



## Permitting Decisions - Variation

### Consultation on our decision document recording our decision-making process

The Permit number is: EPR/FP3139FN  
The Operator is: Essar Oil (UK) Limited  
The Installation is: Stanlow Manufacturing Complex  
This Variation Notice number is: EPR/FP3139FN/V011

Consultation commences on: 08/04/2022  
Consultation ends on: 11/05/2022

### What this document is about

This is a draft decision document, which accompanies a draft Consolidated Variation Notice.

It explains how we have considered the Applicant's Application, and why we have included the specific conditions in the draft permit we are proposing to issue to the Applicant. It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our position. Unless the document explains otherwise, we have accepted the Applicant's proposals.

The document is in draft at this stage, because we have yet to make a final decision. Before we make this decision we want to explain our thinking to the public and other interested parties, to give them a chance to understand that thinking and, if they wish, to make relevant representations to us. We will make our final decision only after carefully taking into account any relevant matter raised in the responses we receive. Our mind remains open at this stage: although we believe we have covered all the relevant issues and reached a reasonable conclusion, our ultimate decision could yet be affected by any information that is relevant to the issues we have to consider. However, unless we receive information that leads us to alter the conditions in the draft Consolidated Variation Notice, or to reject the Application altogether, we will issue the Consolidated Variation Notice in its current form.

In this document we frequently say "we have decided". That gives the impression that our mind is already made up; but as we have explained above, we have not yet done so. The language we use enables this document to become the final decision document in due course with no more re-drafting than is absolutely necessary.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future. A lot of technical terms

and acronyms are inevitable in a document of this nature: we provide a glossary of acronyms near the front of the document, for ease of reference.

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## Glossary of acronyms used in this document

BAT	Best Available Technique(s)
BAT-AEL	BAT Associated Emission Level
BATc	BAT conclusion
BAU	Business as Usual
BREF	Best available techniques reference document
CBA	Cost Benefit Analysis
DD	Decision document
Derogation	from BAT AELs stated in BAT Conclusions under specific circumstances as detailed under Article 15(4) of IED where an assessment shows that the achievement of emission levels associated with the best available techniques as described in BAT conclusions would lead to disproportionately higher costs
DNEL	Derived No-Effect Levels
EAL	Environmental Assessment Level
ELV	Emission Limit Value derived under BAT or an emission limit value set out in IED
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154)
EQS	Environmental Quality Standard
IED	Industrial Emissions Directive (2010/75/EU)
NMVOc	Non-methane VOC
NPV	Net Present Value
PC	Process Contribution
PEC	Predicted Environmental Concentration
VOC	Volatile Organic Compounds
VRU	Vapour Recovery Unit
WACC	Weighted Average Cost of Capital

# 1 Our proposed decision

We are minded to issue the Consolidated Variation Notice to the Operator. This will allow it to continue to operate the Installation, subject to the conditions in the draft Consolidated Variation Notice.

The scope of this variation application covers only a request for a derogation from the requirements of BAT Conclusion 52, as identified in the refining of mineral oil and gas BAT Conclusions document. As part of our decision we have decided to grant the derogation. The way we assessed the Operator's request for derogation and how we subsequently arrived at our conclusion is recorded in this document.

We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the varied permit will ensure that a high level of protection is provided for the environment and human health.

The draft Consolidated Variation Notice contains many conditions taken from our standard Environmental Permit template including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the Notice, we have considered the techniques identified by the operator for the operation of their installation, and have accepted that the details are sufficient and satisfactory to make those standard conditions appropriate.

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## 2 How we reached our draft decision

### 2.1 Receipt of Application

The Application was duly made on 29/03/2021. This means we considered it was in the correct form and contained sufficient information for us to begin our determination but not that it necessarily contained all the information we would need to complete that determination: see below.

### 2.2 Commercial confidentiality

The Applicant claimed that certain information was commercially confidential and should be withheld from the public register. We considered this request and determined that the information claimed as confidential was industrial information commercially sensitive in relation to the operator's commercial strategy and critical in their competitiveness.

We have determined that the following information included in the application and subsequent responses to information notices (Schedule 5 Notices), is confidential:

- Volumes of material imported/exported at the White Oil Docks;
- Cost impact of limiting imports/exports at the White Oil Docks; cost impact of recovered VOCs at the White Oil Docks. As a consequence, the associated cost-benefit analysis spreadsheets submitted with the application are considered commercially confidential and excluded from the public register;
- Details of the project being installed to comply with BAT (Mogas Export Project), when this information related to competitive tenders and contracts.

We decided that the confidentiality of the information in the scope of the applicant's claim is provided by law to protect a legitimate economic interest and, taking account all circumstances, the public interest in maintaining the confidentiality outweighs the public interest in including it in the public register, in accordance with the criteria in Regulation 51(c) (i), (ii) and (iii) of EPR.

The Applicant provided edited versions of the documents containing confidential information to ensure that information included in the Public Register allows public understanding of the scope of the application, adequate technical inputs and details, full understanding of environmental risk assessment, results and outcomes of cost benefit analyses. All the information related to emissions has been included in the Public Register and the information withheld has been kept to a minimum.

Apart from the issues and information just described, we have not received any information in relation to the Application that appears to be confidential in relation to any party.

### 2.3 Requests for Further Information

Although we were able to consider the Application duly made, we did in fact need more information in order to determine it, and issued information notices on 29/06/2021, 05/08/2021 and 24/09/2021. A copy of each information notice was placed on our public register, along with the additional documentation submitted by the Operator in

response to these notices, except in the cases when we determined that this information was commercially confidential (see above).

## 2.4 How we will consider the responses from public consultation

Having carefully considered the Application and all other relevant information, we are now putting our draft decision before the public and other interested parties in the form of a draft Consolidated Variation Notice, together with this explanatory document. As a result of this stage in the process, the public has been provided with all the information that is relevant to our determination and we have given the public the opportunity to make comments. Once again, we will consider all relevant representations we receive in response to this consultation and will amend this explanatory document as appropriate to explain how we have done this, when we publish our final decision.

## 3 The legal framework

The Consolidated Variation Notice will be issued, if appropriate, under Regulation 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* as described by the IED;
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that, if it is issued, the Consolidated Variation Notice will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

### Article 15(4)

The IED enables a competent authority to allow derogations from BAT AELs stated in BAT Conclusions under specific circumstances as detailed under Article 15(4):

By way of derogation from paragraph 3, and without prejudice to Article 18, the competent authority may, in specific cases, set less strict emission limit values. Such a derogation may apply only where an assessment shows that the achievement of emission levels associated with the best available techniques as described in BAT conclusions would lead to disproportionately higher costs compared to the environmental benefits due to:

*(a) the geographical location or the local environmental conditions of the installation concerned; or*

*(b) the technical characteristics of the installation concerned.*

## Cost Benefit Analysis

If a derogation is potentially applicable then Cost Benefit Analysis (CBA) is undertaken. The CBA allows calculation to indicate whether the costs of compliance are greater or less than the environmental benefits.

It essentially groups all the costs on one side, with all the benefits, as far as possible, on the other side. It then includes the effect of time on the value of those costs and benefits in order to produce a Net Present Value (NPV).

This gives an indication of whether those costs are disproportionate or not, but there are many sensitivities in the analysis and many aspects of the environment that cannot yet be monetised so the actual decision on disproportionality rests with the Regulator.

Where the NPV is positive, this indicates that the cost of compliance with the BAT AEL(s) does not outweigh the environmental benefits.

Where the NPV is negative, this indicates that the costs of compliance with the BAT AEL(s) outweigh the environmental benefits.

## **4 Overview of the site and installation**

Stanlow Manufacturing Complex is situated south of the Mersey Estuary near Ellesmere Port and is operated by Essar Oil (UK) Limited. The Manchester Ship Canal (MSC) is located to the north, with the villages of Ince and Elton to the north east and the village of Thornton-le-Moors to the south.

### Refinery activities (Primary activity)

The installation processes crude oil in a refinery which includes crude distillation units (CDU-3 and CDU-4), a fluid catalytic cracker, alkylation unit, platformer and hydrodesulphurisation plant.

In general terms, crude oil is imported by ship into tankage at the Tranmere Oil Terminal some 15 miles away on the Mersey. The Tranmere Oil Terminal is subject to a separate EPR Permit (EPR/YP3238FT). Crude oil is transferred by pipeline to tankage at Stanlow. This is the main feed-stock for crude distillation, which separates the crude oil into fuel gas, liquefied petroleum gases (LPGs), naphtha, kerosene, gas oil and a residue for further processing.

The naphtha (gasoline) fraction from distillation is the feed for the platformer which reforms it into high octane motor gasoline. The product from the Platformer is fed to the Aromatics plant, which produces aromatic hydrocarbons such as benzene, toluene and xylene. The kerosene and gas oil streams are treated to remove sulphur before sale.

The bottom product of the distillation, termed 'long residue' is the feed for the catalytic cracking unit and high viscosity index (HVI) lubeoil complexes. The fluidised catalytic cracker and its associated gas separation units produce fuel gas, LPG, high octane motor gasoline, gas oil, and fuel oil. LPG streams from the cracker and distillation provide the feed for the Alkylation plant, which converts them into motor gasoline.



Other cracker LPG streams are feedstock for chemicals production both on and off-site. The fuel gas from the cracker and benzene from the Aromatics plant are the feedstocks for the production of ethyl benzene, which is exported for conversion to styrene.

The oil movements include receipts and storage of oil (and chemical) feedstocks, for the collection, storage, blending and internal distribution of products and for those parts of ship and road loading of products and intermediates.

Finished products are exported by pipeline then transported either by road tanker from the loading terminal or by water via the Manchester Ship Canal.

The utilities plants supply cooling, fire and process water, steam, electricity, nitrogen and instrument air to most of the site. The utilities area also includes units for extracting hydrogen sulphide from refinery sour water and processing to produce elemental sulphur.

These activities fall under the following descriptions in Part 2 of Schedule 1 of the Environmental Permitting Regulations (EPR) 2016:

- Section 1.2 Part A(1)(d) – Refining mineral oil (cracking, secondary processes and distillation).
- Section 1.2 Part A(1)(e) - The loading, unloading or other handling of, the storage of, or the physical, chemical or thermal treatment of crude oil (oil movements).

Other regulated activities carried out at the installation include: chemical activities, incineration, combustion, recovery and/or disposal of waste.

## 5 Key Issues

The key issues arising during the determination of this variation application are the review and assessment of the derogation application from meeting BAT conclusion 52 of Best Available Techniques Conclusions Document for the Refining of Mineral Oil and Gas (2014/7/738/EU of 28/10/2014).

We therefore describe how we determined these issues in more detail in the following sections of this document.

### 5.1 Description of the derogation request

#### 5.1.1 BAT Conclusion 52

In order to prevent or reduce VOC emissions to air from loading and unloading operations of volatile liquid hydrocarbon compounds, BAT is to use one or a combination of the techniques given below to achieve a recovery rate of at least 95%.

Vapour recovery by:

- (i) Condensation

- (ii) Absorption
- (iii) Adsorption
- (iv) Membrane separation
- (v) Hybrid systems

### Applicability

Generally applicable to loading/unloading operations where annual throughput is > 5000 m<sup>3</sup>/yr. Not applicable to loading/unloading operations for sea-going vessels with an annual throughput < 1 million m<sup>3</sup>/yr.

A vapour destruction unit (e.g. by incineration) may be substituted for a vapour recovery unit, if vapour recovery is unsafe or technically impossible because of the volume of return vapour.

BAT-associated emission levels are (Table 16 of BAT Conclusion document):

**BAT-associated emission levels for non-methane VOC and benzene emissions to air from loading and unloading operations of volatile liquid hydrocarbon compounds**

Parameter	BAT-AEL (hourly average) <sup>(1)</sup>
NMVOC	0,15-10 g/Nm <sup>3</sup> <sup>(2)</sup> <sup>(3)</sup>
Benzene <sup>(3)</sup>	< 1 mg/Nm <sup>3</sup>

<sup>(1)</sup> Hourly values in continuous operation expressed and measured according to European Parliament and Council Directive 94/63/EC (OJ L 365, 31.12.1994, p. 24).

<sup>(2)</sup> Lower value achievable with two-stage hybrid systems. Upper value achievable with single-stage adsorption or membrane system.

<sup>(3)</sup> Benzene monitoring may not be necessary where emissions of NMVOC are at the lower end of the range.

BAT Conclusion 52 is not applicable to loading/unloading operations of sea-going vessels with an annual throughput < 1 million m<sup>3</sup>/yr.

The White Oil Docks (also called Stanlow Island Berths) are located on the north bank of the Manchester Ship Canal (on Shell Island) opposite the Layby berth. There are two berths; numbers 1 and 3, used for importing/exporting white oils and components including gas oil and fuel oil which are produced at the Stanlow Manufacturing Complex from the refining and conversion of crude oil imported via the Tranmere Oil Terminal.

The Operator has provided data for the ship loading/unloading rates of volatile liquid hydrocarbons at the White Oil Docks over the last 3 years (2018, 2019, 2020), showing that the operations exceed the 1 million m<sup>3</sup>/yr throughput set out in applicability of this BAT conclusion.

Since the ship loading/unloading operations at the White Oil Docks exceed this throughput, there are no valid applicability exclusions.

### 5.1.2 Background and Operator's proposal

The Operator was not able to meet the BAT AELs as defined in BAT Conclusion 52 and Table 16 of the BAT Conclusions by the BAT Conclusions implementation date of 28/10/2018. In 2018 we granted a time limited derogation to the Operator (variation No. EPR/FP3139FN/V009), valid until 31/12/2020, but the Operator failed to meet this deadline and have applied for a further derogation.

The Operator supplied the following explanation.

At the present, there is no vapour recovery at the White Oil Docks. Therefore, the emissions of volatile organic compounds arising from the loading operations of the sea-going vessels at the White Oil Docks are emitted unabated through a high level (approx. 60m) vent stack, which uses fans to disperse the vapour. The Operator has explained that there are no localised emissions of VOC from White Oil Docks venting stack from the ship unloading operation, since the unloaded products are directly pumped into floating roof tanks for storage at different locations. The constructive features of floating roof tanks minimise emissions of VOC vapours associated with outbreathing during the tank filling operation.

Since there is no abatement for loading operations in the current process configuration at the White Oil Docks venting stack and no monitoring is specified in the permit for this emission point, no monitoring data is available on the current emission performance. However, the emissions have been calculated by the operator according to an internationally accepted methodology.

This is a second derogation request as a similar time limited derogation had been granted to the operator on 26/09/2018 (variation No. EPR/FP3139FN/V009) expiring on 31/12/2020. The derogation granted in 2018 relied on the reduction of throughput at the White Oil Docks below the applicability threshold of 1 million m<sup>3</sup>/y by 31/12/2020. This assumed completion of the independent project to transfer most of the loading and unloading operations from White Oil Docks to the Tranmere Oil Terminal (referred in the following as the 'Mogas Export Project').

The Operator provided evidence of the limited progress they had made on the Mogas Export Project, including design and tendering documents and evidence of significant commitment of funds with the previous engineering contractor. The Operator has explained why the Mogas Export Project was not completed in 2020, due to two factors:

- Material effects of the COVID-19 pandemic on the availability of engineering personnel;
- Effects of the COVID-19 pandemic on the global market conditions for oil refining with a negative impact on the Operator's business.

The project was paused in March 2020 due to COVID-19 restrictions and then placed on hold due to the financial pressures facing the company. Following the restart of the project, the project scope has been critically reviewed. This critical review has identified elements within the scope which can be changed to reduce technical complexity and therefore reduce costs. The Operator provided information on the value engineering options being considered, that fall beyond the scope of BAT conclusion 52.

The proposed compliance date is based upon the re-phasing of capital expenditure to enable the execution of the Mogas Export Project and also considers the additional time needed for developing a new basis of design to incorporate value engineering options in the new design.

Although the strategy proposed by the operator to achieve compliance relies on the Mogas Export Project, this project should be considered independent from this derogation request because it is driven by commercial / business needs explained by the Operator as follows: it is the intention of the Operator to move the majority of gasoline exports from the White Oil Docks in the scope of this derogation to the Tranmere terminal. This will enable the cargo packet size for gasoline exports to be increased. This has a business benefit to the Operator as it enables sales of gasoline to a wider market and reduces shipping costs per parcel.

Based on the explanation provided by the Operator, we understand that Tranmere Oil Terminal project will be implemented regardless of the BAT requirements for the White Oil Docks operations set out in BAT conclusion 52.

What we have to consider in respect of the derogation request is whether for the time limited period applied for the costs of meeting BAT are disproportionately higher compared to the environmental benefits.

### **5.1.3 Emission Limit Values (ELVs)**

The Operator has proposed that no ELVs are applied to the emission point in the scope of the derogation application until 31/08/2024. After this date, the Operator has proposed that the loading/unloading throughput at the White Oil Docks is reduced to approximately 35% of the current rate by the effect of moving the majority of the loading/unloading operations to the Tranmere Oil Terminal where new infrastructure, including abatement of emissions, will be installed as part of a separate independent project and regulated under a separate environmental permit. As the reduced throughput at the White Oil Docks will correspond to less than 1 million m<sup>3</sup>/y after implementing the proposed changes, the requirement of BAT Conclusion 52 and the associated BAT-AELs won't apply any longer to this operation and emission point.

The current position, the BAT-AEL values and the Operator's proposed position is set out below.

Emission Limit Value (ELV) comparison table			
Averaging period	Current (mg/Nm <sup>3</sup> )	BAT AELs (mg/Nm <sup>3</sup> )	Operator Proposed (mg/Nm <sup>3</sup> )
Hourly average	No limit set	NM VOC: 0.15 -10 g/Nm <sup>3</sup> ; Benzene: 1 mg/Nm <sup>3</sup>	No limit proposed
Correction factors	Not applicable	dry gas, temperature of 273,15 K, pressure of 101,3 kPa	Not applicable

#### 5.1.4 Current ELVs / emission levels

The basis for not setting ELVs during the time-limited derogation period is that the emissions are unabated at the present, therefore there are no installed technological means that would allow limiting, reducing or controlling these emissions. As such, the emissions are solely dependent on the equilibrium distribution of volatile species among the liquid and gaseous phases at the given temperature and the loading rates of the operations.

#### 5.1.5 BAT AELs and proposed ELVs

The BAT AELs are set out in Table 16 of the BAT Conclusion, see above. Since there is no abatement of emissions, the Operator proposed that no ELVs are specified during the time-limited derogation period, based on the same rationale described above for the current ELVs and emission levels.

#### 5.1.6 Derogation criteria

The derogation request is based on geographical location and technical characteristics. Details of the Operator's proposal for the derogation criteria and our review are provided in the following table:

Derogation criteria assessment		
Criteria detail	Operator proposal – linked to DEFRA IED EPR guidance	Environment Agency view
<b>Geographic – Location of White Oil Docks</b>	The Operator has linked the proposed derogation criterion to the interpretation provided in the DEFRA guidance note 'Industrial emissions directive Guidance on Part A installations':  <i>'Geographical location: The geographical location of the installation may have a bearing on costs: for example, construction of energy supply costs may be higher than would normally be encountered if the installation is in a remote location.'</i>	The evidence provided by the Operator included the site layout drawings included in the application. We agree that the geographic location of the installation is likely to have an impact on the cost to install the equipment needed to achieve compliance with the techniques described by BAT Conclusion 52 and the associated emission levels (BAT-AELs).

	<p>The Operator claims the geographic location and configuration of the White Oil Docks on the Stanlow site would make it more technically difficult to install a VRU, which would significantly increase the cost of construction of a VRU.</p> <p>The White Oil Docks are located on Stanlow Island which is not connected by land to the rest of the Stanlow site. In order to install a Vapour Recovery Unit at this location, floating cranes would be required to transport the abatement equipment and all other materials for construction. This significantly increases the cost of the project compared with the proposed installation of a Vapour Recovery Unit at Tranmere as part of the project to move the majority of the loading/unloading operations from the White Oil Docks to the Tranmere Oil Terminal.</p>	
<p><b>Technical – Independent project at Tranmere (MOGAS Export Project)</b></p>	<p>The Operator has linked the proposed derogation grounds to the interpretation provided in the DEFRA guidance note 'Industrial emissions directive Guidance on Part A installations':</p> <p><i>'Technical characteristics:</i></p> <ul style="list-style-type: none"> <li>• <i>The general investment cycle for a particular type of installation</i></li> <li>• <i>The configuration of the plant on a given site, making it more difficult and costly to comply</i></li> <li>• <i>The intended remaining operational lifetime of the installation as a whole or of the part of it giving rise to the emission of the pollutant(s), where the operator is prepared to commit to a timetable for closure.'</i></li> </ul> <p>The Operator claims the intended remaining operational lifetime of equipment newly installed at the White Oil Docks to comply with the BAT Conclusion would be limited, as it is their intention as the result of an independent project aimed at reducing the shipping costs per parcel and therefore enhancing their profitability.</p>	<p>We consider that the technical configuration of the plant, as a result of its geographic location described above, is likely to make it more difficult and costly to comply with BAT Conclusion 52 and the associated emission levels (BAT-AELs). We note that the geographic and technical criteria partially overlap and we consider that the technical criterion is more appropriate to describe this element of the derogation request. We have therefore decided to take forward the technical criterion as the basis of this derogation request.</p> <p>Based on the information provided by the Operator, we also agree, as a second argument based on the technical characteristics of the installation, that the requirement for the new equipment to be installed at the White Oil Docks to comply with BAT Conclusion 52 and the BAT-AELs could be limited in time, given the intention declared by the Operator to move the majority of gasoline exports from the White Oil Docks to the Tranmere terminal, pending the completion of a profitability enhancing project which is independent from this derogation application. After the Mogas Export Project is implemented, the operation at the White Oil Docks will fall below the 1 million m<sup>3</sup>/y applicability threshold set out in BAT Conclusion 52, making a vapour recovery unit at the White Oil Docks not required to meet BAT.</p>

		<p>The evidence provided by the Operator included design and tendering documents showing the progress made on the Mogas Export Project, a statement of intent from the boards of directors of the company confirming the commitment to commit sufficient funds and resources to the project for installation of a Vapour Recovery Unit to ensure the requirements of BAT 52 are satisfied within the extended time frame of 31 August 2024 and a detailed timeline for proposed execution of the Mogas Export Project.</p> <p>Furthermore the Operator has provided evidence that they have already committed significant capital investment to the Mogas Export Project with the previous engineering contractor.</p> <p>The Environment Agency had previously accepted these two grounds for derogation based on the technical characteristics of the installation, as part of the derogation granted to the operator on 26/09/2018 (variation No. EPR/FP3139FN/V009). As this is a second request for a derogation based on the same grounds consideration has been given to how to ensure the Operator will this time meet the proposed end date for the derogation. This is explained further below.</p>
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### 5.1.7 Options review

The Operator has referred to the BAT Conclusions and addressed all reasonable techniques for achieving the BAT AEL or options to exclude their applicability to the loading/unloading operations at the White Oil Docks, in the amended application documentation received on 07/07/2021 in response to the requests for additional information in the Schedule 5 Notice served on 29/06/2021.

Where we have considered an option appropriate for cost benefit analysis (CBA), this has been identified as such and considered further.

The main options considered by the Operator are summarised below:

Review of all possible techniques to achieve BAT AEL (or compliance)				
Option / techniques considered	Technique / option description	Applicability	Timescale for completion	
0.	<b>Business as Usual (BAU)</b>	<p>No change to the current operation for unlimited time.</p> <p>Volatile organic compounds including benzene from the ship loading operations would continue to be emitted unabated for unlimited time through the existing high level (approx. 60m) vent stack, which uses fans to disperse the vapour.</p>	<p>This option would be subject to accepting unabated emissions and granting an unlimited time derogation from compliance with the BAT-AELs.</p> <p>We consider this option is not applicable because it would not deliver compliance with BAT Conclusion 52 and it would be contrary to the principle of non-backsliding on emissions, compared to the previous derogation granted to the installation on 26/09/2018 (variation No. EPR/FP3139FN/V009).</p> <p><b>No CBA provided for this option.</b></p>	Not applicable
1.	<b>Proposed derogation - Continue unabated operations at current throughput at White Oil Docks until operations are moved to Tranmere in 2024</b>	<p>No change to the current operation until the Tranmere project is completed.</p> <p>Volatile organic compounds including benzene from the loading/unloading operations at the White Oil Docks would continue to be emitted unabated through the existing high level (approx. 60m) vent stack, until project is installed to move operations to Tranmere.</p> <p>After then, the throughput of loading/unloading operations at the White Oil Docks would be reduced to approximately 35% of the current throughput, so that the operation would continue below the applicability threshold of 1 million m<sup>3</sup>/annum set out in BAT Conclusion 52.</p> <p>The Operator will install a Vapour Recovery Unit meeting BAT 52 at the Tranmere Oil Terminal. This will be dealt with as an independent project and covered by a separate variation application submitted under the Tranmere Oil Terminal permit (EPR/YP3238FT).</p>	<p>Applicable: this option would deliver compliance after moving part of the loading/unloading operations to Tranmere, since from that point the White Oil Docks will operate under the 1 million m<sup>3</sup>/annum applicability threshold set out by BAT Conclusion 52.</p> <p><b>This is the option proposed by the Operator. CBA provided.</b></p>	Compliance achieved on 01/09/2024 (proposed derogation date)



Review of all possible techniques to achieve BAT AEL (or compliance)			
Option / techniques considered	Technique / option description	Applicability	Timescale for completion
2. <b>BAT-AEL Limiting loading / unloading rates at White Oil Docks until VRU is installed at White Oil Docks in 2023</b>	Immediate compliance with BAT-52 by means of reducing throughput below 1 million m <sup>3</sup> /year and installation of a single-stage VRU with carbon adsorption to meet the requirements of BAT conclusion 52 and comply with the BAT-AELs at the White Oil Docks in the shortest possible time (i.e. by 31/12/2023)	Applicable: this option would deliver immediate compliance in that BAT Conclusion 52 does not apply to loading/unloading operations of sea-going vessels below 1 million m <sup>3</sup> /annum. After the installation of a VRU at White Oil Docks, compliance would be achieved by meeting the BAT-AELs. We consider this option would achieve compliance. <b>CBA provided.</b>	Immediate compliance – No derogation required.
3. <b>Continue unabated operations at current throughput at White Oil Docks until VRU is installed at White Oil Docks in 2023</b>	Installing equipment (single-staged carbon adsorption VRU) at White Oil Docks compliant with BAT-52 and capable of recovering volatile organic hydrocarbons and meeting the BAT-AELs for NMVOC and benzene, whilst maintaining the current loading/unloading throughput.	Applicable: this option would deliver full compliance with BAT Conclusion 52 from the moment the new Vapour Recovery Unit at the White Oil Docks becomes operational. <b>CBA provided.</b>	31/12/2023
4. <b>Limiting throughput at White Oil Docks until move of loading/ unloading operations to Tranmere in 2024</b>	Limiting loading / unloading rates at White Oil Docks to the maximum annual throughput of 1 million m <sup>3</sup> /annum. Emissions of NMVOC and benzene remain unabated but are reduced by effect of the throughput reduction. Since the emissions remain unabated, no emission limits for NMVOC and benzene apply to this option. From 01/09/2024, the throughput of loading/unloading operations at the White Oil Docks would be further reduced to approximately 35% of the current throughput, as most of the loading/unloading operations will be moved to the Tranmere Oil Terminal, as part of an independent project (MOGAS Export Project).	Applicable: this option would deliver compliance in that BAT Conclusion 52 does not apply to loading/unloading operations of sea-going vessels below 1 million m <sup>3</sup> /annum. We consider this option would achieve compliance. <b>CBA provided.</b>	Immediate compliance – No derogation required.

The options discarded without CBA included:

<b>Techniques not progressing to CBA</b>	
<b>Option / techniques</b>	<b>Reasoning / justification not progressed to CBA</b>
<b>BAU</b>	Option would not deliver compliance and would represent back-sliding from the current permitted operation.
<b>Interim road loading/unloading of products currently imported/exported at White Oil Docks until a project is completed to install a BAT-52 compliant VRU at White Oil Docks within the shortest possible time (i.e. 2023)</b>	The Operator provided the following justification that we consider satisfactory: All exports from the White Oil Docks are sent outside of the UK by ship. If the export material were to be transported from Stanlow by road car then it would be necessary to load these onto a ship at another port potentially resulting in a comparable volume of VOC emissions due to the loading. The Operator also explained that they are not aware of any port locations local to Stanlow which have the facility to transfer material from a road car to a ship.
<b>Offsetting the emissions of NMVOC from the interim unabated loading/unloading operations of the White Oil Docks by mean of proposing other cost-beneficial reduction of NMVOC emissions from any other emission sources within the regulated installation</b>	The Operator provided the following justification that we consider satisfactory: A plan for monitoring and reducing NMVOC emissions at Stanlow has been submitted to the Environment Agency as a methodology to close IC 39. This programme will reduce the volume of VOC emissions from Stanlow, which will offset some of the volume of NMVOC emissions from the interim unabated loading/unloading operations of the White Oil Docks. However, as these emissions are currently not monitored it is not possible to quantify the reduction in VOC emissions which will be attributable to the programme.

We consider that the Operator has assessed an adequate range of technically viable options to achieve compliance with BAT conclusion 52 and the associated BAT-AELs.

## 5.2 Demonstrating disproportionality of costs and benefits

We have audited the Cost Benefit Analysis (CBA) submitted by the Operator and we consider that the Operator has satisfactorily demonstrated that the stated derogation criterion would result in disproportionate costs for achieving the BAT AEL compared to the environmental benefits.

### 5.2.1 Cost Benefit Analysis (CBA)

The CBA has been reviewed and considered to support the derogation request. Key points from the CBA (CBA tool version 6.21) are summarised below.

#### Audit of CBA tool

We audited the CBA tool submitted by the Operator, including its inputs, assumptions, outcomes and their interpretation. The basis of some cost assumptions were challenged and considered reasonable.

We identified an input error in the CBA spreadsheet submitted by the Operator. Therefore, this was amended by our economist, based on the inputs provided by the Operator in response to the Schedule 5 Notice 1 served on 29/06/2021 and responded on 07/07/2021. This amended version of the CBA tool was taken as the basis for our decision. The error related to the 'Data Input – general tab' that was not fully completed. The exclusion of these values means that the CBA tool assumes that capital investment is zero, which was not the case.

We consider that the weighted average cost of capital (WACC) is consistent with what we would expect for the sector. The lifetime of the technology and the appraisal period are based on the standard lifetime of new or replaced equipment in this industrial sector, however, the Operator has provided a qualitative explanation that the options entailing the installation of a VRU at White Oil Docks (i.e. Option 2 – 'BAT-AEL' and Option 3 'Install VRU at White Oil Docks') will have a very limited lifetime as a VRU is planned to be installed at Tranmere in the near future that will make the VRU at White Oil Docks not required to meet BAT.

We are satisfied with the Operator's approach and justification for the data input for each of the options.

#### Results of CBA

The costs have been compared using the Environment Agency CBA tool V 6.21, which is based on HM Treasury's Green Book guidance. The results are summarised in terms of Net Present Value (NPV). The costs of meeting the

BAT AEL outweigh the monetised benefits in comparison to the proposed derogation (i.e. NPV < 0).

NPV comparison				
Option	1. Proposed derogation	2. BAT AEL	3. Continue unabated operations at current throughput at White Oil Docks until VRU is installed at White Oil Docks in 2023	4. Limiting throughput at White Oil Docks until move loading/unloading operations to Tranmere in 2024
Central (£millions)	0.00	-72.06	-5.13	-84.96

**BAT AEL option:** The CBA using central assumptions shows a negative NPV for the BAT AEL of £72 million and therefore the cost of compliance is disproportionate compared to the environmental benefit achieved.

**Option 3 - Continue unabated operations at current throughput at White Oil Docks until VRU is installed at White Oil Docks in 2023:** The costs of this option were disproportionate compared to the environmental benefit achieved, with a negative NPV £5 million using central case assumptions.

**Option 4 - Limiting throughput at White Oil Docks until move loading/unloading operations to Tranmere in 2024:** The costs of this option were disproportionate compared to the environmental benefit achieved, with a negative NPV £85 million using central case assumptions.

Comparison of proposed option against retrospective BAT-AEL compliance in 2018

The Operator provided a sensitivity analysis in response to our Schedule 5 Notice request to assess whether it would have been cost-beneficial installing a BAT52 compliant VRU at the White Oil Docks by the compliance date in October 2018, in comparison to the proposed option achieving compliance in September 2024. The aim of our request was to verify whether the costs of compliance are disproportionate when taking into account the cumulative derogation time, including the original period from October 2018, plus the proposed extension until August 2024.

As part of this sensitivity analysis, the Operator submitted a version of the CBA tool that, on review, we considered could not be used to draw conclusions on this assessment, for the following reasons:

- It included the same error described in 2.2: 'Data Input – general tab' that was not fully completed as there were no values for the BAT-AEL option (Q3.7 to 3.9);

- The Operator used a protected version of the CBA tool that was not suitable for retrospective (i.e. backdated) disproportion analysis due to background calculation setup that the Operator could not access or modify. We were not aware of this issue that only emerged when the CBA submitted by the operator was audited by the Environment Agency’s economist;
- We disagree with the timeline and some of the assumptions used in the retrospective BAT-AEL option for this sensitivity analysis in that:
  - o The Operator assumed the retrospective BAT-AEL option would have achieved compliance by mean of installing a new VRU at White Oil Docks in January 2020. This assumption factored in the time to implement a project to design and install such VRU after the compliance date in October 2018. We disagree with this timeline, as we consider this retrospective analysis should have considered achieving compliance at the actual compliance date set out in the BAT conclusions, as the result of a timely implemented project executed and completed prior to this deadline;
  - o The Operator included as costs the loss of profit associated with constrained operations at reduced throughput of the White Oil Docks between the BAT compliance date in October 2018 and the speculative project completion date in January 2020. We disagree with the inclusion of these costs as there would have not been a need for reducing throughput at the White Oil Docks if the Operator had implemented a timely project completed by the BAT compliance deadline.

We have therefore populated a version of the CBA tool, amended by our economist to make it suitable for retrospective analysis, to carry out this sensitivity assessment. We have used the input data provided by the Operator, but we have amended the assumptions we couldn’t agree with. Our analysis shows that costs of meeting the BAT-AEL in October 2018 compared to meeting it in 2024 would still have outweighed the monetised benefits in comparison to the currently proposed derogation (i.e. NPV < 0), see table below:

NPV comparison – Cumulative scenario		
Option	1. Proposed derogation	5. Retrospective - BAT AEL
Central (£millions)	0.00	-9.11

### Other sensitivity analysis and manual sensitivity checks

As part of our review, we carried out a number sensitivity checks around the data inputs, including testing the sensitivity of a closer gap between installation costs on mainland at Tranmere versus installation costs on Stanlow Island at White Oil Docks and testing the sensitivity of lower electric power consumption for the operation of the VRU. We are satisfied that the cost-benefit analysis is based on conservative assumptions and that the results of the sensitivity checks does not change the overall outcome of the assessments.

### Summary of the CBA

We consider that the Operator has provided a credible argument that the increased costs linked to the technical characteristics are disproportionate for achieving the BAT-AEL.

An appropriate range of options were reviewed and those identified as technically viable were considered further. Viable options were taken forward for Cost Benefit Analysis (CBA), were adequately described in the CBA and the cost of the BAT AEL option and other options was confirmed as disproportionate compared to the environmental benefits. The Cost Benefit Analysis using central assumptions shows negative NPVs for the BAT AEL of £72 million and for the other options of £5 million (option 3) and £85 million (option 4). These figure indicate that the cost of compliance is disproportionate compared to the environmental benefit achieved.

In making this conclusion, we have also taken into account the results of an additional retrospective cost-benefit analysis, taking into account the extended timeframe from the BAT conclusions compliance date (October 2018) to proposed compliance date in September 2024. The Cost Benefit Analysis for this retrospective BAT AEL sensitivity scenario shows, using central assumptions, a negative NPV of £9.11 million.

## **5.3 Environmental risk assessment**

We have reviewed the environmental risk assessment submitted by the Operator and we are satisfied that the allowing the proposed derogation will not cause any significant pollution or prevent a high level of protection of the environment as a whole to be achieved.

The risk criteria are defined in our web-guidance: [Air emissions risk assessment for your environmental permit - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit).

At screening stage (also known as H1 screening), which is based on dispersion factors, process contributions (PCs) are screened out as insignificant if:

- the long-term process contribution is less than 1% of the relevant EQS/EAL; and
- the short-term process contribution is less than 10% of the relevant EQS/EAL.

The long term 1% process contribution insignificance threshold is based on the judgements that:

- It is unlikely that an emission at this level will make a significant contribution to air quality;
- The threshold provides a substantial safety margin to protect health and the environment.

The short term 10% process contribution insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short term process contributions are transient and limited in comparison with long term process contributions;
- the threshold provides a substantial safety margin to protect health and the environment.

However, where an emission cannot be screened out as insignificant at first screening stage, it does not mean it will necessarily be significant.

The H1 methodology entails a second stage of screening, which also looks at the predicted environmental concentration (PEC). If both of the following requirements are met, no further assessment is needed:

- the short-term PC is less than 20% of the short-term EQS/EAL minus twice the long-term background concentration
- the long-term PEC is less than 70% of the long-term EQS/EAL

For those pollutants which do not screen out at the second stage with the H1 methodology, we determine whether exceedances of the relevant EQS/EAL are likely. This is done through detailed audit and review of the Operator's detailed air dispersion modelling.

The Operator submitted a detailed air dispersion modelling study assessing the impacts associated with the emissions of speciated non-methane VOCs, from the current non-abated operation of the White Oil Docks, which is proposed to be extended until August 2024.

The assessment considered the impact of emissions of VOCs from four different liquid petroleum products ship loading operations at the shipping berth

of the White Oil Docks: Alkylate, Light Cat Cracked Gasoline (LCCG), Naphtha and Motor Gasoline (Mogas).

Dispersion modelling scenarios were carried out for the four loaded substances, for comparison against long-term and short-term environmental standards, as follows:

- annual scenario (modelling emissions based on a long-term throughput);
- maximum scenario for loading of an individual product (short-term);
- maximum scenario for simultaneous loading of two products (short-term).

Emissions for the two maximum scenarios were based on the maximum pumping rate during exporting operations as a short-term throughput.

The Operator's assessment concluded that the predicted impact of derogating from the BAT AEL on any long term or short-term Environmental Quality Standards (EQS) / Environmental Assessment Levels (EAL) are insignificant at all the relevant discrete receptors for all the speciated VOC substances included in the assessment.

The predicted impact of derogating from the BAT AEL on any long or short term EQS / EAL (as applicable to the speciated chemicals) are summarised in table below:

<b>Summary of impacts predicted by the Operator by air dispersion modelling for the proposed derogation</b>	
<b>Parameter</b>	<b>Maximum process contributions (PC) as a % of the EQS/EAL [Notes 1, 2]</b>
<b>n-Butane</b>	PC is <0.1% of the long term EAL; 1.2% of short term EAL
<b>n-pentane</b>	PC is <0.1% of the proposed long term DNEL
<b>n-hexane</b>	PC is <0.1% of the long term EAL; 3% of short term EAL
<b>n-heptane</b>	PC is <0.1% of the proposed long term DNEL
<b>n-octane</b>	PC is <0.1% of the proposed long term DNEL
<b>n-nonane</b>	PC is <0.1% of the proposed long term DNEL
<b>Isopentane</b>	PC is <0.1% of the proposed long term DNEL
<b>1-butene</b>	PC is <0.1% of the proposed long term DNEL
<b>Cyclopentane</b>	PC is <0.1% of the proposed long term DNEL
<b>Cyclohexane</b>	PC is <0.1% of the proposed long term DNEL and <0.1% of the long term EAL for n-hexane; <0.1% of the proposed short term DNEL and 1% of the short term EAL for n-hexane.
<b>Benzene</b>	PC is 0.7% of the long term EQS; 1.7% of the short term EAL at the most affected sensitive receptor
<b>Toluene</b>	PC is <0.1% of the long term EAL; 1.3% of the short term EAL
<b>Ethylbenzene</b>	PC is <0.1% of the long term EAL; <0.1% of short term EAL
<b>Cumene</b>	PC is <0.1% of the proposed long term DNEL
<b>Naphthalene</b>	PC is 0.3% of short term EAL



<b>1-ethyl-naphthalene</b>	PC is <0.1% of the proposed long term DNEL
Notes:	
1. When no EAL/EQS is defined, the operator has proposed to use the general population derived no-effect levels (DNELs) from the Reach registration dossier reported by the European Chemical Agency.	
2. The risk assessment must be carried out at the location where receptor's exposure takes place (discrete receptors): these are the specific locations for relevant exposure. As a conservative approach, we have shown maximum PC over modelling domain, unless otherwise stated: when the maximum PC over the modelling domain are above the insignificance threshold, we have shown the PC at the discrete receptors where the highest modelling prediction occurs. This is in line with our guidance.	

We have audited the air dispersion model submitted by the Operator, including the emission calculations, selection of inputs, modelling assumptions, modelling setup, distribution of receptors and sensitivity analysis and we are satisfied that these are adequate and reasonably conservative. We have carried out check modelling using the AQMAU Screening Tool and obtained predictions that are comparable to those obtained by the Operator.

We have consulted and taken advice from the UK Health Security Agency (UKHSA) on the air emissions risk assessment submitted with the application. The UKHSA were not able to validate the proposed use of DNELs in absence of more detailed toxicological information but advised that the most practical approach for assessing the health risks of a complex mixture of hydrocarbon products could consider exposure to various petroleum hydrocarbon fractions and groups (i.e. aliphatic and aromatics), rather than assessing every individual chemical constituent of a petroleum product, according to the methodology set out by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG). Following this advice, in addition to the assessment for chemical species that have set EALs or EQS, we have compared the long-term PC for the total un-speciated annual emissions of VOCs (conservatively including butane as well) against the reference concentrations from TPHCWG advised by UKHSA and this PC ( $<10 \mu\text{g}/\text{m}^3$ ) is only a fraction of the total reference concentration for each class of petroleum products (Aliphatic C5-C8 –  $18 \text{ mg}/\text{m}^3$ ; Aliphatic C9-C16 –  $1.0 \text{ mg}/\text{m}^3$ ; Aromatics C5-C8 -  $0.4 \text{ mg}/\text{m}^3$ ; Aromatics C9-C16 –  $0.2 \text{ mg}/\text{m}^3$ ). Based on this assessment the UKHSA advised that they did not have any concerns regarding the risk to the health of the local population from the VOC emissions from this activity at the installation.

In conclusion, based on the outcomes of our audit and the advice from UKHSA, we agree with the conclusions of the impact assessment submitted by the

operator in that the environmental impacts of the aerial emissions are not significant.

We consider that no source/pathway/receptor mechanisms, other than those relevant to the air emissions risk assessment described above, are relevant for the operations proposed to be derogated.

We are satisfied that the Operator has demonstrated that the proposed derogation is not likely to cause significant pollution of the environment or harm to human health.

Allowing the derogation will not increase the emissions from loading / unloading at the site and therefore presents no additional risk compared to the current operations.

## **5.4 Permit Conditions**

Given that this is a second derogation we have imposed additional conditions to restrict the operations of the White Oil Docks in the case that the Operator fails to provide evidence of sufficient progress towards meeting the August 2024 date for reducing throughput at White Oil Docks on which their application is predicated. The Operator will need to report progress 6-monthly of the Mogas Export Project, which is relied upon to achieve compliance with BAT-52, in response to improvement conditions (IC54, IC55, IC56, IC57 and IC58) set out by this permit variation and seek approval from the Environment Agency to operate above the throughput applicability threshold of BAT-52 (pro-rated as 500,000 m<sup>3</sup> for 6 months operations) in the following 6 months.

Should the Environment Agency not be satisfied with the progress reported by the operator, the limits of the activity specified in the permit will restrict operations to a loading/unloading throughput of 500,000 m<sup>3</sup> per 6 months, starting from the 6 months after the reporting period when insufficient progress has been reported.

## **6 Decision considerations**

### **6.1 Confidential information**

A claim for commercial or industrial confidentiality has been made. We have accepted the claim for confidentiality. Refer to section 2.2. The decision was taken in accordance with our guidance on confidentiality.

### **6.2 Identifying confidential information**

We have not identified information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on confidentiality.

### **6.3 Consultation**

The consultation requirements were identified in accordance with the Environmental Permitting (England and Wales) Regulations (2016) and our public participation statement.

We consulted the UK Health Security Agency on the air emissions risk assessment methodology proposed by the Operator. The comments and our responses are summarised in the consultation responses section. Also, refer to section 5.3 for further details.

Consultation is relevant for derogations and we have consulted on our 'minded to' (draft) decision. The application was publicised on the GOV.UK website. The comments and our responses to the 'minded to' (draft) decision will be summarised in the consultation responses section.

### **6.4 Nature conservation, landscape, heritage and protected species and habitat designations**

We have checked the location of the application to assess if it is within the screening distances we consider relevant for impacts on nature conservation, landscape, heritage and protected species and habitat designations. The application is within our screening distances for these designations.

We have assessed the application and its potential to affect sites of nature conservation, landscape, heritage and protected species and habitat designations identified in the nature conservation screening report as part of the permitting process. Based on the source/pathway/receptor mechanisms entailed by the derogated operations and the pollutants emitted, we consider that the application will not affect any site of nature conservation, landscape and heritage, and/or protected species or habitats identified.

We have not consulted Natural England. The decision was taken in accordance with our guidance.

## **6.5 Environmental risk**

We have reviewed the operator's assessment of the environmental risk from the operations in the scope of this variation application. The operator's risk assessment is satisfactory.

The assessment shows that, applying the conservative criteria in our guidance on environmental risk assessment or similar methodology supplied by the operator, or advised by a statutory consultee, and reviewed by ourselves, the emissions associated with the proposed derogation will not cause any significant pollution or prevent a high level of protection of the environment as a whole to be achieved. Refer to section 5.3 for further details.

## **6.6 Operating techniques**

We have reviewed the techniques used by the operator, as relevant to the scope of this variation application, and compared these with the refining of mineral oil and gas BAT Conclusions document. This variation permits a derogation from BAT conclusion 52 and the associated BAT-AELs for emissions of NMVOC and benzene, granted in accordance with Article 15(4) of IED and our guidance.

## **6.7 National Air Pollution Control Programme**

We have considered the National Air Pollution Control Programme as required by the National Emissions Ceilings Regulations 2018. The derogation option proposed by the Operator and accepted by us will result in reduced emissions of NMVOC from September 2024. We do not consider that we need to include any additional conditions in this permit.

## **6.8 Updating permit conditions during consolidation**

We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit.

## **6.9 Use of conditions other than those from the template**

Based on the information in the application, we consider that we need to include conditions other than those in our permit template:

- Condition 4.2.10.

This condition has been added as a result of a variation initiated by the Environment Agency. This condition requires the operator to periodically report to the Environment Agency on the potential risks of exceedances of the short-term 15 minute UK air quality objective for sulphur dioxide. The rationale for this is that, since the improvement condition 52 was specified, there has been an increased understanding of the factors contributing to the local Air Quality Management Area (AQMA) for sulphur dioxide. The Operator have produced a

report in response to improvement condition 52 and process improvements are continuing.

The success of these complex improvements in reducing the number of exceedances of the relevant air quality objective will require evidence from a number of years of operation with their variations in meteorological conditions. Therefore, improvement condition 52 is now replaced with an additional reporting condition that provides a formal framework for the work to be tracked until such time as the AQMA for sulphur dioxide is revoked.

## **6.10 Improvement programme**

Based on the information on the application, we consider that we need to include an improvement programme.

We have included an improvement programme to ensure that the Operator complies with the proposed derogation option. Refer to section 5.4 for further details on the reasons as to why we consider we have to impose improvement conditions. Refer to Annex 2 for the wording of the improvement conditions.

We have also updated the status of previous improvement conditions according to their progress.

## **6.11 Emission limits**

No emission limits have been added, amended or deleted as a result of this variation. Refer to the key issues section for details on the derogation from the BAT-AELs for NMVOC and benzene granted by this variation.

## **6.12 Previous performance**

The Operator failed to comply with the timetable proposed by them in 2018 to achieve compliance with BAT conclusion 52. However, we have taken into account the justification provided by the Operator, which is explained in section 5.1.2, and, on balance, we have decided to grant the variation to the permit. We take compliance with our permits very seriously. We will be monitoring the site. We have worded the limits of the activity being derogated in a way that will enable us to restrict the loading and unloading operations at the White Oil Docks to the applicability threshold set out in BAT conclusion 52, should we not be satisfied with the progress reported by the Operator in response to a number of improvement conditions specified in the Consolidated Variation Notice. Refer to section 5.4 for further details.

## **6.13 Growth duty**

We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit variation.

Paragraph 1.3 of the guidance says:

“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or

growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”

We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.

We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.

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## 7 Consultation Responses

The following summarises the responses to consultation with other organisations, our notice on GOV.UK for the public, and the way in which we have considered these in the determination process.

### Responses from organisations listed in the consultation section

Response received from UK Health Security Agency (UKHSA)

Brief summary of issues raised: The UKHSA advised they were not able to validate the proposed use of DNELs in absence of more detailed toxicological information but advised that most practical approach for assessing the health risks of a complex mixture of hydrocarbon products could consider exposure to various petroleum hydrocarbon fractions and groups (i.e. aliphatic and aromatics), rather than assessing every individual chemical constituent of a petroleum product, according to the methodology set out by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG).

Summary of actions taken: Following this advice, in addition to the assessment for chemical species that have set EALs or EQS published in our guidance, we compared the PC for the total un-specified annual emissions of VOCs (conservatively including butane as well) against the reference concentrations from TPHCWG. Refer to section 5.3 for further details and the conclusions of our assessment.

## 8 Annex 1: BAT conclusions for the Refining of Mineral Oil and Gas

BAT conclusions for the Refining of Mineral Oil and Gas – Glossary (as relevant to the scope of this variation application)

### 1.20.6. Volatile organic compounds (VOC)

Technique	Description
Vapour recovery	<p>Volatile organic compounds emissions from loading and unloading operations of most volatile products, especially crude oil and lighter products, can be abated by various techniques e.g.:</p> <ul style="list-style-type: none"><li>- Absorption: the vapour molecules dissolve in a suitable absorption liquid (e.g. glycols or mineral oil fractions such as kerosene or reformat). The loaded scrubbing solution is desorbed by reheating in a further step. The desorbed gases must either be condensed, further processed, and incinerated or re-absorbed in an appropriate stream (e.g. of the product being recovered)</li><li>- Adsorption: the vapour molecules are retained by activate sites on the surface of adsorbent solid materials, e.g. activated carbon (AC) or zeolite. The adsorbent is periodically regenerated. The resulting desorbate is then absorbed in a circulating stream of the product being recovered in a downstream wash column. Residual gas from wash column is sent to further treatment</li><li>- Membrane <b>gas separation</b>: the vapour molecules are processed through selective membranes to separate the vapour/air mixture into a</li></ul>

	<p>hydrocarbon- enriched phase (permeate), which is subsequently condensed or absorbed, and a hydrocarbon-depleted phase (retentate).</p> <ul style="list-style-type: none"> <li>- <b>Two-stage refrigeration/condensation:</b> by cooling of the vapour/gas mixture the vapour molecules condense and are separated as a liquid. As the humidity leads to the icing-up of the heat exchanger, a two-stage condensation process providing for alternate operation is required.</li> <li>- <b>Hybrid systems:</b> combinations of available techniques</li> </ul> <p><i>NB</i> Absorption and adsorption processes cannot notably reduce methane emissions</p>
Vapour destruction	<p>Destruction of VOCs can be achieved through e.g. <b>thermal oxidation</b> (incineration) or <b>catalytic oxidation</b> when recovery is not easily feasible. Safety requirements (e.g. flame arrestors) are needed to prevent explosion.</p> <p><b>Thermal oxidation</b> occurs typically in single chamber, refractory-lined oxidisers equipped with gas burner and a stack. If gasoline is present, heat exchanger efficiency is limited and preheat temperatures are maintained below 180 °C to reduce ignition risk. Operating temperatures range from 760 °C to 870 °C and residence times are typically 1 second. When a specific incinerator is not available for this purpose, an existing furnace may be used to provide the required temperature and residence times.</p> <p><b>Catalytic oxidation</b> requires a catalyst to accelerate the rate of oxidation by adsorbing the oxygen and the VOCs on its surface. The catalyst enables the oxidation reaction to occur at lower temperature than required by thermal oxidation: typically ranging from 320 °C to 540 °C. A first preheating step (electrically or with gas) takes place to reach a temperature necessary to initiate the VOCs catalytic oxidation. An oxidation step occurs when the air is passed through a bed of solid catalysts</p>

## 9 Annex 2: Improvement Conditions

Based in the information in the application and our own records of the capability and performance of the installation at this site, we consider that we need to set improvement conditions so that we can monitor the progress of the project proposed by the Operator to achieve compliance with BAT conclusion 52 and we can restrict the loading and unloading operations at the White Oil Docks to the applicability threshold set out in BAT conclusion 52, if we are not satisfied with the reported progress. These additional improvement conditions are set out below - justifications for them are provided at the relevant section of the decision document.

Reference	Requirement	Date
IC54	<u>BAT Conclusion 52</u> The Operator shall submit a report setting out the progress made in delivering the Mogas export project relied upon to achieve compliance with BAT 52, for approval by the Environment Agency.	31/05/22
IC55	<u>BAT Conclusion 52</u> The Operator shall submit a report setting out the progress made in delivering the Mogas export project relied upon to achieve compliance with BAT 52, for approval by the Environment Agency.	30/11/22
IC56	<u>BAT Conclusion 52</u> The Operator shall submit a report setting out the progress made in delivering the Mogas export project relied upon to achieve compliance with BAT 52, for approval by the Environment Agency.	31/05/23



<b>Table S1.3 Improvement programme requirements</b>		
<b>Reference</b>	<b>Requirement</b>	<b>Date</b>
IC57	<u>BAT Conclusion 52</u> The Operator shall submit a report setting out the progress made in delivering the Mogas export project relied upon to achieve compliance with BAT 52, for approval by the Environment Agency.	30/11/23
IC58	<u>BAT Conclusion 52</u> The Operator shall submit a report setting out the progress made in delivering the Mogas export project relied upon to achieve compliance with BAT 52, for approval by the Environment Agency	31/05/24

These improvement conditions then tie in with the limitations imposed on the loading or unloading of volatile liquid hydrocarbons in table S1.1 of the permit. So for example, if the report to be submitted by 31/05/2022 is not approved by the Environment Agency, the throughput from 1/07/2022 and for the following 6 months will be limited to below the BAT conclusion applicability criteria.

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