 4.1.7.3 for some examples. BAT is to separate and/or segregate incompatible substances. For the compatible and incompatible combinations see Annex 8.3. MSs apply different</p>	Yes	As stated in Annex 2 Stage 1 - 3 Assessment (Control Measures, Storage), waste will be stored in a manner that prevents commingling or contact between incompatible wastes, and the Waste Storage Area will include dedicated space for substances with special requirements. The same section states that the Chemical Storage Area and Waste Storage Area are separate areas within the building.

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BAT No.	Conclusions on BAT	Applicability	Operator Response
	distances and/or physical partitioning between the storage of incompatible substances; see Section 4.1.7.4 for some examples.		
BAT 35	<p>Containment of leakage and contaminated extinguishant</p> <p>BAT is to install a liquid-tight reservoir according to Section 4.1.7.5, that can contain all or a part of the dangerous liquids stored above such a reservoir. The choice whether all or only a part of the leakage needs to be contained depends on the substances stored and on the location of the storage (e.g. in a water catchment area) and can only be decided on a case-by-case basis. BAT is to install a liquid-tight extinguishant collecting provision in storage buildings and storage areas according to Section 4.1.7.5. The collecting capacity depends on the substances stored, the amount of substances stored, the type of package used and the applied fire-fighting system and can only be decided on a case-by-case basis.</p>	Yes	<p>As stated in Main Supporting Document, Section 7.3.1.5 In the event of a fire, a flow diversion valve will control the flow of firewater run-off to a dedicated firewater run-off collection pond for storage testing and disposal. In the event that the firewater run-off collection pond capacity is exceeded, the firewater run-off collection pond would flow to the attenuation pond for PCSWs to provide additional storage. The drains on Site have been sized to deal with calculated maximum firewater run-off flows.</p> <p>The discharge from the Outflow Retention Pond to Emission Point W1 is a pumped discharge and therefore this would be shut-off in the event of a fire.</p>
BAT 36	<p>Fire-fighting equipment</p> <p>BAT is to apply a suitable protection level of fire prevention and fire-fighting measures as described in Section 4.1.7.6. The appropriate protection level has to be decided on a case-by-case basis in agreement with the local fire brigade.</p>	Yes	<p>As stated in the Appendix J, Qualitative Risk Assessment, fire/smoke detection and alarm will be present around the installation.</p> <p>The CCGT and carbon capture plant will be fitted with a water mist fire suppression system. Pressurised fire water will be provided throughout the plant to supply all water based fire fighting systems. A dedicated fire water reserve will be provided within the treated raw water tank. The fire water reserve shall be sized to supply, for two hours, all fixed fire water suppression system demands, that could reasonably be expected to operate simultaneously during a single fire event, plus hose stream allowance. Local fire extinguishers and outdoor hydrants will also be present on site.</p> <p>The design of Building structures will comply with BS 9999 and the Buildings Fire Strategy. The Installation will be design to ensure safe separation distances plant items. Fire rated-walls and fire-rated structural elements will be employed where protection of personnel and equipment cannot be achieved by spatial separation.</p> <p>Any fire water likely to arise from any area in case of a fire event shall be contained within the site. Fire water will be collected from the storage area and disposed of offsite</p>

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BAT No.	Conclusions on BAT	Applicability	Operator Response
BAT 37	Preventing ignition BAT is to prevent ignition at source as described in Section 4.1.7.6.1.	Yes	<p>The proposed development aligns with BAT by preventing ignition at source through the controlled combustion of natural gas within enclosed gas turbine systems, ensuring that fuel-air mixtures and ignition occur only within engineered equipment.</p> <p>This approach is supported by the use of enclosed process systems for flue gas handling and carbon capture, together with BAT-led design principles that prioritise prevention and minimise the formation of flammable atmospheres.</p>
Basins and lagoons – Section not applicable			
Atmospheric mined caverns – Section not applicable			
Pressurised mined caverns – Section not applicable			
Salt leached caverns – Section not applicable			
Floating storage – Section not applicable			
Transfer and handling of liquids and liquefied gases			
BAT 44	Inspection and maintenance BAT is to apply a tool to determine proactive maintenance plans and to develop risk-based inspection plans such as, the risk and reliability based maintenance approach; see Section 4.1.2.2.1.	Yes	In the Main Supporting Document, Section 4.6 (General Maintenance), it states routine maintenance will be planned and scheduled via a maintenance management system, including major overhauls, and the maintenance and inspection strategy will cover maintaining integrity and reliability.
BAT 45	Leak detection and repair programme. For large storage facilities, according to the properties of the products stored, BAT is to apply a leak detection and repair programme. Focus needs to be on those situations most likely to cause emissions (such as gas/light liquid, under high pressure and/or temperature duties). See Section 4.2.1.3.	Yes	<p>The Installation is not a large storage facility, however, as stated in Annex 2 Stage 1 - 3 Assessment, Table 2, all fuel storage will be fitted with leak detection, ammonia gas detectors will be installed around the ammonia tank and pump area, and storage areas and bunds will be subject to regular inspection by trained personnel.</p> <p>As stated in the Main Supporting Document, Sections 4.5 and 4.6, these measures form part of the EMS and routine maintenance strategy.</p>
BAT 46	Emissions minimisation principle in tank storage BAT is to abate emissions from tank storage, transfer and handling that	Yes	As stated in the Main Supporting Document, Section 4.5 (Management Systems), the EMS will identify and manage risks of pollution from operation, maintenance, accidents and incidents.

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	have a significant negative environmental effect, as described in Section 4.1.3.1.		<p>Section 4.7 also outlines that ammonia storage will use nitrogen blanketing, vapour balancing and carbon filtered venting, while CANSOLV storage will rely on low volatility and fixed roof storage.</p> <p>Within Annex 2 Stage 1 - 3 Assessment, Table 2, it states bunding, impermeable hardstanding, leak detection and regular inspections are also provided.</p> <p>These measures are intended to minimise emissions from storage, transfer and handling.</p>
BAT 47	Safety and risk management BAT in preventing incidents and accidents is to apply a safety management system as described in Section 4.1.6.1.	Yes	<p>As stated in the Main Supporting Document, Section 4.5 (Management Systems), the Installation will be operated in line with an ISO 14001 compliant EMS. The EMS will identify the systems and procedures that minimise the risk of pollution and harm to human health arising from operation, maintenance, accidents, incidents and non-conformances.</p> <p>In Annex 2 Stage 1 - 3 Assessment (Management Procedures), it states the EMS will also include procedures on delivery of raw materials, removal of waste, transport within the Installation boundary, spill response, incident response, and reporting and follow up of incidents. This provides the safety and risk management framework for transfer and handling activities.</p>
BAT 48	Operational procedures and training BAT is to implement and follow adequate organisational measures and to enable the training and instruction of employees for safe and responsible operation of the installation as described in Section 4.1.6.1.1.	Yes	<p>The Main Supporting Document, in Section 4.5 (Management Systems) states that written procedures describing responsibilities, training, communication, actions, monitoring, document control, maintenance programmes and emergency preparedness and response will be available for operational personnel.</p> <p>As stated in Annex 2 Stage 1 - 3 Assessment, Table 2 and the Management Procedures section, all personnel required to handle chemicals or wastes will receive appropriate training, and access to Chemical and Waste Storage Areas will be limited to trained personnel. This addresses operational procedures and training for transfer and handling.</p>
Considerations on transfer and handling techniques			
Piping			

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BAT No.	Conclusions on BAT	Applicability	Operator Response
BAT 49	BAT is to apply aboveground closed piping in new situations, see Section 4.2.4.1. For existing underground piping it is BAT to apply a risk and reliability based maintenance approach as described in Section 4.1.2.2.1	Yes	As stated in the Main Supporting Document, Section 5.2 (Emissions to Water), the PCC plant will have a hard piped, closed drainage system for amine containing wastewaters and for glycol containing closed cooling water and fuel gas condensate drums, to ensure these are not released to the Installation drainage system. In addition, as stated in the Main Supporting Document, Section 4.7 and Annex 2 Stage 1 - 3 Assessment, Table 2, pipework associated with the bunded tank systems will be routed over the bund and not through it. On that basis, the application adopts aboveground and closed arrangements where the documents identify transfer systems.
BAT 50	Bolted flanges and gasket-sealed joints are an important source of fugitive emissions. BAT is to minimise the number of flanges by replacing them with welded connections, within the limitation of operational requirements for equipment maintenance or transfer system flexibility, see Section 4.2.2.1. BAT for bolted flange connections (see Section 4.2.2.2.) include: <ul style="list-style-type: none"> • fitting blind flanges to infrequently used fittings to prevent accidental opening • using end caps or plugs on open-ended lines and not valves • ensuring gaskets are selected appropriate to the process application • ensuring the gasket is installed correctly • ensuring the flange joint is assembled and loaded correctly • where toxic, carcinogenic or other hazardous substances are transferred, fitting high integrity gaskets, such as spiral wound, kammprofile or ring joints. 	Yes	As mentioned in the Main Supporting Document, Section 4.6 (General Maintenance), the design seeks equipment with high inherent integrity and minimum intrusive maintenance requirements, and a plant inspection strategy will be developed during the EPCC phase.
BAT 51	Internal corrosion may be caused by the corrosive nature of the product being transferred, see Section 4.2.3.1. BAT is to prevent corrosion by: <ul style="list-style-type: none"> • selecting construction material that is resistant to the product • applying proper construction methods • applying preventive maintenance, and • where applicable, applying an internal coating or adding corrosion inhibitors. 	Yes	As stated in the Main Supporting Document, Section 4.6 (General Maintenance), material selection is key to managing corrosion risk for plant used to store and transfer amine solvent, and appropriate stainless steels would be used in the amine systems to minimise corrosion. The same section states that the plant inspection strategy will take into account all systems involved in the handling and transfer of amine solvent, and that corrosion monitoring methods will be employed.

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BAT No.	Conclusions on BAT	Applicability	Operator Response
			Annex 2 Stage 1 - 3 Assessment, Table 2 also states that chemicals are stored in systems designed in line with CIRIA C736 and relevant standards, with preventive inspection and maintenance.
BAT 52	To prevent the piping from external corrosion, BAT is to apply a one, two, or three layer coating system depending on the site-specific conditions (e.g. close to sea). Coating is normally not applied to plastic or stainless steel pipelines. See Section 4.2.3.2.	Yes	As stated in the Main Supporting Document, Section 4.6 (General Maintenance), high quality coatings, corrosion protection and corrosion allowances will be provided to render the requirement for fabric maintenance low criticality.
Vapour treatment			
BAT 53	BAT is to apply vapour balancing or treatment on significant emissions from the loading and unloading of volatile substances to (or from) trucks, barges and ships. The significance of the emission depends on the substance and the volume that is emitted, and has to be decided on a case-by-case basis. For more detail see Section 4.2.8.	Yes	As stated in the Main Supporting Document, Section 4.7 (Ammonia Storage), the ammonia tank will have vapour balancing for unloading operations and the vent to atmosphere will be fitted with carbon filters to prevent ammonia emissions. As stated in Section 4.7 (Amine Storage), CANSOLV DC-103 has very low volatility and the document concludes that back venting for tanker deliveries is not required and abatement is not required on the breather vent for the storage tank. The application documents do not identify any other storage transfer with significant vapour emissions requiring treatment.
Valves			
BAT 54	BAT for valves include: <ul style="list-style-type: none"> • correct selection of the packing material and construction for the process application • with monitoring, focus on those valves most at risk (such as rising stem control valves in continual operation) • applying rotating control valves or variable speed pumps instead of rising stem control valves • where toxic, carcinogenic or other hazardous substances are involved, fit diaphragm, bellows, or double walled valves • route relief valves back into the transfer or storage system or to a vapour treatment system. 	Yes	The Main Supporting Document, Sections 4.2 and 4.4, state that the plant will include emergency fuel shut off systems, safety valves, pressure relief valves, alarms and interlocks through the control and safeguarding systems. Detailed BAT valve selection, including any specialist valve types for hazardous duties, will be confirmed through detailed design and the maintenance and inspection strategy.
Pumps and compressors			

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BAT No.	Conclusions on BAT	Applicability	Operator Response
BAT 55	<p>Installation and maintenance of pumps and compressors</p> <p>The design, installation and operation of the pump or compressor heavily influence the life potential and reliability of the sealing system. The following are some of the main factors which constitute BAT:</p> <ul style="list-style-type: none"> • proper fixing of the pump or compressor unit to its base-plate or frame • having connecting pipe forces within producers' recommendations • proper design of suction pipework to minimise hydraulic imbalance • alignment of shaft and casing within producers' recommendations • alignment of driver/pump or compressor coupling within producers' recommendations when fitted • correct level of balance of rotating parts • effective priming of pumps and compressors prior to start-up • operation of the pump and compressor within producers' recommended performance range (The optimum performance is achieved at its best efficiency point.) • the level of net positive suction head available should always be in excess of the pump or compressor • regular monitoring and maintenance of both rotating equipment and seal systems, combined with a repair or replacement programme. 	Yes	<p>As stated in the Main Supporting Document, Section 4.6 (General Maintenance), the maintenance and inspection strategy will encompass all aspects of maintaining integrity and reliability of the facilities. The same section states that rotating equipment auxiliaries such as filters, pumps and heat exchangers will be arranged with sufficient redundancy, and routine maintenance will be planned and scheduled via a maintenance management system.</p> <p>Section 4.4 (Process Control) also states plant operational data from the DCS will allow plant processes and maintenance procedures to be reviewed and optimised.</p>
BAT 56	<p>Sealing system in pumps</p> <p>BAT is to use the correct selection of pump and seal types for the process application, preferably pumps that are technologically designed to be tight such as canned motor pumps, magnetically coupled pumps, pumps with multiple mechanical seals and a quench or buffer system, pumps with multiple mechanical seals and seals dry to the atmosphere, diaphragm pumps or bellow pumps. For more details see Sections 3.2.2.2, 3.2.4.1 and 4.2.9.</p>	Yes	<p>Pumps handling process chemicals and utilities are specified to minimise fugitive emissions in accordance with relevant standards such as API 682. The design basis requires the use of appropriate sealing systems (e.g. mechanical seals and, where required, enhanced (double) sealing arrangements for amines). This aligns with the Installation's overall approach of preventing fugitive releases through equipment selection rather than reliance on end-of-pipe abatement.</p>
BAT 57	<p>Sealing systems in compressors</p> <p>BAT for compressors transferring non-toxic gases is to apply gas lubricated mechanical seals.</p> <p>BAT for compressors, transferring toxic gases is to apply double seals with a liquid or gas barrier and to purge the process side of the containment seal with an inert buffer gas.</p>	Yes	<p>The primary compression systems at the Installation relate to CO₂ handling within the capture and export system. These compressors are electrical motor driven and are being designed with appropriate dry gas seals and sealing systems in accordance with API 692 consistent with the hazardous nature of CO₂. The design philosophy is to minimise fugitive CO₂ losses prior to export to the NEP network.</p>

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BAT No.	Conclusions on BAT	Applicability	Operator Response
	In very high pressure services, BAT is to apply a triple tandem seal system.		
Sampling connections			
BAT 58	BAT, for sample points for volatile products, is to apply a ram type sampling valve or a needle valve and a block valve. Where sampling lines require purging, BAT is to apply closed-loop sampling lines. See Section 4.2.9.14.	Yes	Sampling systems for volatile or hazardous fluids (e.g. amine systems or CO ₂ service) are designed as closed or low-emission systems. This includes the use of suitable valves and containment arrangements and, where purging is required, closed-loop sampling to prevent releases to atmosphere. This approach is consistent with the wider Installation design philosophy of minimising fugitive emissions from routine operations.
Open storage – Section not applicable			
Enclosed storage			
BAT 60	<p>BAT is to apply enclosed storage by using, for example, silos, bunkers, hoppers and containers.</p> <p>Where silos are not applicable, storage in sheds can be an alternative. This is, e.g. the case if apart from storage, the mixing of batches is needed. BAT for silos is to apply a proper design to provide stability and prevent the silo from collapsing. See Sections 4.3.4.1 and 4.3.4.5. BAT for sheds is to apply proper designed ventilation and filtering systems and to keep the doors closed. See Section 4.3.4.2. BAT is to apply dust abatement and a BAT associated emission level of 1 – 10 mg/m³, depending on the nature/type of substance stored. The type of abatement technique has to be decided on a case-by case basis. See Section 4.3.7.</p> <p>For a silo containing organic solids, BAT is to apply an explosion resistant silo (see Section 4.3.8.3), equipped with a relief valve that closes rapidly after the explosion to prevent oxygen entering the silo, as described in Section 4.3.8.4.</p>		<p>The use of silos or shed are not applicable for storage at the Installation.</p> <p>As stated in Annex 2 Stage 1 - 3 Assessment (Control Measures, Storage) and Table 2, materials will be contained within a dedicated Storage Area inside the building, or within the Chemical Storage Area (located within a building) unless they are fed directly into the process. All material storage areas will be fitted with a sealed drainage system.</p> <p>In relation to dust, dry and powdered materials will be contained within bags, sacks or other suitable smaller containers. All dry and powdered materials will be stored on suitably robust shelving/ pallets within the dedicated Storage Area inside the building which has an impermeable concrete floor.</p>
Storage of packaged dangerous solids			

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BAT No.	Conclusions on BAT	Applicability	Operator Response
BAT 61	For details regarding BAT for the storage of packaged dangerous solids, see Section 5.1.2.		<p>As stated in Annex 2 Stage 1 - 3 Assessment, Table 2, activated carbon will be delivered in sealed containers or bags and stored inside a building on an impermeable concrete floor. Sodium metabisulphite is anticipated to be stored in either IBCs or drums within a bunded Chemical Storage Area.</p> <p>As stated in the Control Measures section of the same document, waste and raw materials are stored to prevent commingling, with secondary containment where relevant, closed containers, sealed drainage, inspections and EMS controls. This is the basis for BAT for packaged dangerous solids at the Installation.</p>
Preventing incidents and (major) accidents			
BAT 62	BAT in preventing incidents and accidents is applying a safety management system as described in Section 4.1.7.1.		<p>As stated in the Main Supporting Document, Section 4.5 (Management Systems), the Installation will be operated under an EMS that addresses operation, accidents, incidents and non-conformances. As stated in Annex 2 Stage 1 - 3 Assessment (Management Procedures), the EMS will include procedures for storage area management, spill response, incident response, inspections and maintenance.</p> <p>This applies equally to packaged dangerous solids.</p>
Transfer and handling of solids			
General approaches to minimise dust from transfer and handling – BAT 63 -72 Not applicable			
Considerations on transfer techniques – BAT 73 -74 Not applicable			

The Storage BAT assessment demonstrates that the proposed storage represent BAT for the materials to be stored on site.