William Grant & Sons Distillers Limited
Girvan Grain Distillery
PPC/A/1003144/CP01/VAR02

Derogation Assessment for Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), Total Nitrogen (TN) & Total Phosphorous (TP) in Effluent Discharge from the Girvan Grain Distillery

Final outcome of Derogation Assessment	SEPA minded to approve Derogation subject to IED consultation

1. Non-Technical Summary of Determination

Introduction

William Grant & Sons Distillers Limited, the owner and operator of the grain distillery in Girvan, have requested a time limited derogation from the emission levels associated with best available techniques associated emission limits (BAT-AEL) for chemical oxygen demand (COD), total suspended solids (TSS), total nitrogen (TN) and total phosphorous (TP) discharges to the water environment.

This request relates to one of the BAT Conclusions (BATc) for the Food, Drink and Milk sector which form part of the BAT Reference Document (BREF) for this industry sector. The decision document sets out the steps SEPA have followed in assessing the request for derogation.

Derogation Application

An additional period has been requested to progress modifications to processes to allow recovery of extra resource value from the effluent and reduce emissions to BATc standards.

The approach of recovering resource value from the effluent discharge is innovative and, where successful, will support delivery of net zero carbon emission ambitions not only at a site level but also in the wider Scotch whisky industry and society.

SEPA Assessment

The cost benefit analysis (CBA) identified the cost of achieving the BAT AEL's would outweigh the benefit disproportionately when compared with the proposed derogation.

A progressive reduction in emissions is expected during the derogation period as different step changes are implemented. Improved dispersion of effluent will also take place at the existing long sea outfall.

A high level of protection of the environment as a whole should not only be maintained but be enhanced during the derogation period and beyond particularly in relation to a reduction in carbon dioxide emissions to atmosphere and the circular economy.

Conclusion

SEPA is minded to approve a derogation until 04 December 2030 as justified by the available information assessed and the reasons presented.

2. Basic Information

Co-ordinating officer	-
BREF	The Best Available Techniques (BAT) Reference document for the Food, Drink & Milk Industries was published in 2019 (link below) Best Available Techniques (BAT) Reference Document for the Food, Drink and Milk Industries (europa.eu)
BAT Conclusions reference number and date of publication	The Food, Drink & Milk Industries BAT conclusions document was adopted in 12/11/19 & published on 04/12/19 (link below) EUR-Lex - 32019D2031 - EN - EUR-Lex (europa.eu) C/2019/7989/EU, 04/12/2019
BAT Conclusions compliance date	*04/12/23*
Associated derogations at Installation	No

BAT Review Process

The BREF document sets out the techniques and technologies that are considered to be the most effective at reducing emissions for a specific industry. BAT Conclusions, which are the reference for setting permit conditions and therefore include the emission levels associated with the best available techniques (BAT-AEL) are published on roughly eight – ten year cycles, with sites having four years to comply with the requirements, following publication.

Following the publication of BAT Conclusions, SEPA reviews the site's Pollution Prevention and Control permit to determine the Best Available Techniques (BAT) for the site and any necessary changes to deliver

the updated requirements. The review process involves detailed examination of current and proposed operations and the drafting of changes to the conditions of the permit.

In the event that achievement of the BAT-AEL would lead to disproportionately higher costs compared to the environmental benefits due to the geographical location, local environmental conditions or technical characteristics of the site, derogation from the BAT-AEL can be requested. This requires significant discussion and agreement from SEPA that it is an acceptable route. There are strict legal tests that must be passed for a derogation to be acceptable. These are all detailed below, with the primary tests being no Environmental Quality Standards (EQS) are being breached and the environment is protected.

In order to demonstrate disproportionate cost, a Cost Benefit Analysis (CBA) is completed, using a Spreadsheet tool developed by the UK Environmental Regulators. This is freely available on the Gov.UK website.

If the costs exceed environmental benefits then SEPA will assess the request for derogation at a Technical Oversight Panel to ensure that a consistent and rigorous assessment process is applied. The draft decision document and relevant section of the proposed permit will be placed on SEPA's website for 28 days for public comment. These comments are then reviewed and taken into account before a decision is taken on the permit variation.

William Grant & Sons Distillers Ltd Permit Review

SEPA have been reviewing the entire Pollution Prevention and Control permit held by William Grant & Sons Distillers Ltd for the Girvan site against the BAT Conclusions. Activities covered within the scope of the PPC Part A Permit include the manufacture of grain whisky by William Grant & Sons Distillers Ltd and the anaerobic digestion (AD) of distillery co products at two AD plants (Seaside & Ladywell) carried out by Grissan Carrick Ltd. A derogation has been requested from the requirements of one of the applicable BAT Conclusions.

William Grant & Sons Distillers Ltd and Grissan Carrick Ltd have a track record of investing in the site to innovate and recover resource value from the effluent stream. This work has delivered tangible circular economy and low carbon outcomes that have contributed to a high level of protection of the environment as a whole which are described in more detail in other parts of this document.

The permit review will include first time emission limit values for certain water emissions, reduced Emission Limit Values (ELVs) for other water emissions together with improved data gathering and reporting measures.

3. Derogation Description

Derogation Request from BAT 12 AEL's

BAT 12, Table 1, specifies four BAT AEL's for direct emissions to water for effluent discharges. The BAT AEL's are described in the table below along with a comparison of current effluent discharge performance against these standards.

Table 1 – Comparison of Current Effluent Performance vs BAT 12 AEL's

Parameter	BAT AEL (daily average) in mg/l	95%ile (daily average in mg/l)	99%ile (daily average in mg/l)
COD	25 – 100	10,400	10,800
TSS	4 – 50	6100	6500
TN	2 – 20	1350	1750
TP	0.2 – 2	200	210

Short Description

Operator Proposals

The operator has requested an 8 year derogation from all four of the BAT 12 AEL's until 04/12/31. The request has been made to allow sufficient time to complete the development & implementation of solutions for recovery of resource value from the effluent together with any necessary effluent treatment to meet the BAT AEL standards.

Key milestones , as proposed by the operator, within the 8 year derogation period are described below.

2024

- Net reduction in COD & TSS emissions through installation & operation of 2 new anaerobic digestion reactors and 2 new filter presses. Generation of additional biogas to the gas grid and additional digestate to displace virgin peat from the horticultural market.

2025/26

- Operation of Girvan South expansion. Modification to distillation process will be an enabling step to verify improved ability to break down feedstocks & progress feasibility of recovering TN & TP from the effluent for use as a fertiliser. Where successful modifications will be extended to the existing distillation process.

- Control of COD & TSS emissions through introduction of 2 additional anaerobic digestion reactors & screw presses. Generation of additional biogas to the gas grid and additional digestate to displace virgin peat from the horticultural market.

- Operation of a second effluent long sea outfall that will take effluent from the expansion as well as a proportion of effluent currently discharging down the existing long sea outfall. Improved dispersion of effluent should occur at the existing outfall.

2027/28

- Existing distillery processes to be altered to send spent wash feedstocks directly to the most modern anaerobic digestion plant on site (Ladywell). Associated installation of 6 new anaerobic digestion reactors with filter presses & cessation of 4 older generation anaerobic digestion

basins (Seaside). All effluent from anaerobic digestion to be discharged down the second effluent long sea outfall.

- Further improved dilution at existing effluent long sea outfall with the scheduled cessation of the effluent component from the anaerobic digestion processes.

- Anticipated net reduction in COD & TSS through installation of new anaerobic digestion reactors and filter presses at Ladywell and cessation in operation of anaerobic digester basins at Seaside.

- Enabling step to allow opportunity for better recovery of TN & TP from the effluent when market conditions allow.

2028

- Review of effluent quality post improvement work against the BAT AEL standards to determine gaps & identify any further work necessary to deliver compliance.

2029/30

- If further reductions in pollutant concentrations are required from the distillery component of the effluent then a suitable wastewater treatment system will be designed and installed to meet the BAT AEL requirements. This will potentially involve using the footprint currently occupied by the anaerobic digestion basins at the Seaside part of the site.

- Providing market conditions are suitable effluent from the anaerobic digestion plant to be subject to ultrafiltration membrane and reverse osmosis treatment to create an N & P fertiliser.

2030 - 2031

- Ongoing monitoring to confirm compliance with BAT AEL standards will be carried out during 2030 - 2031.

There are ongoing discussions regarding the potential for the existing permit to be split to enable Grissan to hold a separate permit or alternative authorisation relating to the operation of the AD plant. Should this happen regulatory requirements including any derogations will be reassessed.

Strategy for Controlling Discharge of the 4 BAT AEL Pollutants During the Derogation Period

COD

- There is no current limit in the Permit for COD.

- SEPA has undertaken statistical analysis of COD monitoring data gathered by the company to generate 95 & 99%ile values that reflect current performance capabilities. The output of this analysis has been used to inform interim 95%ile lower (10,400mg/l) & 99%ile upper (10,800mg/l) tier daily average concentration limits for COD. These will act as interim effluent limits until the expiry of the derogation. After this, the BAT AEL concentration limit of 100mg/l will apply.

- COD emissions will be mainly controlled through operation of existing AD reactors, installation of new AD reactors (2024,2025 & 2027/28) and all anaerobic digestion activity being transferred to the Ladywell part of the site (2027/28).

- COD effluent performance will be reviewed following the installation of new AD reactors. Where reductions in COD emissions are delivered by these changes in infrastructure the

interim effluent limits will be reviewed to determine if they can be reduced to reflect improved effluent performance capabilities.

Total Suspended Solids (TSS)

- The Permit currently contains a daily loading limit of 70t/day for TSS which is being reduced to 65t/day under the Permit Review to reflect current effluent performance capabilities. An annual average daily loading limit of 50t/day for TSS is being retained to reflect current effluent performance capabilities and to avoid any slippage.

- SEPA has undertaken statistical analysis of TSS monitoring data gathered by the company to generate 95 & 99%ile values that reflect current performance capabilities. The output of this analysis has been used to inform interim 95%ile lower (6100mg/l) & 99%ile upper (6500mg/l) tier daily average concentration limits. These will act as interim effluent concentration limits until the expiry of the derogation. After this, the BAT AEL concentration limit of 50mg/l will apply.

- Currently TSS emissions in the effluent are mainly controlled through the operation of existing anaerobic digestion reactors & associated filter presses.

- During the derogation period TSS emissions are anticipated to reduce as new filter presses are introduced (2024,2025/26 & 2027/28) and all anaerobic digestion activity is transferred to the Ladywell part of the site (2027/28).

- TSS effluent performance will be reviewed following implementation of the changes described above. Where reductions in TSS emissions are delivered the interim effluent limits will be reviewed to determine if they can be reduced to reflect improved effluent performance capabilities.

Total Nitrogen (TN)

- There are currently no limits in the Permit for TN.

- SEPA has undertaken statistical analysis of TN monitoring data gathered by the company to generate 95 & 99%ile values that reflect current performance capabilities. The output of this analysis has been used to inform interim 95%ile lower (1350mg/l) & 99%ile upper (1750mg/l) tier daily average concentration limits. These will apply as interim effluent limits until the end of the derogation period. After this, the BAT AEL concentration limit of 20mg/l will apply.

- During the derogation period modifications to the distillation & distillery processes (2025-2028) will make it easier to break down feedstocks in the anaerobic digestion processes. It is anticipated this will set up the opportunity for better TN recovery with potential, providing that market conditions are suitable, for treatment by ultrafiltration membrane and reverse osmosis technology to create a fertiliser (2029/30) with a resultant reduction in TN in the effluent discharge.

- TN effluent performance will be reviewed following implementation of the changes described above. Where reductions in TN emissions are delivered the interim effluent limits will be reviewed to determine if they can be reduced to reflect improved effluent performance capabilities.

Ammoniacal Nitrogen (As N)

- Although there is no BAT AEL for ammoniacal nitrogen (as N) the Permit does currently contain effluent loading limits for this parameter of 9.36t/day as a daily average & an annual average value of 7.92t/day.
- Loading limits are being retained for this parameter as these are most appropriate for ensuring delivery of compliance with the annual average EQS for unionised ammonia.
- As a result of the Permit Review these existing limits are being reduced to figures of 9t/day and 7.5 t/day respectively to better reflect current performance capabilities.

Total Phosphorous (TP)

- There are currently no limits in the Permit for TP.
- SEPA has undertaken statistical analysis of Orthophosphate (OP) monitoring data gathered by the company to generate 95 & 99%ile values that reflect current performance capabilities. The output of this analysis has been used to inform interim 95%ile lower (200mg/l) & 99%ile upper (210mg/l) tier daily average concentration limits.. These standards will apply as interim effluent limits until the end of the derogation period. After this, the BAT AEL concentration limit of 2mg/l will apply.
- During the derogation period modifications to the distillation & distillery processes (2025-2028) will make it easier to break down feedstocks in the anaerobic digestion processes. It is anticipated this will set up the opportunity for better TP recovery with potential, providing that market conditions are suitable, for treatment by ultrafiltration membrane and reverse osmosis technology to create a fertiliser (2029/30) with a resultant reduction in TP in the effluent discharge.
- TP effluent performance will be reviewed following implementation of the changes described above. Where reductions in TP emissions are delivered the interim effluent limits will be reviewed to determine if they can be reduced to reflect improved effluent performance capabilities.

Duration of Derogation

The operator has requested a derogation for a period of 8 years until 04/12/31 after which full compliance with the BAT AEL's for the 4 pollutants will be required.

4. BAT Assessment

Is the proposed derogation BAT?

The majority of the effluent loading arises from two different anaerobic digestion (AD) facilities on site (Seaside & Ladywell) which use by products from the distillery as their main feedstock.

The AD plant at both Seaside & Ladywell represent a BATc recognised technique for secondary effluent treatment & deliver COD reduction. BAT 12 requires an appropriate combination of techniques to be used to reduce emissions to water.

The Ladywell AD plant uses a combination of filter presses and decanters for suspended solids removal in the form of digestate which is predominantly taken off site and used to displace virgin peat in the horticulture market.

The current techniques available on site have been optimised as far as possible with respect to removal of the four BAT AEL pollutants.

During the first half of 2024 two new AD reactors & two new filter presses are being brought into operation at the Ladywell AD plant. It is anticipated these changes will deliver further reductions in COD & TSS emissions. The changes will also result in additional biogas generation for export to the gas grid and first-time recovery of carbon dioxide (CO2) emissions to atmosphere. Additional digestate will be recovered for use as a replacement to virgin peat in the horticultural industry.

The measures proposed for implementation during the derogation period should not only result in a reduction in emissions to the water environment of the 4 BATc pollutants but, through acquiring resource value from the effluent, will also support delivery of decarbonisation at site , scotch whisky industry and wider society levels. Additional circular economy benefits will also arise through the use of digestate to displace virgin peat in horticulture and a compressed natural gas ultra low carbon fuel to displace fossil fuel derived diesel in heavy road vehicles.

A review of effluent monitoring data supplied by the Operator has resulted in the setting of interim effluent limits for TSS, COD, TN & TP to reflect current performance capabilities. These interim limits are described in Section 3 above.

5. Legal requirements

Environmental Quality Standards (EQS)

TSS, COD, TP & TN

There are no marine EQS standards for TSS, COD, TP & TN.

Annual Average EQS for Unionised Ammonia

Although there is no BAT AEL for unionised ammonia this parameter can be regarded as a sub set of TN. Any reduction in TN will have a corresponding reduction in unionised ammonia.

There is an annual average marine EQS for unionised ammonia (as N) which is 0.021mg/l.

Unionised ammonia concentrations are not measured directly but are derived from a measured ammoniacal nitrogen value which then has corrections applied for pH, salinity & sea temperature. SEPA's Marine Chemistry team advise that pH is the parameter which most influences the derived value for unionised ammonia and that this parameter as well as sea temperature may be subject to seasonal variation.

Due to a limited data set SEPA's Marine Chemistry team consider it is not currently possible to assess compliance with the annual average unionised ammonia EQS in the vicinity of the outfall. Year round data is being gathered by the Operator to enhance the available data set and remove uncertainties with respect to the seasonal variability in pH & sea temperature at this location. The operator is scheduled to complete this work in July 2024. The current uncertainty neither supports nor opposes the derogation request.

An existing Permit condition requires that the existing effluent long sea outfall be extended to improve effluent dispersion by 30 June 2025.

Improved dispersion of effluent from the existing outfall is also due to take place during 2025 and 2028 as significant proportions of effluent are redirected to a new second effluent outfall.

Mandatory Emission Limit Values

The mandatory minimum emission limit values in Annex V, VI, VII or VIII of the IED do not apply to this release.

No Significant Pollution/High Level of Environmental Protection

Background

A long sea outfall discharges effluent from the distillery and anaerobic digestion processes into the Firth of Clyde at a distance 700m out from the shore. The receiving waters are known as the Girvan waterbody for Water Framework Directive (WFD) classification purposes.

The Girvan water body (ID:200015) is in the Scottish river basin district & is 134.4km2 in area.

The overall status of the Girvan water body is Good for WFD classification purposes.

The effluent discharge from the grain distillery has not been identified as a pressure to the classification of this water body.

The site is compliant with current limits on total suspended solids & ammonia in the effluent discharge.

No Significant Pollution (Benthic Study of Seabed)

The most recent benthic survey of the seabed conducted in September 2022 found 4 sample stations between the edge of the 100m mixing zone & 170m from the outfall to be of Moderate biological status while all the other 11 sample stations outwith the mixing zone were found to be either Good or High status. SEPA's assessment of this survey is that the current effluent discharge is not causing significant biological pollution of the seabed.

In the first half of 2024 two new anaerobic digestion reactors & two new filter presses are to be brought into operation at the Ladywell part of the site. These changes are expected to result in a net reduction in TSS emissions to the marine environment.

An existing Permit condition requires that the existing effluent long sea outfall be extended to improve effluent dispersion by 30 June 2025.

Significant improved dispersion of effluent from the existing outfall is also due to take place during 2025 and 2028 as the proportions of effluent from the anaerobic digestion plant are due to be redirected to a new second effluent outfall.

The effects on the seabed of reducing TSS loading at source & improving effluent dispersion will continue to be verified via biannual monitoring.

No Significant Pollution (unionised ammonia EQS)

Due to a limited data set SEPA's Marine Chemistry team consider it is not currently possible to assess compliance with the annual average unionised ammonia EQS in the vicinity of the outfall.

Year round data is being gathered by the Operator to enhance the available data set and remove uncertainties with respect to the seasonal variability in pH & sea temperature at this location.

The operator is scheduled to complete this work in July 2024. The current uncertainty neither supports nor opposes the derogation request.

An existing Permit condition requires that the existing effluent long sea outfall be extended to improve effluent dispersion by 30 June 2025.

Significant improved dispersion of effluent from the existing outfall is also due to take place during 2025 and 2028 as proportions of effluent associated with the two anaerobic digestion plants at Ladywell and Seaside are due to be redirected to a new second effluent outfall.

High Level of Protection of the Environment as a Whole

Significant investment in AD technology and the associated recovery of resource value from the effluent provides evidence of a track record in delivery of tangible positive circular economy and low carbon outcomes. Such outcomes result in a high level of protection of the environment as a whole as described below.

- Significant reduction in COD loading in the effluent discharge.
- Generation of biomethane to the Scottish Gas Network has enabled energy self sufficiency on site and the decarbonisation of direct distilling operations and wider supply chains. This action delivers an important reduction in CO2 emissions for the company & wider society.
- The injection of electricity into the grid from the biogas fuelled combined heat & power plant creates a low carbon source of energy for use by wider society.
- Since commencing anaerobic digestion activities at Girvan in 2015 significant quantities of biomethane have been injected into the Scottish Gas Network and electricity exported to the grid. These measures have resulted in the abatement of significant quantities of CO2.
- The generation and use of compressed natural gas ultra low carbon fuel (ULCF) is beginning to displace fossil fuel derived diesel as a fuel in heavy road vehicles.
- Digestate is used as a sustainable soil conditioner by farmers thus displacing the use of artificially manufactured carbon intensive fossil NPK fertiliser.
- Digestate is also used as a direct replacement for virgin peat in the horticulture market. This action acts to protect an important sink of CO2.
- In the first half of 2024 the first bio-CO2 recovery and liquefaction plant is being commissioned which will provide food grade CO2 for supply into the UK's food and drink industry.
- The AD plant technology developed at Girvan has been used as a template for rolling out similar initiatives and circular economy / low carbon benefits for the Scotch whisky industry in other geographical locations.

6. Derogation Justification

Derogation Criteria: Technical characteristics

Technical Characteristics of the Installation Which Justify Derogation

The company have identified the following 3 technical characteristics which act as a justification to support a derogation request under Article 15(4) of the IED.

1) atypical cross media impacts would arise whereby reducing the emissions of one pollutant increase the emissions of another :-

   The company estimate that the installation of a traditional high energy effluent treatment plant to reduce COD, TSS, TP & TN to meet the BAT AEL's would result in 10,000t of carbon dioxide emissions to atmosphere and undermine initiatives which already make significant reductions in this area.

2) the configuration of the plant within the site results in practical difficulties and increased costs, including lack of space for the construction of additional plant;

   The company estimate that approximately 20Ha of additional land would have to be purchased to install & operate a traditional effluent treatment plant of the type required to achieve BAT AEL compliance. Conversely a sufficient area is available on site to progress solutions to recover resource value from the effluent. In addition the planned relocation of feedstocks from the Seaside AD plant to the Ladywell AD plant in 2027/28 will open the possibility of repurposing the footprint currently occupied by the Seaside AD plant area into the provision of any further required treatment of the distillery effluent in 2029/30.

3) the history of recent investment in techniques designed to reduce emissions :-

   The company have presented figures to show the extent invested on site to deliver the existing anaerobic digestion technology and associated infrastructure to treat the effluent and recover resource value that has resulted in tangible circular economy and low carbon outcomes.

Additional Factors

Grain distilling is not a specific named sectoral activity within the BAT conclusions but falls within scope due to being an activity that falls within the general food and drink descriptor.

The company have a proven track record of delivering innovative circular economy and low carbon solutions through their recovery of resource value from anaerobic digestion technology (see previous section). These solutions have been rolled out to other parts of the Scotch whisky sector where they are delivering benefit in different geographical areas.

The company and site are not only innovative in their ambition to gather further resource value from the effluent but also have evident financial and technical commitment in place to support the successful delivery of this outcome.

7. Judgement on the balance of environmental benefits and disproportionate costs

Version of tool: CBA/QDAT – Hybrid Used

Due to the derogation application relating to water, limited data is available for damage costs. As such we have taken a hybrid approach of a Qualitative assessment, with use of the CBA tool to illustrate the costs and benefits to water. Additionally, most of the benefits of allowing the derogation will not be captured by the CBA as they relate to wider circular economy & low carbon goals which require a qualitative assessment.

The annual emission reductions have not been quantified as water damage costs do not exist for these substances. A damage cost was calculated using WFD classifications instead which is considered to be a conservative approach as it encompasses the entire 134km2 water body.

The latest CBA Spreadsheet was downloaded from the UK.Gov Website.

Version 6.23, as updated on 04 October 2021.

In the interests of time SEPA carried out the CBA using data specifically requested from the applicant.

Overview of Assessment

Three scenarios were entered into the tool:

1. Business as Usual – current situation. No actual costs were entered for this in the CBA Tool as the aim is to show the difference for the BAT AEL option. The existing costs are not expected to change under any of the scenarios.
2. Proposed derogation – primarily qualitative as costs and benefits are not available.
3. BAT AEL – the costs of constructing a new effluent treatment plant and operating it for 25 years to meet the BAT AEL discharge requirements.

Data input - General

- WAC of Capital set at 7.5% (Low 5% and High10%), based on comparable derogation assessments.
- Duration of improvements was set at industry standard of 25 years for investment decisions.
- For water damage costs, an additional line was added to the Damage Costs part of the spreadsheet for an annual cost of £13.4 million net present value.
- This figure was derived from the theoretical cost of moving from moderate to good for the Girvan waterbody (current water body status is Good). Figures are derived from SEPA published water benefit costs multiplied by the area (134.4 km^2), giving £100,000 x 134.4 = £13,400,000.

Note: These figures are available in the water benefit costs spreadsheet hyperlinked in WAT-RM-41

Data input - Options

1. Business as Usual – current situation. This incurred no additional costs in the CBA tool and so no figure is given. Run for the proposed 8 years of the derogation.
2. Proposed derogation – primarily qualitative as costs and benefits are not available. Therefore, no figure was given by the CBA tool. Run for the proposed 8 years of the derogation.

3. BAT AEL – Information was provided by the applicant for the expected construction and running costs over 25 years of a new effluent treatment plant. This was given with an accuracy of +/- 15%.

Sensitivity Test (CBA)

The CBA Tool automatically carries out a sensitivity analysis on the key variables and underlying Net Present Value (NPV) costs and benefits.

CBA Output (Water Environment Only)

The results indicate that the costs of achieving the BAT AEL's over the proposed derogation would exceed the benefits (defined as a one step up change in Water Framework Directive classification) to the water environment by a net present value of £340 million.

Sensitivity tests give a range of £288.6 million to £503.2 million.

Balancing Test (Qualitative)

Environmental Benefits	**Costs of achieving BAT-AELs**
Summary of the benefits the proposed derogation would provide	Summary of the costs of the proposed derogation
Effects on health and safety (emission to water only) None identified.	The applicant will invest heavily in :- • Anaerobic digestion technology • Digestate recovery & creation of a substitute for virgin peat • Gas and electrical generation and provision to the grid. • Decarbonising NPK fertiliser manufacture Ultimately these measures will not only allow resource value to be gained from the effluent but also generate a much improved final effluent quality.
Effects on recreation (emission to water only). None identified.	
Effects on visual amenity and landscapes (emission to water only) Positive as a new effluent plant will not be built.	
Effects on climate change Positive as an estimated 10,000t of CO2 are avoided by not constructing and operating a conventional effluent treatment plant. In addition the proposed circular economy model reduces green house gas emissions through :- generation of additional biogas to displace fossil fuel energy sources for both local and wider benefit; use of digestate to displace virgin peat in horticultural markets and potential for decarbonisation of NPK fertiliser manufacture.	
Effects on biodiversity Positive as new construction on greenfield site is avoided. Neutral in the interim for the water environment as current WFD water quality is Good status. Impacts on biodiversity in the water environment have been assessed as very low importance and the scale of the impact on the receiving water is negligible. In terms of environmental improvement, the discharge is not currently having an impact on the classification of the receiving water body.	
Effects on Health (emission to air only) N/A	

Senior Policy Officer (Water Resources) Report on CBA
SEPAs environmental benefit values (water damage costs) have been used to determine the cost benefit assessment. These values were developed from the National Water Environment Benefits Survey which is referenced in the Government Green Book Annex A as an option for assessing the quality of water in the environment. These values have been used by SEPA in the past and were recently published following a public consultation. The CBA identified the cost of achieving the BAT AELs would outweigh the benefit disproportionately when compared with the proposed derogation.
Overall Judgement (Qualitative)
There is a disproportionate cost in delivering the BAT AEL's compared to the benefits. The planned improvements will deliver genuine benefits to the environment as a whole, particularly in relation to reductions in carbon dioxide emissions to atmosphere & the circular economy.

8. Derogation Assessment

Permitting officers minded to position

I am minded to accept the derogation request for a period of 7 years as opposed to the 8 year period requested for the reasons set out below.

- The current effluent treatment technology has been optimised as far as possible.
- The environmental impact of the derogated limits were assessed and considered not significant and acceptable.
- An overall high level of protection of the environment is in place.
- The derogation request meets the technical characteristic criterion namely :- atypical cross media impacts, limited availability of space on site & history of recent investment.
- An appropriate range of options were reviewed and those identified as technically viable were considered further.
- Viable options were taken forward for CBA/QDAT, were adequately described in the CBA and the cost of complying with the BAT-AEL's by 04 December 2023 via new effluent treatment plant was confirmed as disproportionate compared to the environmental benefits.
- The measures proposed under the derogation will allow additional resource value to be gained from the effluent which will not only contribute to a reduction in carbon dioxide emissions to air and emissions to water but also enable significant circular economy and low carbon outcomes to be delivered at site, sector & wider society levels.
- Improvement conditions will be inserted in the Permit to track delivery of the company's progress with their strategy to reduce emissions to the water environment of the 4 pollutants to BAT AEL standards.

- The operator must justify any derogation request with detailed plans to bring operations to within the BAT AEL range within an appropriate timescale. Although the operator has requested a derogation period of 8 years the information provided indicates implementation of the proposed measures will be completed within 7 years. In accordance with SEPA policy the derogation is to be time limited for a period of 7 years until 04 December 2030.

Overview of site and installation

At the site on the outskirts of Girvan, William Grant & Sons carry out the distillation of grain and malt whisky as well as gin. The majority of co products from the distillation processes are used by Grissan Carrick Ltd as feedstock for two anaerobic digestion plants which they operate at the Seaside & Ladywell parts of the site.

Permitting Officers assessment of the derogation request

Validity of the derogation request

- The Operator has addressed all reasonable options for achieving the BAT-AEL.
- See Section 7 for full details.
- The operator has referred to the BAT Conclusions and addressed all reasonable options for achieving the BAT AEL.

Option name	Short description of the option	Emission limit that would be achieved	Timescales for completion	Option taken forward to the CBA
Business as Usual – current situation.	No change	Current permit limits	Already in place	Yes
Proposed derogation – primarily qualitative as costs and benefits are not available.	Variety of measures to deliver circular economy & low carbon outcomes. See Sections 1 & 3 For full details	Current but with BAT AEL's from 04/12/31	04/12/31	Yes
BATAEL – the costs of constructing a new effluent treatment plant and operating it for 25 years to meet the BATAEL discharge requirements.	Install & operate a new effluent treatment plant by 04/12/23	BAT AEL's	04/12/23	Yes

- The Operator provided SEPA with the necessary cost data which allowed SEPA to undertake the cost / benefit analysis.

Demonstrating disproportionality of costs and benefits

- SEPA using cost data provided by the operator has satisfactorily demonstrated that the stated criterion would result in increased costs of achieving the BAT-AEL compared to the environmental benefits.
- The outcome of the Cost Benefit Analysis review is that it supports the derogation request.

Summary

- The operator has provided a credible argument that the increased costs linked to the technical characteristics are disproportionate for achieving the BAT-AEL compared to the environmental benefits.

Risks of allowing derogation

- Allowing the proposed derogation would not cause significant pollution and will promote achievement of a high level of protection of the environment as a whole.
- The operators proposals mean that full compliance with the BAT 12 AEL's will be delayed with incremental reductions in emissions to the water environment being made in the interim.
- The proposed approach for delivering a reduction in emissions to water will allow resource value to be gained from the effluent that will support circular economy & net zero carbon ambitions.

Final Considerations

- Protection of local water quality during the derogation will be delivered by the setting of interim effluent limits, a phased reduction in emissions at source and improved effluent dispersion.
- Support of the derogation will enable the company to extract additional resource value from the effluent which has the potential to deliver significant circular economy and low carbon solutions that have the capability to support net zero carbon ambitions at site, sector and wider society levels.
- The company is extremely dynamic to market forces and in creating business opportunities.
- A proven track record is in place for delivering innovative solutions to recover resource value from the anaerobic digestion effluent treatment processes that already benefit the site, the Scotch whisky sector and wider society.
- The company have significant resources and commitment in place to support the successful delivery of the changes which are proposed..

- The company is a major employer in the area and across the Scotch whisky industry.
- The site, company and sector are expanding.
- The company is a key player in delivering low carbon distillation for the sector.
- The effluent treatment techniques the company are seeking to use are not unique in themselves however the way in which they wish to use these techniques to recover resource value is novel to the sector and other industries. SEPA has a duty under Regulation 5(2) to encourage the development and application of emerging techniques.
- Intrinsic to the consideration of this request for derogation is the qualitative balancing test which considers the environmental benefits (including effects on climate change) against the costs of achieving the BAT-AELs. SEPA has considered the positive reductions in greenhouse gas emissions that the derogation will provide and the CO2 emissions that will be avoided by not constructing and operating an effluent treatment plant. It was concluded that the grant of the derogation supported SEPA's climate change duties without having to balance these against our permitting considerations. We support businesses in exploring new techniques that will contribute to Scotland's net zero goals, whilst also ensuring that the environment is protected and improved. In exercising our permitting functions under the PPC Regulations, in particular to ensure that the derogation meets the requirements of Regulation 25(14) taking account of the general principles under Regulation 21, and in deciding to grant the derogation, we have acted in the best way calculated to mitigate, and to adapt to, climate change in accordance with our climate change duties under Part 4 of the Climate Change (Scotland) Act 2009.

9. Text for inclusion in the permit

Permit Conditions

SEPA consenting policy for complex effluent discharges such as this is to set two tier limits as 95% and 99%ile values. On that basis the existing Table 4.5 (Emissions to Water Environment ELV's) has been modified to include interim two tier composite daily average limits for TSS, COD, TN & TP. These two tier limits will apply during the derogation period after which single value daily average BAT AEL limits will come into effect which will need to be met 100% of the time. The planned changes are described in the table below.

Parameter	BAT-AEL[1] (daily average in mg/l)	Derogated ELV Lower Tier (95%ile) (daily average in mg/l)	Derogated ELV Upper Tier (99%ile) (daily average in mg/l)
Total suspended solids (TSS)	50**	6100*	6500*
Chemical oxygen demand (COD)	100**	10400*	10,800*
Total nitrogen (TN)	20**	1350*	1750*
Total phosphorous (TP)	2**	200*	210*

* Until 04/12/30

** From 04/12/30

Note the BAT conclusions specifies a range for each parameter. The proposed limits represent the top of the range. Once compliance is achieved it may be that an ELV can be set below the top of the range.

In addition the following new conditions have been inserted to track progress with planned changes during the derogation period to provide reassurance that the strategy will deliver compliance with the BAT AEL's.

Condition 4.6.22
By 30 November each year the Operator shall provide a progress report including but not limited to :-

- The outcome of the previous 12 months work at the Midi plant.
- A review of effluent monitoring data gathered for TSS, COD, TN & TP over the previous 12 months in accordance with Condition 4.2.5 and compare performance against the ELV's for TSS, COD, TP & TN in Table 4.5 that will apply from date of derogation expiry on 04 December 2030..
- Overall progress made in the previous 12 months in the implementation of techniques to reduce emissions to water of TSS, COD, TN & TP to achieve compliance with the ELV's for those parameters in Table 4.5 that apply from date of derogation expiry on 04 December 2030.
- Intended plans for reducing emissions to water of TSS, COD, TN & TP over the following 12 month period.

Condition 4.6.23
By 31 December 2026 the Operator shall provide timebound plans for processing all spent wash at the Ladywell anaerobic digestion plant.

Condition 4.6.24
By 31 December 2027 the Operator shall submit a review detailing the outcome of work to modify the distilling process for Girvan North to enable easier processability of feedstock and recovery of nutrients from effluent for use as a fertiliser.

Condition 4.6.25
By 31 December 2028 the Operator shall submit a review of effluent monitoring data for the previous 12 months and compare performance against the ELV's for TSS, COD, TP & TN in Table 4.5 that will apply from date of derogation expiry on 04 December 2030. Where gaps exist a fully costed and timebound plan shall be provided detailing any further measures which are necessary to ensure compliance with those ELV's by 04 December 2030.

Installation specific derogation annex

X.1 The Regulation

Regulation 25(6) of the Regulations provides that SEPA must include emission limit values that ensure that emissions do not exceed the levels associated with the best available techniques (BAT-AEL) laid down in the BAT Conclusions.

Regulation 25(12) of the Regulations states:

"SEPA may set a less strict emission limit value... for an installation if –
(a) an assessment shows that achievement of the emission levels associated with the best available techniques as described in any BAT Conclusions would lead to disproportionately higher costs compared to environmental benefits due to the –
i) the geographical location or local environmental conditions of the installation, or
ii) technical characteristics of the installation, ..."

Regulation 25(2)(c) provides that where a less strict value is set ("derogation"); it is a requirement that "the permit specifies the reasons for setting the value, including the result of the assessment and the justification for the conditions imposed". The purpose of this Appendix is to satisfy those requirements.

X.2 The Derogation Used

SEPA has decided to set ELV's that derogate from the BAT-AEL range in the BAT Conclusions in respect of total suspended solids (TSS), chemical oxygen demand (COD), total nitrogen (TN) & total phosphorous (TP).

Parameter	BAT-AEL[1] (daily average in mg/l)	Derogated ELV Lower Tier (95%ile) (daily average in mg/l)	Derogated ELV Upper Tier (99%ile) (daily average in mg/l)
Total suspended solids (TSS)	50**	6100*	6500*
Chemical oxygen demand (COD)	100**	10400*	10,800*
Total nitrogen (TN)	20**	1350*	1750*
Total phosphorous (TP)	2**	200*	210*

[1] *BAT-AEL as specified in Table 1 to the Food, Drink & Milk Industries BAT Conclusions*

* Until 04/12/30

** From 04/12/30

X.3 Basis for the Derogation

SEPA has set this emission limit value on the grounds that achievement of emissions within the BAT-AEL range would lead to disproportionately higher costs compared to environmental benefits due to the technical characteristics of the installation:

The technical characteristics of the installation mean that achievement of total suspended solids, chemical oxygen demand, total phosphorous & total nitrogen emissions within the BAT-AEL range would lead to disproportionately higher costs due to the need to:

i) atypical cross media impacts would arise whereby reducing the emissions of one pollutant increase the emissions of another;

ii) the configuration of the plant within the site results in practical difficulties and increased costs, including lack of space for the construction of additional plant;

iii) the history of recent investment in techniques designed to reduce emissions,

A Cost Benefit Analysis conducted by SEPA based on applicant data gave the result that achievement of emissions for total suspended solids, chemical oxygen demand, total phosphorous & total nitrogen within the BAT-AEL range would lead to disproportionately higher costs for the reasons given above.

X.4 Justification for the Conditions Imposed

SEPA has included two tier composite ELV's for total suspended solids (CL of 6100 mg/l & CU of 6500mg/l), chemical oxygen demand (CL of 10,400mg/l & CU of 10,800mg/l), total nitrogen (CL of 1350mg/l & CU of 1750mg/l) & total phosphorous (CL of 200mg/l & CU of 210mg/l) on the grounds that SEPA considers it :-

- represents current BAT for the installation;
- Reflects current plant operating capabilities;
- Ensures no significant pollution of the environment will be caused and that a high level of protection of the environment as a whole will be achieved; and
- The derogation is time limited until 04 December 2030.There is projected to be a phased reduction in emissions to water during the period of the derogation.

10.Conclusions

Overall Conclusion

The operator has demonstrated that the costs of achieving the BAT-AEL by 04 December 2023 are disproportionate to the environmental benefits.

The Scottish Environment Protection Agency has reviewed the derogation request and concluded

that the derogation is the best overall option for the environment.

The Scottish Environment Agency is therefore minded to allow this derogation request for a period until 04 December 2030 subject to the conditions outlined in Section 9.