

---

---

**Whiteshore Cockles Limited  
Salmon morts processing facility**

**Permit Variation Application**

**Supporting Information Report**

---

---

**Whiteshore Cockles Limited**  
Whiteshore  
Kyles  
Paible  
Isle of North Uist  
HS6 5EB

**Permit Reference PPC/A/5001983**

**Date:** April 2026



## Document Control

<b>Title</b>	<p>Supporting Document for Part A Permit Variation (standard) – (Whiteshore Cockles Ltd) under regulation 25 of the Environmental Authorisations (Scotland) Regulations 2018 No.219.</p> <p>Permit Ref: PPC/A/5001983</p> <p>Submission to: Scottish Environmental Protection Agency</p>
<b>Applicant</b>	<p>Whiteshore Cockles Limited Whiteshore Kyles Paible Isle of North Uist HS6 5EB</p> <p>Tel [REDACTED] Contact – [REDACTED]</p>
<b>Reference</b>	WSC/VAR/26v.3/IPPC
<p><b>Application prepared by:</b></p> 	<p>IPPC Consultants Ltd The Lodge Whitwell Worksop Derbyshire S80 4RW</p> <p>Contact: [REDACTED] (EHO) [REDACTED]@<a href="mailto:[REDACTED]@ippc-consultants.co.uk">ippc-consultants.co.uk</a></p> <p>Tel: [REDACTED]</p>
<b>Address for correspondence</b>	As above
<b>Submission Date</b>	10 <sup>th</sup> April 2026

Copyright ©

All material on these pages, including without limitation text, logos, icons and photographs, is copyright material of IPPC Consultants Limited. Use of this material may only be made with the express, prior, written permission of IPPC Consultants Limited. This document was produced solely for use by the named contractee to whom the document refers.

## Contents

1.0	Non-technical summary.....	3
2.0	Variation (substantial).....	5
3.0	Introduction .....	6
4.0	Operational Location.....	8
2.1	Maps and Plans.....	9
5.0	Planning.....	9
6.0	Existing process operations.....	9
7.0	Process Controls for receiving, storing & processing ensiled fish morts.....	11
7.1	Ensiled morts delivery and storage.....	12
7.2	Ensiled morts processing.....	14
8.0	Ensiling process.....	14
9.0	Second steam raising boiler .....	15
9.1	Combustion of fish oil as a fuel.....	18
10.0	Biomass boiler particulate matter AEL.....	19
11.0	Condensate storage capacity.....	20
12.0	Site schematic.....	21
13.0	Odours.....	22
14.0	Noise.....	23
15.0	Environmental risk assessment.....	24
16.0	BAT Assessment.....	27
17.0	Waste.....	27
18.0	Emissions to surface water.....	27
19.0	Baseline condition report.....	28
20.0	Habitat receptors.....	28
21.0	Management systems.....	28
22.0	Accident minimisation and prevention.....	28
23.0	Permit variation application fee.....	29

### Additional documents (referenced as appendices in the report)

Appendix	Reference	Description
1	Whiteshore/boundary/24	OS location Map of installation and permitted site boundary
2	N429_11A Site Plan	Site schematic
3	BAC's-Whiteshore	BAC's remittance for proof of payment of variation application fee
4	251215 R 21146 TH Initial Site Condition Report V3 R3-combined	Updated Baseline Condition Report
5	20250120_WS_Second Boiler Temp Position Letter	SEPA temporary position letter
6	Ren-07, Fish Oil As an Alternate Fuel (1)	Research report for using fish oils as a fuel
7	SCAIL Model screening	SCAIL dispersion model screening for the Kerosene fired boiler
8	BAT for odour control v2 - Feb 2022	Original BAT assessment for odour control submitted for the 2022 Part A permit application.

## 1.0 NON-TECHNICAL SUMMARY

Whiteshore Cockles Limited is making this permit variation application under regulation 25 of the Environmental Authorisations (Scotland) Regulations 2018 No.219.

The variation is to the existing permit (PPC/A/5001983) issued to Whiteshore Cockles Limited, for the Disposing of or recycling animal carcasses and animal waste at installations with a capacity exceeding 10 tonnes per day and other than by incineration or co-incineration and any directly associated activities, as further detailed in this permit and described in Schedule 20, chapter 6 paragraph 33 of the Regulations.

The facility is located at Whiteshore, Kyles, Paible, Bayhead on the isle of North Uist (Figure 1). The approximate centre of the facility is at National Grid Reference (NGR): 073720 866410. The site comprises approximately 2 hectares of land on a broadly rectangular shaped plot and is currently occupied by the new process buildings on a 0.4-hectare concreted area.

The existing permit issued to Whiteshore Cockles Ltd allows the facility to receive fish morts from the Scottish aquaculture industry for processing into fish meal, fish oil and condensate by the introduction of heat. From the two years since the issue of the permit the aquaculture industry has approached the Whiteshore facility for its waste ensiled fish morts to be collected and processed.

The acceptance of ensiled fish morts at the Whiteshore Cockles processing facility will require the facility to install additional storage tanks (400,000l) to hold the ensiled fish prior to processing through the dryer. The ensiled fish would be delivered to the facility by bulk road tanker and pumped into the specific ensiled fish morts storage tanks.

In order to provide additional contingency for the fish morts rendering operations to accommodate situations such as plant breakdowns it would be sensible that the Whiteshore installation has the facility to carry out its own ensiling of fish morts. This would involve fish morts received into the storage pit being macerated and then ensiled on the site where the ensiled fish morts would be stored in designated ensiled fish storage tanks. The ability to ensile fish on site would also enable the facility to process a mass casualty incidence by being able to process larger numbers of fish morts and preserving the quality of the morts until they are processed. The ensiling of fish morts will include the installation of a 10,000-litre tank to store formic acid and a 10,000-litre mixing tank.

The processing of ensiled fish morts to fish meal, fish oil and condensate will be conducted inside a new process building which would be constructed immediately adjacent to the existing production building and within the existing process boundary. The second building will be connected internally with the existing processing building and will house a series of 3 mixing bowls, for the heat treatment of the ensiled fish morts as required by the Method 6 process. The oil will be separated in a de-cantor and the remaining solids and water will be pumped to the ABP dryer and processed in the normal manner using the method 4 process.

The new processing building will be to the same construction specification as the existing building. Part of the new building will be kept under constant negative pressure using an extension of the extraction duct work from the existing building which will take the internal air to be treated through the onsite wet scrubber unit.

Condition 3.2.2 of the existing permit allows the production throughput of the dryer at 2 tonnes per hour and 48 tonnes in any 24-hour period. The production capacity of the dryer is governed by the steam input which in turn is limited to the thermal output of the steam raising boiler. The boiler specification was compiled at the initial design stage for the process which is now nearing seven years ago. It became apparent once the process began operation that the steam raising capacity was inadequate and following an independent engineering review an additional steam raising boiler was proposed to supplement the biomass boiler. An additional kerosene fuelled boiler is now on site and in the process of being commissioned under a temporary position statement issued on 20/01/2025 and detailed in appendix 4 accompanying this report. A air impact screening assessment using the SCAIL model for the second boiler has been submitted to SEPA. The report for the output of the screening exercise is documented in appendix 7. The additional liquid fuel boiler has the ability to burn fish oil as a fuel blend which would assist to mitigate logistical challenges associated with the removal of the fish oil from site for bio-diesel production particularly during winter months.

The additional steam capacity from the operation of a second boiler enables the dryer to process up to 4 tonnes of material per hour and 96 tonnes in any 24 -hour period which is the manufacturers throughput maximum.

## 2.0 Variation of Permit (Substantial)

The application for variation of the permit is for the following:-

- 1) removal of condition 3.1.5 of the issued permit:

3.1.5 *No ensiled fish waste shall be accepted at the Permitted Installation*

- 2) to include a fish mort ensiling process within the process boundary including tank farm storage of ensiled fish (400,000l) and associated raw materials (formic acid – 10,000l), and 10,000litre mixing tank for the ensiling process.
- 3) Addition of a second steam raising boiler (2.49MW net thermal output) fuelled by kerosene and fish oil (MCP).
- 4) Increase of the daily throughput of the morts process facility to the capacity of the dryer (condition 3.2.2 on the SEPA Permit) from  
  
2 tonnes per hour and 48 tonnes in any 24-hour period  
to  
4 tonnes and hour and 96 tonnes in any 24 -hour period.
- 5) Construction of a second processing building within the installation boundary for the ensiled fish processing operations to be located and operated including a new process control room serving both the existing fish morts rendering operations and ensiled processing operations and additional fish meal storage.
- 6) The increase of the AEL for particulate matter emissions from the biomass boiler from 3mg/m<sup>3</sup> to 10mg/m<sup>3</sup>
- 7) Increase the condensate storage capacity from 90,000l to 500,000 litres by the installation of a 400,000l tank and increase the retention time for condensate on site to 3 months.

### 3.0 Introduction

The installation was issued a Part A Permit (PPC/A/5001983) under the Pollution Prevention and Control (Scotland) Regulations 2012, now the Environmental Authorisations (Scotland) Regulations 2018, in June 2023.

The principal permitted activities carried out at the Stationary Technical Unit are:

- a. The disposal of or recycling animal carcasses and animal waste at installations with a capacity exceeding 10 tonnes per day and other than by incineration or co-incineration, being an activity described in Schedule 20, chapter 6 paragraph 33 of the Regulations.
- b. The burning of meat and bone meal in a medium combustion plant with a rated thermal input equal or greater than 1 megawatt and less than or equal to 20 megawatts as described in Schedule 1, Section 1.1 Part B (d) of the Regulations.

The activities falling under the definitions listed in Schedule 20 of the EASR Regulations for the fish morts rendering process, including directly associated activities and combustion processes are summarised in the table 1 below:

**Table 1**

Schedule 1 Reference	Description of Activity	Details of the Activity
Schedule 20, chapter 6 paragraph 33- The Environmental Authorisations (Scotland) Amendment Regulations 2025: Disposing of or recycling animal carcasses and animal waste at installations with a capacity exceeding 10 tonnes per day	Mincing and drying by application of heat of raw fish morts, cooling, and condensing of water vapour, separation of fish oil by filtration and pressing.	The treatment of farmed fish morts in a sustainable manner (approved under the ABP regulations) to reduce their risk to human and animal health and their polluting potential and produce usable waste and materials
Directly Associated Activity	The receipt of raw fish morts in a dedicated building including control of odorous air and its treatment	To receive raw fish morts and contain and treat odorous emissions associated with the raw materials and process of the materials
Directly Associated activity	The storage, handling, and dispatch of by-products and waste	The activity will produce ash from the combustion process, fish oil and excess fish meal from the drying process that is not utilised as a fuel by the biomass boiler.
Directly Associated Activity	Fuel Storage	Storage of liquid fuel (diesel) in a 9600-litre tank for the onsite electrical generator

Combustion Process	Description of Activity	Details of the Activity
Medium Combustion Plant Directive (MCPD –Directive (EU) 2015/2193 Schedule 27 The Environmental Authorisations (Scotland) Amendment Regulations 2025. SA-BREF – BAT 15	Combustion of dried fish meal and fish oil in a boiler	To produce heat for the drying process of the fish morts and destruction of odorous process air by thermal combustion

The Whiteshore Cockles fish morts processing facility has conducted a lengthy commissioning programme over the last 2 years to address a number of technical and engineering challenges that had arisen associated with the operation of the plant, specifically equipment involving fish oil separation and steam raising capacity. Improvements to the oil extraction pressing and centrifuge equipment were needed along with achieving sufficient steam raising capacity for the dryer together with the efficient burning of fish meal in the biomass boiler.

This variation application is being submitted to address a number of these issues associated with steam production capacity for the drying process by the additional of a second steam raising boiler using kerosene and/or a fish oil blended fuel; but also a change in the commercial operation for processing of fish morts by the aquaculture industry for the receipt of ensiled fish morts at the facility and also for a fish ensiling operation to take place at the Whiteshore installation. The improved steam capacity will enable the operational capacity of the dryer to be realised for the increased production of morts processing.

## 4.0 Operational Location

The facility is located at Whiteshore, Kyles, Paible, Bayhead on the isle of North Uist (Figure 1). The approximate centre of the facility is at National Grid Reference (NGR): 073720 866410. The OS map and Google satellite maps are shown below

Figure 1 – location denoted by red circle.



The site comprises approximately 2 hectares of land on a broadly rectangular shaped plot and is currently occupied by the main process building, raw material reception building, externally located wet scrubber unit, air cooled condenser and associated storage tanks for fish oil, condensate and fuel. The process buildings and concreted site for the fish morts processing operation is shown on the photograph below with the yellow line boundary for the prescribed activities that this permit variation application covers.

### The installation site is outlined in Yellow



#### 4.1 Maps and Plans

Submitted with this application are the following maps and plans as required and referenced in the submitted SEPA permit variation application form.

Reference	Description
Whiteshore/boundary/24	OS location Map of installation and permitted site boundary
Whiteshore/tankplan/24	Site schematic (depicting location of extension to the existing processing building and 400,000 litres ensiled fish storage, formic acid storage and ensiling mixing tank, additional condensate storage tank.

#### 5.0 Planning

The installation is covered by planning permissions (Ref. 14/00333, 19/00288 and 20/00007) granted by Comhairle nan Eilean Siar under the Town and Country Planning (Scotland) Act 1997 (as amended). These permissions are for a building (33m x17m x5m), extension of the building to house a biomass boiler and in 2020 an additional building for the reception and storage of fish morts before processing. A further planning application was made in 2022 in accordance with condition 4 of decision notice 20/00007 for ancillary structures such as storage tanks for fish oil, diesel generator tanks, condensate tank and the location of the odour abatement wet scrubber unit. Unfortunately, due to a criminal Cyber incident which occurred on 7 November 2023 and affected Comhairle nan Eilean Siar IT systems including planning means that reference to this application is not available for the purposes of this document.

A later planning application (ref 21/00047/SCR\_L) was submitted and approved in 2022 for the extension of building (to house biomass boiler, heighten part of roof and install two flues) and erection of building (for storage of fish morts before processing).

#### 6.0 Existing Process operations

The current process undertaken at Whiteshore Cockles is the rendering of fish morts, which involves the removal of water and separation of the oil to yield a final fish meal biomass fuel. The installation comprises of raw material reception and handling, drying equipment, and separation of the



---

## **7.0 Process Controls for receiving, storing and processing ensiled fish mortts**

### **7.1 Ensiled mortts delivery and storage**

Delivery of ensiled fish mortts will be made using bulk load transfer vehicle and must arrive on site with a clean vehicle certificate to demonstrate disinfection between loads together with a ABP transfer notice confirming the load as Ensiled fish liquor ABP Category 2. Both these certificates must be presented at the weigh bridge office.

The bulk load transfer vehicle will then travel onto the weighbridge and generate a ticket. After weighing is complete the load will be taken directly to the bunded ensiled tank(s) area where the tanker will reverse onto the bunded deliver pad ready for connecting the associated pipe work to the tank farm.

As the ensiled waste contains formic acid, a COSHH (Control of substances hazardous to health) trained member of staff will be in attendance wearing appropriate PPE (oilskins, long armed rubber gloves, Wellington boots worn inside the oilskin trousers, full-face visor, goggles and respirator with E1 filter).

The vehicle discharge pump will be connected to the appropriate storage tanks. The current capacity within the tanks will be confirmed before discharge begins, high level alarms will be in operation to prevent overfilling, and the tanks will be filled within a fully bunded area.

On completion of a delivery the vehicle will be weighed again on the weighbridge cleaned down at the waste holding area and a cleaning certificate issued. Upon receipt of the cleaning certificate vehicle may then leave site via the clean vehicle route.

The pH level of the ensiled waste contained within the tanks will be recorded daily to ensure the pH level remains at 3.5 to prevent the formation of offensive odours, this will be checked using a handheld pH meter and litmus paper prior to being recorded on a daily check sheet.

The storage tanks will be fitted with high-level alarms to control the quantity of ensiled materials being pumped into a tank. The ensiled fish storage tank farm will be back vented to an activated carbon unit to treat the displaced air/odours during filling of the storage tanks and also to treat natural venting of odours from the storage tanks at all other times. The size and specification of the unit will be confirmed by Whiteshore Cockles and a suitable equipment supplier of activated carbon units.

The storage capacity for ensiled fish morts will be 400,000 litres which will be accommodated by a tank farm consisting of twenty ISO storage tanks each with a capacity of approximately 20,000l



Example of an ISO liquid storage tank

## 7.2 Ensiled morts processing

The ensiled waste fish morts will be pumped from the storage tank(s) into the ensiled ABP system initially passing through a scraped surface heat exchanger. The heat exchanger will operate on the waste heat generated by the ABP dryer on site. This process will begin to break down the proteins in the ensiled liquor.

It will then be pumped into a series of 3 mixing bowls, the first of these being the filling mixing bowl which will be maintained at 90°C to ensure the ensiled fish is treated as required in the Method 6 process as below:

Method 6 (for aquatic ABPs)	50mm 90°C for 60 minutes
	30mm 70°C for 60 minutes



Example of stainless-steel heated mixing bowls for ensiled fish processing

The ensiled fish will then pass into the second holding bowl again maintained at 92°C where it will be held before passing into the final 'emptying bowl' where it will then be pumped to the decanter at a rate of two tonnes per hour. This process will then remove the fish oil which will go directly to storage.

The remaining solids and water will be pumped to the ABP dryer and processed in the normal manner using the method 4 process.

The steam (condensate) from the drying process will be condensed by the air-cooled condenser and stored on site for the treatment of land for agricultural benefit spreading condensate under and under a SEPA exempt activity, Schedule 1 Paragraph 7 exemption.

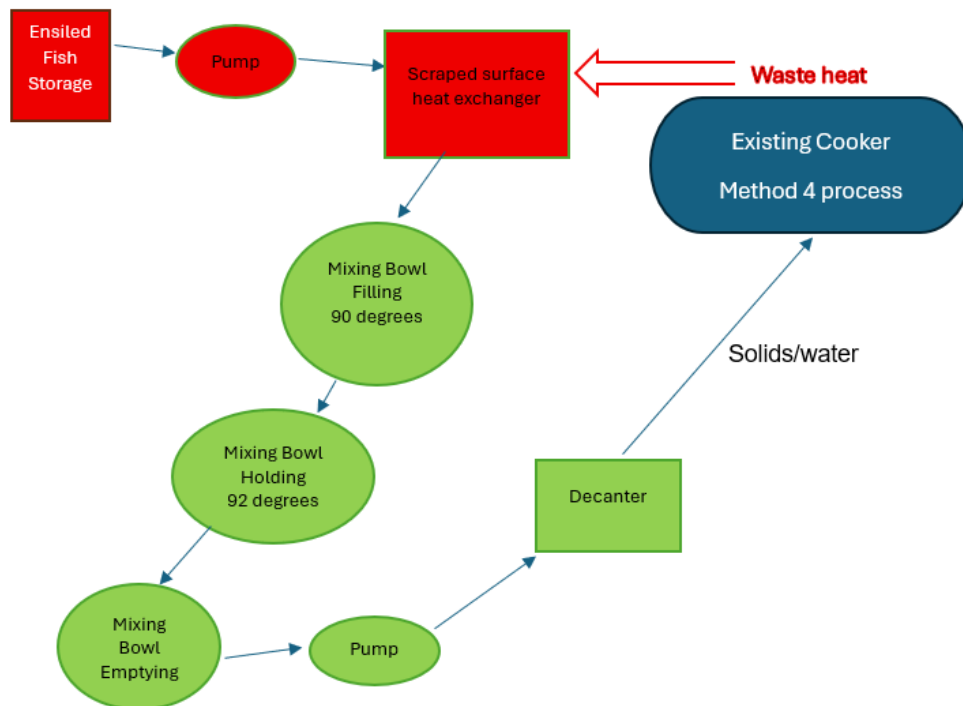
The Category 2 fish meal produced is used as combustion fuel for the Sugimat biomass boiler. Any excess fish meal is stored inside the process building in tote bags and collected for use in a bio-digester. The fish oil is transported offsite for further processing and use in biodiesel production or if approved by SEPA can be combusted as a blended fuel for use in the second liquid fuel steam generating boiler.

Non condensable gases from the air-cooled condenser are oxidised by thermal destruction in the Sugimat biomass boiler combustion chamber the same as for existing fish morts processing. The thermal destruction process and boiler operating temperatures ensure that non-condensable ensiled fish odours will be fully destroyed in the boiler combustion chamber so not to result in any malodours being emitted from the process.

The second liquid fuel fired boiler will not be used for thermal treatment of odours.

The 3 heated mixing bowels will have direct extracting via a sealed pipe system to the wet scrubber unit for abatement of odours.

A process flow diagram for the processing of ensiled fish morts is shown below.



## 8.0 Ensiling process

Fish morts will be received at site in a sealed skip as the existing permitted process. On arrival drivers must display a Transfer Note that identifies the material is category 2, its source location and date of uplift.

Skips are tipped into the pit from the ramp immediately provided there is storage room available in the pit. Once paperwork has been confirmed and the load has been weighed it is discharged /unloaded directly to the internal storage area. Storage consists of an initial tipping trough and the main storage hopper. The incoming raw material is deposited into the tipping trough and undergoes a thorough inspection before being moved into the main stainless steel storage hopper.

All skips and tubs are cleaned and disinfected at the top of the ramp with the wash water running to the AKO drain, which is directed into the main storage hopper. Once cleaned each skip, tub or vehicle is assessed by a senior staff member before being cleared with a certificate or sent to be further cleaned and disinfected if the standard is unsatisfactory.

The raw fish morts material in the storage pit is fed through the macerator pump where the morts are reduced to a particle size less than 30mm. This particle size is achieved with an arrangement inside the mincer unit that includes a hole cutter disc with holes of 20mm.

The minced fish morts material will then be pumped to an ensiling tank located at the ensiled fish tank farm. This tank will contain a macerator (chopper pump) which will be used to further break down the fish morts whilst it is being dosed with the Formic acid to bring the PH level to stable position. The ensiling machine will automatically dose the formic acid to the correct volume depending upon the quantity of fish morts by weight.

There will be one 3,000 litre ensiling mixing tank on site located within the ensiled fish storage tank farm together with a 10,000l tank of formic acid.

Below is a typical ensiling process and bulk storage tank for the ensiled fish. Macerated fish morts will be pumped by a sealed pipe system to the mixing tank so there is no need for a mincer.



After 24 hours storage the ensiled fish liquor can be processed as detailed in the process description contained in section 7.0 of this technical report.

The pH level of the ensiled waste contained within the mixing tank will be recorded daily to ensure the pH level remains at 3.5 to prevent the formation of offensive odours, this will be carried out using a handheld pH and recorded on a daily check sheet. Any odour from the tanks will be captured and back vented by a pipe to the wet scrubber for abatement. Displaced air from the ensiling mixing tank will be passed through an activated carbon unit to minimise odours.

## 9.0 Second steam raising boiler

At an early stage following commissioning of the morts processing equipment, it was identified by Whiteshore Cockles together with independent engineering advice that the existing Sugimat 1.2MW biomass boiler was unable to reach the combustion temperatures high enough when burning fish meal fuel to achieve the steam demand necessary for the efficient operation of the dryer. In order to mitigate this problem a second boiler has been purchased to provide additional steam capacity.

The specification of the additional boiler is detailed below:

Beel Industrial Boilers Ltd.

Serial number: 10875

Year of manufacture: 2000

The net thermal input approximately 3.2MW.

The thermal output approximately. 2.49MW

The boiler is a liquid fuel combustion unit using kerosene. The boiler could also combust fish oil as a fuel or a blend of fish oil and kerosene. A 10,000 litre bunded tank previously used for diesel storage will be used for storage of the kerosene.

The location of the stack emission point is shown on the N429\_11A Site Plan schematic. The new secondary boiler will not be connected to the air-cooled condenser for destruction of high intensity odours. Improvements have been made to the hearth and combustion chamber of the Sugimat boiler to assist in the biomass boiler performing better when firing on fish meal.

The kerosene fired boiler was installed at the Whiteshore facility during 2025 with commissioning only recently begun to connect up the boiler to the dryer steam system. To date the boiler has not been used for continued steam production. The installation of the boiler and its use is currently under a temporary position statement issued by SEPA in January 2025 which has been extended to the 31<sup>st</sup> January 2026 whilst a full substantial change variation is prepared and submitted to SEPA which will also cover the additional liquid fuel boiler as an MCP application.

At the request of SEPA a boiler emissions impact screening exercise has been undertaken for assessing the impact of the emissions on the environment from the kerosene boiler. This has been in response to a point raised in the legislation for a MCP and the habitats/dispersion modelling requirements if a boiler is located within the screening distance for a designated habitats site. From the SEPA web site for MCP, if the boiler is deployed at an existing Part A permitted installation, then the survey and potential dispersion modelling for impacts is not necessary. It was agreed with the SEPA following advice taken from SEPA's air quality unit that the mechanism for assessing the impacts of the kerosene boiler would be to use a screening assessment using the SCAIL impact model to calculate the concentration of each substance released into air from the proposed

activity. This is known as the process contribution (PC). The SCAIL assessment model identifies PCs with insignificant environmental impact so that they can be 'screened out' which means that no further assessment is needed. For substances not screened out, the screening tool calculates the predicted environmental concentration (PEC) for each substance released to air. The PEC is the PC plus the concentration of the substance already present in the environment at the receptor.

An assessment using the SCAIL screening model has been carried out and is detailed in Appendix 7 accompanying this variation application.

A copy of the temporary position statement letter is detailed in appendix 5 accompany this technical report

The additional boiler will be subject to Medium Combustion Plant (MCP) New plant MCP emission limits for liquid fuelled units are detailed below.

NO<sub>x</sub>: 170 mg/m<sup>3</sup> (STP, Dry, 3% O<sub>2</sub>).

SO<sub>2</sub>: 200 mg/m<sup>3</sup> (STP, Dry, 3% O<sub>2</sub>).

Dust: 20 mg/m<sup>3</sup> (STP, Dry, 3% O<sub>2</sub>).

The additional steam capacity unlocks the manufacturers potential for the dryer to process up to 4 tonnes of material per hour and 96 tonnes in any 24 -hour period.

An application form has been completed for MCP with the supporting information on the boiler and its operation contained in this technical supporting report

Operators of MCP plant not on a PPC/EASR Industrial Activity-regulated site must carry out a Habitats Impact Assessment screening assessment using tools that have been specifically developed for this purpose.

As the MCP is located on an existing PPC/EASR Industrial Activity-regulated site it will be advised by SEPA on how to proceed whether the MCP requires further habitats impact assessments to be completed.

## 7.1 **Combustion of fish oil as a fuel**

The site currently combusts fish meal as a fuel on the 1.2MW Sugimat boiler which is produced as a byproduct of the fish morts rendering process. Fish oil is also produced as a byproduct of the process which is

currently stored in tanks and removed from site to be used in bio diesel production. During winter months due to weather conditions and transport availability such as ferries, the logistics for the removal of the fish oil can be challenging and as such the ability to be able to combust the fish oil in the second liquid fuel steam raising would resolve this problem.

The category 2 fish oil by-product from the Whiteshore Cockles fish morts rendering process has an economic value with the product collected and processed in biodiesel production. The economic market for animal by-product biomass materials (tallow/fish oil, MBM) has established over the last two decades and most recently with very high fossil fuel costs due to the conflict in Ukraine, the recent war which has started in the Middle East, coupled with complex UK energy policies mean that these materials are better defined as “products” and not a waste to be discarded particularly when emissions are not detrimental and are comparable to those produced when burning fossil fuels.

Combustion of fish oil, often processed into biodiesel (FOME), shows promise as a renewable fuel, offering lower smoke, particulate matter (PM), carbon monoxide (CO), and unburned hydrocarbon (UHC) emissions due to its high oxygen content and lack of aromatics. This promotes a more complete oxidation upon combustion. While generally having good combustion properties, it can lead to higher Nitrogen Oxide (NOx) emissions and sometimes slightly higher fuel consumption or viscosity, requiring potential after-treatment (like exhaust gas recirculation) for optimal use in diesel engines as a sustainable alternative to fossil fuels.

Combustion tests for fish oil and its blends with fuel oils have been performed (using a pilot tunnel furnace and residential boilers) to evaluate fish oil as an alternative fuel for conventional boilers and furnaces. Fish oil and blends of fuel oil and fish oil burned readily when tested. The emissions were generally lower than burning the pure fuel oil except that of NO, which was higher for blends. The boiler can accommodate flue gas recirculation which would assist in reducing NOx levels. Overall, in the tests fish oil showed good combustion properties, minimal impact on emissions when compared with fuel oil. There are significant economic and environmental benefits from using the fish than fossil fuels.

Commission Regulation (EU) No 2020/735 which amends the Animal By-Products Regulations; Meat and Bone Meal (MBM) is no longer classified as material falling under the scope of the Waste Framework Directive. This is due to it being combusted as a fuel rather than be an animal by-product

subjected to incineration. The main implication of this change is that the stringent waste incineration requirements of IED Chapter IV no longer apply. In terms of emissions limits, the biomass boiler will need to meet the new “Other liquid Fuel” limits in Annex II, Part 2, Table 1 of the Medium Combustion Plant Directive (MCPD).

Appendix 6 details a research report for the testing of fish oil as a fuel.

## 10.0 Biomass boiler particulate matter AEL

The use of fish meal fuel on the Sugimat biomass boiler together with the boiler being used for treatment of malodorous air from the air cooled condenser means that stricter SA-BREF (Slaughterhouses, Animal By-products and Edible Co-products Industries) AEL's for BAT 15 – are set including BAT 25 - treating odorous air and channelled emissions to air of odour, organic compounds and NH<sub>3</sub> from fishmeal and fish oil production.

The above sets a BAT-AEL for particulate matter emissions of 3mg/m<sup>3</sup>. This is a very low emission concentration and is nearing the maximum filter efficiency of the Glosfume ceramic particulate filter which is fitted to the flue gas exhaust stream from the boiler. The most recent extractive emissions testing of the boiler emissions took place in July 2025. The testing was carried out by Socotec.

A summary of the emissions is shown on the table below.

EMISSIONS SUMMARY Boiler A1					
Parameter	Units	Result	Calculated Uncertainty +/-	Emission Limit Value (ELV)	Accreditation
Total Particulate Matter	mg/m <sup>3</sup>	5.13	0.18	3	MCERTS
Particulate Emission Rate	g/hr	64.6	2	-	MCERTS
Sulphur Dioxide	mg/m <sup>3</sup>	4.3	0.44	15	MCERTS
Sulphur Dioxide Emission Rate	g/hr	49	4.98	-	MCERTS
Hydrogen Sulphide	mg/m <sup>3</sup>	0.2	0.15	-	MCERTS
Hydrogen Sulphide Emission Rate	g/hr	1.7	1.74	-	MCERTS
Odour	ouE/m <sup>3</sup>	679.4	See Appendix 3	-	None
Odour Emission Rate	ouE/s	738.0	38.76	-	None
Oxides of Nitrogen (as NO <sub>2</sub> )	mg/m <sup>3</sup>	59	8.4	60	MCERTS
Oxides of Nitrogen (as NO <sub>2</sub> ) Emission Rate	g/hr	651	92	-	MCERTS
Carbon Monoxide	mg/m <sup>3</sup>	5.17	5.39	30	MCERTS
Carbon Monoxide Emission Rate	g/hr	56.4	58.83	-	MCERTS
Oxygen	% v/v	11.0	0.271	-	MCERTS
Moisture	%	5.9	0.18	-	MCERTS

The total particulate matter emission recorded was 5.13mg/m<sup>3</sup>. Discussions with SEPA about the emission testing data and specifically the particulate matter AEL is that SEPA would be willing to accept a higher AEL of 10mg/m<sup>3</sup> as a the permitted AEL for total particulate matter.

## 11.0 Condensate storage capacity

Condensate is a by-produced from the fish mortars drying process. It is collected in two bunded 50,000-litre tanks and under a paragraph 7 exemption allows the ground spreading of condensate water for agricultural benefit. The condensate can be stored for a maximum number of 28 days during which time the condensate is uplifted by a tanker for spreading.

The current condensate storage capacity of 90,000 litres over the two tanks provides enough holding capacity for condensate whilst it is continuing to be uplifted for ground deployment during the summer months. However, during the closed winter period for deployment which is between the beginning of September to the end of December this has been a challenging with the condensate removed from site by HGV Tanker for disposal at Motherwell which is a 200-mile journey taking over 12 hours due to the ferry crossings. These journeys use up valuable space on the islands lifeline ferries and results in an increase in carbon footprint and high financial implications of transport and treatment costs.

It is proposed to increase the capacity of condensate storage by adding an additional bunded storage area to accommodate a 400,000 litre - capacity tank. The tank will be fully enclosed with vapours back vented to the odour abatement system. The tank will be fitted with a high-level alarm to prevent overflowing. It is requested in this variation application that the retention time of condensate is increased from 28 days to 90 days. The extended retention time mitigates the above winter challenges of transport issues to tanker the material to Motherwell and reduced ground deployment rates, whilst still enabling the fish rendering process to continue processing.

The present system of feeding the condensate into the tanks via stainless steel pipework from the separation area will continue, with a sealed system feeding into the additional storage tank when required. The condensate is run through an activated carbon filter to remove odours as it discharges from the condenser into the tank.

The waste permitting team at SEPA have initially agreed for Whiteshore Cockles to continue the spreading activity during the closed winter months due to the unique soil and weather conditions in the Western Isles, but a limit of 9kg of nitrogen per hectare has been set. This deployment rate is



The schematic also shows the new building and the dividing wall between the section that will accommodate the heating mixing bowls for the ensiled fish processing and the additional storage capacity for fish meal.

The yard surface is bunded and drains to an interceptor and holding tank.

### **13.0 Odours**

The ISO stainless-steel storage tanks for ensiled fish mortars will be back vented to an activated carbon unit. The additional processing building is to house the fish mortars ensiling process and additional boiler and will be of a very similar size occupying approximately 3000m<sup>3</sup>. The building will be divided into two by an internal wall, such the ensiling heated mixing bowls will be located in the left hand side and the remaining section of building to the right of the internal wall will be used for fish meal storage.

The building will be constructed to the same standard as the existing processing building and the section housing the mixing bowls will be subject to a negative pressure provided by the induction fan serving the wet scrubber abatement system. The new building will be an extension of the existing building and will have an internal connecting door and also a single external roller shutter door and a single self-closing personnel door.

The odorous air will be removed from inside the new building by circular stainless ductwork with various open louver points along the length of the duct where the odorous air will be extracted. The duct work will be suspended from the ceiling of the building and connected into the existing ductwork of the main processing building housing the dryer and meal equipment. The ensiled fish cooking bowls will be connected directly to the odour abatement system as a more effective and efficient means of removing and treating odours produced from the ensiled fish rendering process.

The principal odours contained within the air stream from processing consist of amines and ammonia and the wet scrubber has a sulphuric acid dosing system based upon 20ppm concentration of ammonia. The extraction of the emissions from the ensiled fish heating bowls would be acid of which this gas stream would have some effect of mitigating the ammonia containing air from the raw material reception building and existing processing building.

The existing odour abatement system is specified for a maximum 24,000m<sup>3</sup>/hour based upon a total extraction volume of 21,624m<sup>3</sup>/h. Operational Group who completed the design and installation of the existing odour abatement plant and extraction system have been contacted to provide advice on balancing the existing extraction system so that extraction rates can accommodate the part section of the new building and the direct emissions from the heated mixing bowls. Whiteshore Cockles will be able to provide more detailed information for odour control as the variation application is determined.

#### 14.0 **Noise**

The proposed ensiling process and associated equipment will be accommodated inside the new extended process building. The process building structure will provide noise attenuation for the ensiling equipment and it is not anticipated that this equipment is any noisier than existing equipment such as the dryer, decanter and meal cooling/handling etc. Similarly, the additional boiler will be located inside the new building and would not be expected to be an issue in respect to noise emissions.

The tanker deliveries of ensiled fish would be pumped directly into the ensiled fish storage tanks. The tanker delivery takes about 15 minutes. It is anticipated that there would be a maximum of two tanker deliveries of ensiled fish per day, however on some days only non-ensiled fish mortars will be received at the facility upon which these will be tipped by the usual method of a skip lorry into the raw material reception building.

It is not anticipated that the delivery of ensiled fish mortars which would require offloading from a tanker by an onboard pump for a 15-minute duration would cause a noise impact issue given the nearest sensitive receptor is located 800m away from the installation.

### 15.0 Environmental risk assessment

An environmental risk assessment has been completed for the receipt, storage and processing of ensiled fish morts and the introduction of an ensiling fish process at the Whiteshore facility.

Hazard	Receptor	Pathway	Risk management technique	Probability of exposure	Consequence	Risk
Odour	Residential dwellings located 800m away	Airborne	<p>Ensiled morts received in sealed tanker. Pumped to ensiled fish storage tanks which are back vented to an activated carbon unit for odour control</p> <p>Ensiling process machinery and equipment will be located inside the new building. Section of new building connected to the wet scrubber odour abatement and extraction system.</p> <p>Abatement system maintained and continuously monitored for pump operation and chemical dosing</p> <p>Ensiled fish storage tanks will have high level alarms to prevent over filling and causing an odour incident from spilt fish morts</p> <p>Ensiling mixing tank will be back vented to an activated carbon unit for control of odours during filling with fish morts and formic acid.</p> <p>Non-condensable odours from the dryer are thermally destroyed in the biomass boiler.</p> <p>The heated mixing bowls will have a direct extraction to the wet scrubber to abate any odour emissions.</p>	Would be very low to non-existent as concentration is low and mass emission rate very low for from the storage tanks and from operations in the new building	Nuisance deposition to properties	negligible

Hazard	Receptor	Pathway	Risk management technique	Probability of exposure	Consequence	Risk
Odour (continued)			New building for the ensiling process will be sealed and kept under negative pressure by the extraction to the wet scrubber odour abatement system  Condensate liquor is passed through an activated carbon unit to reduce the odour potential of the liquor.			
visible emissions for example smoke or visible plumes	Residential dwellings located 800m away	Airborne	The installation of a second liquid fuelled boiler would be set up and optimised to prevent any visible emissions.  There would be no visible emissions from the storage tanks or from the offloading process	Would be very low to non-existent.	N/A	N/A
Noise	Residential dwellings located 800m away	Airborne	Tanker deliveries of ensiled fish morts limited to a maximum of 2 deliveries per day. Pumping duration of ensiled morts to storage tanks 15 minutes. New building will house the ensiling processing equipment	Limited expose as the ensiling process equipment is located inside a building which is sealed under a negative pressure with all doors closed at all times. Nearest receptor is located 800m away and noise from tanker delivery pump would not impact receptor due to distance and short duration of 15 minutes	Nuisance deposition to properties	negligible
Pollution of surface water and land	Marine estuary less than 260m away	Surface water	Storage tanks for ensiled fish morts and storage of forming acid tanks and mixing tanks will be contained in a bund. Tanker deliveries of ensiled fish will take place on a bunded surface area between the tank farm and wet scrubber. Base line condition report update for RHS associated with ensiling and ensiled fish deliveries.	Limited as the facility surface is drained to an interceptor	Pollution of ensiled fish morts to marine environment and land	negligible

Hazard	Receptor	Pathway	Risk management technique	Probability of exposure	Consequence	Risk
Accidents and/or abnormal emissions	Surface water, ground, air	Land/ground water and airborne	The tanks have continuous volume monitoring and high-level alarms to prevent over filling. The tanks will be located inside an impermeable bund capable of 110% of tank contents. Road tanker offloading is done on concrete hard surface bunded to the surface drainage system and interceptor.	N/A	Very low risk of emissions reaching receptors	negligible

## 16.0 BAT Assessment

The following documents were reviewed to identify those techniques required for inclusion in the assessment of BAT for the process:

- Reference Document on Best Available Techniques in the Slaughterhouses and Animal By-products Industries May 2005 (SA BREF)

The Best Available Techniques for control of odours, noise and emissions to water and land were completed in the original permit application submitted in 2022. The BAT for storage tank odours is to back vent the tanks to suitable odour abatement equipment or plant together with controls for volume control and filling. Tanks will have high level alarms and be back vented to activated carbon unit for odour control. No other parts of this variation would require assessment as the techniques remain the same for processing of non-ensiled fish mortars. The original BAT assessment for odours is detailed in Appendix 8.

## 17.0 Waste

The installation of the additional storage tanks for ensiled fish and condensate together with processing of ensiled fish at the Whiteshore Cockles facility will not produce any new waste streams associated with the thermal drying process. The by-products from processing ensiled fish (oil, condensate and fish meal) remain the same as processing none ensiled fish mortars. The quantity of fish meal, fish oil and condensate produced will increase as the maximum production capacity is increased from 2 tonnes per hour and 48 tonnes in any 24-hour period to 4 tonnes an hour and 96 tonnes in any 24 -hour period.

The increase quantity of fish meal produced (beyond the capacity needed as fuel of the Sugimat biomass boiler) will be removed from site for use in an aerobic digester. Fish oil will be removed for use in production of biodiesel or if approved by SEPA for use as a fuel for the second liquid fuel steam raising boiler. Additional volumes of condensate will be accommodated by the additional 400,000 litre storage tank and proposed all year round ground deployment.

## 18.0 Emissions to surface water/ground water and land

There will be no emissions to surface water or ground water from the storage and processing of ensiled fish mortars at the installation. The new storage tanks and mixing tanks for ensiled fish and ensiling fish will be contained in a bunded area capable of holding 110% of the tank(s) volume.

There will be no emission to land from the storage and processing of ensiled fish mortars at the installation

## 19.0 Base line condition report

The introduction of the facility to receive ensiled fish morts and also to ensile the morts will introduce and new relevant hazardous substances (RHS) at the installation of formic acid along with the storage of ensiled fish.

The existing permit issued to the facility has a requirement that the baseline condition report submitted with the original permit application should be updated withing 9 months from the issue date of the permit.

Updated Site Condition Report, including a Baseline Report	2.6.16	As required	Within 9 months of the date of permit
--	--------	-------------	---------------------------------------

An intrusive ground investigation has been undertaken of the installation by RPS consultants. The baseline condition report has been updated to incorporate the results of the intrusive site investigation and also the introduction of new RHS associated with the ensiling process. A copy of the updated baseline condition report is detailed in appendix 3.

## 20.0 Habitats and receptors

The North Uist and Islands Ramsar/Special Protection Area (SPA), the North Uist Special Area of Conservation (SAC) and Baleshare and Kirkibost Site of Special Scientific Interest (SSSI) lie approximately 3.5km to the northeast of the site and 1.2km to the southeast on Kirkibost Island.

There will be no impact from the receipt and processing of ensiled fish on habitats and sensitive receptors. The air emissions from the second liquid fuelled steam raising boiler have been screened and assessed using the SCAIL screening model. The results of the screening assessment are given in appendix 7. A summary of the results is that there is no detrimental impact on sensitive habitats or receptors from the operation of the additional boiler burning kerosene fuel.

## 21.0 Management System

The operation of ensiling process, new storage tanks for ensiled fish, along with delivery/offloading procedures and odour management will be incorporated into the sites existing management and maintenance systems and EMS.

## 22.0 Accident prevention and minimisation

The accident prevention and minimisation plan will be updated to incorporate the use and storage of formic acid products used in the ensiling process.

### 23.0 Variation Application Fee

The determination of the application fee for a substantial variation is based upon a percentage of the total of the activity application charge applicable to the activities which are subject of the application.

<https://www.sepa.org.uk/regulations/authorisations-and-permits/charging-schemes/charging-schemes-and-summary-charging-booklets/>

A substantial variation application fee is 70% of the total of the activity application. The activity application for a band 14 Part A process covering a Section 6.8, Part A, paragraph (b): Disposing of or recycling animal carcasses and animal waste at installations with a capacity exceeding 10 tonnes per day and other than by incineration or co-incineration at installations falling within Section 5.1 of this Schedule, at 2025-26 fees and charges is £14,573.

10160	All Others	All Others	All Others	Any other PPC A activity not described elsewhere in this table.	Band 14	£14,573
-------	------------	------------	------------	---	---------	---------

70% of the £14,573 application fee is = **£10,201.10**

An application for a standard variation was submitted to SEPA in May 2024. The application was not duly made and returned due to a number of points which needed to be included in the application, one specifically being the updating of the baseline condition report for RHS (formic acid) associated with ensiled fish. The standard variation at the time did not include an additional building and to install a dedicated ensiling operation at the facility which the operator has now decided to incorporate into the existing fish morts processing operations.

A fee (standard variation at 30% of the activity fee) was paid to SEPA at the 2024-25 fees and charges rates on 29<sup>th</sup> April 2024. This amount paid was **£4257**

A payment remittance for the above amount is shown in appendix 3.

A decision was made not to request the fee be returned but to leave the amount pending a resubmission of the variation application. This application is deemed as a substantial variation and as such commands the 70% proportion of the activity fee.

The difference between the payment made in 2024 and the 70% substantial variation fee is

£14,573 x 70% = £10201.10

**£10,201.10** minus **£4257** = **£5944.10**

A remittance for the difference has been paid to SEPA on 30<sup>th</sup> January 2026 to encompass a substantial variation. Appendix 3 details the payments made to SEPA for the substantial variation application fee.