Cyfoeth Naturiol Cymru
Natural Resources Wales

Natural Resources Wales Permitting Decisions

Valero Energy Limited (Pembroke Refinery) Permit variation PAN-026658

Decision Document

Application for a Normal Variation

The application number is: PAN-026658

The permit variation number is: EPR/YP3930EX/V009

The operator is: Valero Energy Limited

The Installation is located at: Pembroke Refinery, Pembroke, Pembrokeshire, SA71 5SJ

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise, we have accepted the applicant's proposals.

Contents

Glossary of acronyms and definitions used in this document

BAT- Best Available Techniques

BRef- BAT Reference Document

ELV-Emission Limit Value

EMS-Environmental Management System

EPR-Environmental Permitting Regulations (England and Wales) 2016

EWC-European Waste Code

IED-Industrial Emissions Directive (2010)

NRW-Natural Resources Wales

VPOT-Valero Pembroke Oil Terminal (permit number EPR/BK1341IN)

1. Executive summary

1.1. Application summary

Valero Energy limited have applied to vary their permit for Pembroke Refinery to allow the acceptance of crude oil from Valero Pembroke oil Terminal (VPOT) (permit number EPR/BK1341IN) via Cross-Haven pipe line; an existing pipe line under the Milford Haven that links Pembroke Refinery to VPOT. The proposal also includes the receipt and treatment of waste dewater effluent and slop oil from VPOT under two European waste Codes. These waste are to be treated at the existing effluent treatment facility via either the pipeline or road tanker.

The variation will not result in any change to site's production volume or storage of crude. The waste dewatering effluent and slop oil received from VPOT is the same as what is currently generated on site and the existing effluent treatment plant has the ability to treat these wastes without any modifications.

1.2. Our decision

We have decided to issue the variation for Pembroke Refinery operated by Valero Energy Limited

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure the appropriate level of environmental protection is provided.

2. Receipt of the application

The application was received on 14/08/2025**.** In order for us to be able to consider the application duly made, we needed more information. We requested the following:

- List of changes to the accident management plan
- List of changes to the environment management system
- Waste acceptance procedures for the dewatering effluent and slop oil from VPOT

- Compliance with the relevant BAT conclusions from the waste treatment BRef
- Specification of the additional pipework

A letter requesting this information was sent to the applicant on 10/03/2025. Upon receipt of this information, on 28/03/2025, we were able to consider the application duly made. 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.

3. Confidential information

The applicant made no claim for commercial confidentiality, and we have not received information in relation to the application that appears to be confidential in relation to any party.

4. Legislation

The variation will be issued, 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 the Well-Being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016 which also have to be addressed.

We address the legal requirements directly where relevant in the body of this document. NRW is satisfied that the decision on this application is consistent with its general purpose of pursuing the sustainable management of natural resources (SMNR) in relation to Wales and applying the principles of SMNR. In particular, NRW acknowledges that it is a principle of sustainable management to take action to prevent significant damage to ecosystems. We consider that, in issuing the variation a high level of protection will be delivered for the environment and human health through the operation of the Installation in accordance with the permit conditions. NRW is satisfied that this decision is compatible with its general purpose of pursuing the sustainable management of natural resources in relation to Wales and applying the principles of sustainable management of natural resources

As the EPR regulator for Part A1 installations in Wales, NRW are required to determine any duly made Part A1 permit applications. This means that we must decide either to grant, or to refuse the variation based upon an objective assessment of the proposals against the detailed legal requirements of EPR. Our public participation statement[1] gives more information on what can, and cannot, be taken into account when making our permitting decision.

The application, and this decision document, only considers the permitting of the facility under EPR as described throughout the document. We only assess the installation and its impacts and cannot take into consideration indirect impacts which are not as a direct result of activity within the installation boundary.

Any proposed development and wider associated activities will be required to be compliant with all relevant and applicable law, for example, environmental law, health and safety law, planning law. This other legislation acts largely independently of EPR (although they may be inter-related). Such other matters are beyond both the scope of this document, and of our regulatory remit and expertise and are not relevant to our EPR permitting decision. Ensuring compliance with all other regulation and obtaining any required consents (such as planning permission) is the responsibility of those undertaking the development and is regulated by the relevant appropriate authority for each.

5. Consultation

No consultation has been carried out on this application because it is not a substantial variation. This decision was made in accordance with the Environment Permitting Regulations (EPR), our statutory Public Participation Statement[2] and our Regulatory Guidance.

[1] Natural Resources Wales / Public participation: how you can take part in our permit and licence consultations
[2] Natural Resources Wales / Public participation: how you can take part in our permit and licence consultations

6. Requests for information

Further information requested during determination, was made via email and related to:

- Additional information of compliance with the Waste treatment BAT conclusions; BAT 3 waste gas/waste water inventory and BAT 9: Monitoring

A copy of the e-mails requesting further information were placed on our public register as were the e-mails and letters of response received.

7. The Installation

7.1. The permitted activities

The regulated facility is currently an installation which comprises of the following activities listed in Part 2 of Schedule 1 to the Environmental Permitting Regulations:

Reference	Activity listed in Schedule 1 of the EPR (2016) and Description
A1	S1.1 A(1)(a) –Burning any fuel in an appliance with a thermal input of 50 megawatts *Boiler Plant-(Refinery fuel oil storage and supply, boilers and abatement plant including: (i) 1 x 63.9 MW(th) boiler [designated B1] (ii) 2 x 63.8 MW(th) boilers [B2, B3] (iii) 1 x 78.9 MW(th) boiler [B4] (iv) 3 x 62.7 MW) th) boiler [B5, B6, B7] (v) 1 x 24.9 MW(th) boiler [B8] (vi) 1 x 74 MW MW(th) boiler [B9] (vii) 1 x 137 MW(th) natural gas fired cogeneration plant. From receipt of fuel to emissions of combustion products.*
A2	S1.2 A(1)(d) – Refining mineral oils *Refining mineral oil – primary operations*
A3	S1.2 A(1)(d) – Refining mineral oils *Refining mineral oil – secondary operations – oil movements and blending*

A4	S1.2 A(1)(e) – The loading, unloading, handling or storage of, or the physical, chemical or thermal treatment of – (i) Crude oil (ii) Stabilised crude petroleum *Handling and processing crude oil (From receipt of crude to operation of crude distillation unit including: (i) jetty operations (ii) Crude distillation unit (typical throughput capacity 13,360,300 m^3/year) and 3 crude heaters (48.6MW(th) [H21], 52.7MW(th) [H22] and 58.5MW(th) [H23]) Crude storage (storage capacity – 538,625 m^3))*
A5	S4.2 A(1)(a)(v) – Producing inorganic chemicals such as – non-metals, metal oxides, metal carbonyls, or other inorganic compounds *(Sulphur recovery and production- Removal of sulphur from aqueous waste stream by use of: (i) amine recovery unit (nominal throughput capacity – 185 m^3/hr/train; 2 trains) (ii) FCCU sour water stripper (nominal throughput capacity – 32 m^3/hr) (iii) CDU waste water stripper (nominal throughput capacity – 30 m^3/hr (iv) VDU waste water stripper (nominal throughput capacity – 55 m^3/hr) (v) SRU 1 (nominal throughput capacity - 80 tonnes of sulphur/day). (vi) SRU 2 (nominal throughput capacity - 80 tonnes of sulphur/day). (vii) tail-gas incinerator (viii)Sulphur storage prior to export*
A6	S5.3 A1 (a) Disposal of hazardous waste (other than by incineration or landfill) in a facility with a capacity of more than 10 tonnes per day *From receipt of ballast water, through treatment (oil recovery operations) to disposal of treated water and solid waste.*
A7	S5.4A(1)(a)(i) Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day by biological treatment *Removal of oil and other chemicals from process water by action of aerobic/anaerobic bacteria within bio-cell.*

A8	S5.4 A(1)(ii) Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day by physico - chemical treatment *From formation of waste water stream, discharge into site drainage systems to discharge of effluents to Milford Haven waterway including interceptors, DAF units and clarifiers*.
A9	S1.2 Part B (a) – Blending odorant for use with natural gas or liquefied petroleum gas Odorising LPG (or natural gas) *From feed to unit to discharge for storage or export*
A10	S1.2 Part B (b) – The storage of petroleum in stationary storage tanks at a terminal, or the loading or unloading at a terminal of petrol or from road tankers, rail tankers or inland waterway vessels *Loading petrol into road tankers*

Directly associated activities

- A11 Flaring of gases
- A12 Cooling water systems
- A13 Lagoons
- A14 Oxygen or nitrogen generation
- A15 Surface water drainage
- A16 Water treatment
- A17 Storage of Hazardous Waste *(R13 Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)*
- A18 Demineralisation Plant

Together, these listed and directly associated activities comprise the Installation.

7.2. Changes to the installation

The variation is to make the following changes to the site:

- Acceptance of crude from VPOT – The variation is to allow Pembroke refinery to accept crude from VPOT. This would result in the amendment of activity A4 (The loading, unloading, handling or storage of, or the physical, chemical or thermal treatment of – (i) Crude oil (ii) Stabilised crude petroleum) to include acceptance of crude oil from the pipe connected to VPOT.

- Acceptance of waste slop oil and dewatering effluent from VPOT - Slop oil and dewatering effluent is also proposed to be sent via the pipe or road tanker from VPOT to Pembroke Refinery where it is stored on site and treated at the effluent treatment plant. The slop oil and dewatering effluent are accepted under European Waste Codes 13 07 03* and 16 10 01* respectfully. This will fall under the existing activity A6.

- Addition of pipe work within the refinery between the outlet of the Cross-Haven pipeline from VPOT and storage tanks.

Receipt of crude and waste via the pipe will not result in an increase in production capacity or storage volume on site.

The Cross-Haven pipeline is a sub-tidal pipeline that is regulated by The Pipe Line Safety Regulations 1996 and as such is considered out of scope of the EPR Permit and this variation. However the proposed 1555 meter pipe within the installation that links the end of the Cross-Haven pipe line to the to the crude blend pumps and/or storage tanks are in scope of EPR and were assessed as part of the variation.

8. Operation of the installation

8.1. Operator competence

The applicant is the sole operator of the Installation. We are satisfied that the operator is the person who will have control over the operation of the Installation after the variation is issued; and that they will be able to operate the Installation so as to comply with the conditions included in the permit, if issued. The decision was taken in accordance with EPR RGN 1 Understanding the meaning of operator[3].

[3] RGN 1 Understanding the meaning of 'operator' (naturalresources.wales)

8.2. Environmental Management System

The applicant has stated in the application that they will implement an Environmental Management System (EMS) that will meet the requirements for an EMS in our "How to comply with your environmental permit" guidance[4].
The applicant has submitted a summary of the of the additions to their EMS as a result of the new proposal.

We have reviewed the application and are satisfied that appropriate management systems and management structures will be in place for this Installation, and that sufficient resources are available to the Operator to ensure compliance with all the Permit conditions.

Accident management

The EMS includes an Accident Management Plan. The site currently has an accident management plan in place. The operator has outlined what aspects of the accident management plan will be amended as a result of the addition of the connection to the Cross-Haven pipeline. As there are details that are to be finalised we have added to pre-operational condition (for future expansion) for the operator to submit the finalised updates to their accident management plan prior to using the pipeline.

In order to ensure that the management system proposed by the applicant sufficiently manages the residual risk of accidents, permit condition 1.1.1a requires the implementation of a written management system which addresses the pollution risks associated with, amongst other things, accidents.

8.3. Operating techniques

Installation activities and assessment of Best Available Techniques

The applicant has described the proposed equipment and operating techniques and compared these against the relevant Best Available Techniques conclusions (BATc) for the part of the installation that relates to this permit variation;

[4] Natural Resources Wales / Guidance to help you comply with your environmental permit

1) Receive crude oil via the Cross-Haven pipeline - Best Available Techniques for Refining of Mineral Oils and Gas
2) Addition to receive slop oil and dewatering effluent from VPOT - Best Available Techniques for Waste treatment.

We have reviewed the techniques proposed and consider them in line with BATc for the installation. The operator must operate the permit in accordance with descriptions in the application. The operating techniques are integrated into the permit through these techniques in table S1.2 of the permit.

There were a few aspects of the accident management plan and waste acceptance criteria that were not yet finalised. We have put in pre-operational conditions for the operator to submit the finalised version of these documents prior to receiving crude and/or waste via the Cross-Haven Pipeline.

For details on waste acceptance procedure see Section 12.6

9. The site

9.1. Site protection: potentially polluting substances and prevention measures

The operator has a duty to ensure that soil and groundwater are protected in order to meet the requirements of Articles 14 (1)(b), 14(1)(e) and 16(2) of the IED.

The variation proposal includes the receipt and storage of potentially polluting substances including the crude oil and the hazardous wastes (slop oil and dewatering effluent). The main impact pathways through the variation is as follows:

1) Leakage from the pipework
2) Emissions from failure of primary containment used to store the crude oil and the hazards wastes received.

The new pipework will be located within the existing pipe track, built to the specification outlined in line with American Society of Mechanical Engineers B31.3 – Process Piping (ASME B31.3). This standard is recognised by the Health and Safety Executive (HSE)

guidance on the storage of flammable liquids[5] and the pipe work will be subject to regular inspection and leak detections to meet the requirements of BAT 51 (i) of the Refinery of Mineral Oil and Gas BRef.

We are satisfied that the measure and standard represent best practice and will minimise the likelihood of leakage from the new pipeline. The site has an existing management plan, and given that the new pipe will be located alongside the existing pipe track the existing plan should be sufficient however we have put in a pre-operational condition to send in any revisions for approval to NRW prior to the commissioning of the new pipe.

The crude oil received from VPOT via the Cross-Haven pipeline is to be primarily sent to the existing crude blend pump (and blended with crude from on site storage) at the start of the refining process. However the crude and wet crude received from VPOT may also be stored in existing storage tanks. These tanks are currently being used for the storage of crude that is received by ship or lorry. The variation will not change the contents in the existing tanks and will not increase the storage volume.

We are satisfied that variation will not introduce any new or increase risk of impact to land from the storage tank.

The BRef Review undertaken in 2018 (variation V006) had assessed the operator's compliance with BAT conclusion 51 for containment measures.
The waste slop oil and dewatering effluent that is received on site from VPOT, will be stored on site within existing tanks. As these tanks are already used to store these wastes, the risk of impact to land would not increase as a result of the variation.
Based upon the information in the application we are satisfied appropriate measures will be in place to protect the site and its surroundings from polluting substances.

[5] Storage of flammable liquids in tanks, Health and Safety Executive

10. Environmental Risk Assessment

Regulated activities can present different types of risk to the environment, these include odour, noise and vibration; accidents, fugitive emissions to air and water; as well as point source releases to air, water, sewer and discharges to ground or groundwater, global warming potential and generation of waste. All these factors have been considered during are determination and the relevant risks from this proposal are discussed in this and other sections of this document.

The next sections of this document explain how we have approached the critical issue of assessing the likely impact of emissions from the Installation on human health and the environment and what measures we are requiring ensuring a high level of protection.

In line with our guidance, the applicant has provided an environmental risk assessment with the application which identifies and the sources of key risks from the variation, possible pathways and receptors. This risk assessment and further assessments provided by the applicant and/or completed by NRW will be discussed in further detail below.

The Cross-Haven pipeline is regulated by The Pipe Line Safety Regulations 1996 [6] and as such is considered out of scope of the EPR Permit and this variation.
The risks assessed during the permit determination are those of the activities associated that will occur on the site. This includes;

- The 1555 meter pipe within the installation that links the end of the Cross-Haven pipe line to the storage tanks.
- The risk of accepting, storing and treating waste dewatering effluent and slop oil.

10.1. Assessment of impact on air quality

There are no new emission point or changes to any existing emissions from the site as a result of the variation. Any fugitive emissions to air are discussed in section 10.3

[6] The Pipelines Safety Regulations 1996

10.2. Assessment of impact to surface, ground water and Sewer

There are no changes to direct discharge to surface water. The slop oil and dewatering effluent from VPOT will be treated at the existing effluent treatment plant which already treats these wastes generated on-site and will not require any modification or changes as a result of the variation.

The volume and composition of effluent discharge are not going to increase as a result of the variation. As such there is no change to the impact to surface water discharge as a result of the variation.

10.3. Fugitive emissions

The applicant has identified the following potential fugitive emissions in their environmental risk assessment:

- Leaks from pipe work and/or storage tanks
- Fugitive emissions from storage tanks to land
- Fugitive emissions to air of VOCs

The risk for these fugitive emission to land have been discussed in section 9.1.

The application details measures which will be in place for preventing and minimising fugitive emissions. The crude oil will be place in the existing crude tanks that are equipped with floating roof to minimise emissions of VOCs. Given that these tanks are already used to store crude, slop oil and dewatering effluent and there are existing procedures in place that had been assessed as part of the BRef review issued in 2021 (and integrated into existing operating techniques), the proposal is not likely to result in an increase in risk of fugitive emissions from storage.

Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise fugitive emissions and to prevent pollution from fugitive emissions.

Permit condition 3.2.1 requires that emissions of substances not controlled by emission limits (i.e., fugitive emissions) shall not cause pollution. Condition 3.2.2

requires that a management plan shall be developed if pollution is subsequently identified.

10.4. Assessment of odour impact

Given that the crude, waste slop oil and dewatering effluent are already stored and/or generated on site, the variation is unlikely to change the risk of odours emissions from the site. The operator has confirmed that the site has an existing odour management plan, which should remain relevant for the crude and wastes imported via the pipeline with VPOT.

10.5. Noise and vibration assessment

Given the scale of the changes to the site as a result of the variation relative to the current operations on site, the changes are unlikely to result in an increased risk of noise impact from the site.

11. Impact on National Site Network Sites, SSSIs and non-statutory sites

The applicant has used the relevant screening distance criteria to identify relevant protected conservation sites which could be at risk from the proposal. We are in agreement with the screening distances used.

A full assessment of the variation application and its potential to affect the identified sites identified has been carried out as part of the permit determination process. National Site Network sites, Sites of Special Scientific Interest (SSSI) and non-statutory conservation sites will be discussed separately below.

11.1. The National Site Network

The following National Site Network sites are located within 10 km of the installation:

- Skomer, Skokholm and the Seas off Pembrokeshire (SPA) UK9014051
- Castlemartin Coast (SPA) UK9014061
- Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru (SAC) UK0014787

- Pembrokeshire Marine / Sir Benfro Forol (SAC) UK0013116
- West Wales Marine / Gorllewin Cymru Forol (SAC) UK0030397
- Pembrokeshire Bat Sites and Bosherton Lakes / Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton (SAC) UK0014793

A Habitats Regulations Assessment (HRA) is not required because there is no conceivable impact pathway to any of the National Site Network sites identified by virtue of the scale or location or nature of the project. The proposed variation would not result in any new point source emissions to air and water and will not change any existing emissions from the site. All activities associated with proposed storage of crude and storage/treatment of waste is similar to activities already carried out on site and would not increase the discharge volume or composition compared to what is already processed at the site's effluent treatment plant.
As such a HRA was not required as the proposal does not have any additional impact pathways that would affect the designated sites.

11.2. Sites of Special Scientific Interest (SSSI)

The following SSSIs are located within 2 km of the installation:

- Milford Haven Waterway
- Castlemartin Corse
- Broomhill Burrows
- Gweunydd Somerton Meadows

An assessment was not required because there is no conceivable impact pathway to any designated SSSI. The proposed variation would not result in any new point source emissions to air and water and will not change any existing emissions from the site. All activities associated with proposed storage of crude and storage/treatment of waste is similar to activities already carried out on site and would not increase the discharge volume or composition compared to what is already processed at the site's effluent treatment plant.

11.3. Non-statutory conservation sites

The following relevant non-statutory sites re located within 2 km of the installation:

- 19 designated ancient woodlands

No additional assessment was required because there is no conceivable impact pathway to any of the non-statutory conservation sites

12. The Permit Conditions

12.1. Variation

We have specified that the applicant must operate the permit in accordance with descriptions in the application, including additional information received as part of the determination process.

These descriptions have been specified in the Operating Techniques table (Table S1.2) in the permit.

12.2. Emission Limits

The variation will not add any new emission points to air or water. We have added limits for phenol index as this is required by the waste treatment BRef. The annual returns of the water discharge from the site for 2021 to 2024 showed that the phenol index was below the limit set in the BAT. As such we are satisfied that the operator will be able to meet these limits.

12.3. Monitoring

There are no changes to monitoring as a result of the variation.

12.4. Reporting

We have specified the reporting requirements in Schedule 4 of the Permit to ensure data is reported to enable timely review by Natural Resources Wales to ensure

compliance with permit conditions and to monitor the efficiency of material use and waste recovery at the installation.

We have added the requirements for the operator to reporting on the receipt of waste of hazardous waste. There are no other changes to reporting requirements.

12.5. Waste Types

We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility.
The variation will allow the operator to accept waste slop oil and dewatering effluent from VPOT. As Valero Pembroke oil terminal limited and Valero are different operators and the waste originates from a different site, the slop oil and dewatering effluent is classed as waste from another site and the proposed activity falls under a Section 5.3 Part A1 (a) of the Environmental Permitting Regulation 2016. The existing permit already has this as a listed activity (A6).

We are satisfied that the operator can accept these wastes for the following reasons;
The site currently stores and treats slop oil and dewatering effluent generated on site at the effluent treatment plant. The existing infrastructure that is used for both storage and treatment of these waste generated on site will also be used to store the waste received. The effluent treatment plant has the design and capacity to process these wastes.

- The receipt of waste would not result in any changes to effluent volume or composition
- The operator will have a waste acceptance procedure or the acceptance of these wastes. The wastes originate from a single operator VPOT and the composition of the wastes is well known.
- The operator has applied the relevant BAT conclusions/techniques from the waste treatment BRef review for these wastes.

We made these decisions with respect to waste types in accordance with BAT for waste treatment.

12.6. Pre-operational conditions

Based on the information in the application, we consider that we need to impose pre-operational conditions. Details of the pre-operational conditions used can be found in Annex 1.

The pre-operational condition are for the operator to submit the finalised versions of the revisions to the accident management plan and the waste acceptance procedure prior to acceptance of crude oil and hazardous waste from VPOT via the Cross-Haven pipeline.

13. OPRA

The OPRA score has changed as a result of this variation. The new agreed score is now 445 (was 443). This will form the basis for ongoing subsistence fee.

Annex 1 Pre-Operational conditions

Table S1.4 Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational measures**
3	Receipt of Crude oil from Valero Pembroke oil terminal	Prior to operation of receipt of crude oil from Valero Pembroke oil terminal via the Crosshaven pipeline, the operator must submit to Natural Resources Wales for approval the finalised version of the amendments to the accident management plan
4	Receipt of waste dewatering effluent and slop oil from Valero Pembroke oil terminal	Prior to operation of receipt of waste dewatering effluent and slop oil waste from Valero Pembroke oil terminal via the Crosshaven pipeline, the operator must submit to Natural Resources Wales for approval the finalised version of the amendments to the waste acceptance procedure.

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