Arbikie Distillery Green Hydrogen Limited
Arbikie Distillery Green Hydrogen

Permit Application

Application Number PPC/A/5011109

Contents

1 Non-Technical Summary of Determination

Provide a non-technical summary of the process and determination

The Arbikie Distillery Green Hydrogen Project is situated on former agricultural land adjacent to Arbikie Highland Estate Distillery Montrose DD10 9TR Grid Reference 6774 5268 previous land use has consisted of a pasture providing grazing to a small herd of highland cattle as part of a dairy farm.

The current project involves the installation of a small (460 kW) low complexity electrolyser unit for the production of hydrogen for use in the associated and existing distillery This small hydrogen production unit will provide hydrogen to the distillery as part of the Scottish Government's decarbonisation programme for the whisky industry. Currently the distillery's existing boiler uses gas oil as fuel to produce the heat required by the distillation process, the switch to the combustion of hydrogen (produced on site) is expected to reduce CO2 emissions by half to approximately 350 t of CO2 per year.

The applicant describes how the system installed at Arbikie has been designed from first principles to avoid significant environmental emissions or risks, and to operate without reliance on complex abatement or high-impact processes.

The production of hydrogen involves the use of renewable electricity (wind and solar) currently generated on site to undertake the electrolysis of borehole water in the first instance, with view to replacing "freshwater" with a mix of distillery wastewater ('Spent Lees' from the distillation process) and rainwater, thereby recycling effluent and reducing the use of fresh water. The regulatory position on the use of these effluents is currently under review and would be likely to require additional treatment primarily due to the copper levels present in the Spent Lees.

The hydrogen produced will be piped to the distillery where it will feed a new burner and boiler system producing steam for the distillery, the introduction of this plant will see overall emissions from the distillery reduce however a drawback of hydrogen combustion is that nitrous oxide can be produced. The control of the distillery is under a separate but associated company and regulated through a Part B medium Combustion Plant Permit SEPA has been informed that the design of the new combustion includes measures to control nitrous oxide emissions such that they are kept well below acceptable levels.

All water emissions are to be tested so as to confirm their suitability for discharge to a soakaway there are to be no emissions direct to the water environment. SEPA has included conditions regarding ground water and soil monitoring, and all discharges must meet relevant standards.

The use of electrolysis in the production of hydrogen not only produces hydrogen gas but also oxygen gas as a waste (or by-product if captured) nitrogen may also be emitted during start-up, shutdown and system testing There are no Volatile Organic Compounds (VOCs) or other gases generated or used at the site and therefore the emissions from the electrolysis process can be considered harmless and odourless.

Under normal operation the hydrogen production electrolyser, and associated equipment should not cause a significant noise nuisance. In an emergency, hydrogen may need venting to atmosphere and as such there may be an increase in noise, however the small size of the unit

when combined with nature of the event means these events should be relatively short and infrequent.

The following schematic shows the process being undertaken at Arbikie

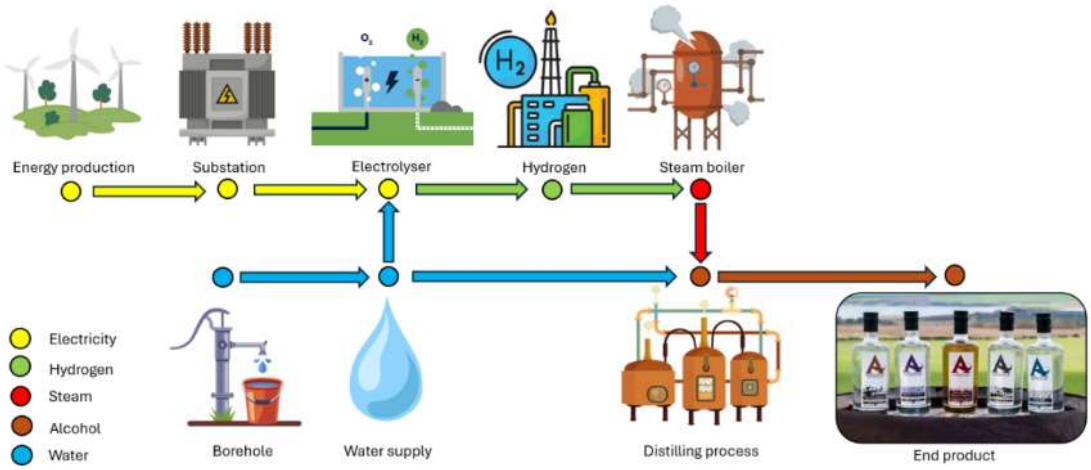


Figure 1: Process flow diagram for overall system

Based on the Information provided SEPA has assessed the site to be a Low Impact Installation for the purposes of Charging under the Pollution Prevention and Control (PPC) Regulatory regime and is proposing to issue a permit under those conditions

It is worth noting that the current Low Impact Status assessment may be reviewed following the introduction of the Low-Risk Hydrogen Production Activity under the amended Environmental Authorisation (Scotland) Regulations 2018

Glossary of Terms
BAT - Best Available Techniques BREF – Best Available Techniques Reference Document BAT-C – Best Available Technique Conclusions ELV – Emission Limit Value CO – Coordinating Officer

2 External Consultation and SEPA's response		
Is Public Consultation Required? (if no delete rows below)		**Yes**
Advertisement Check:	**Date**	**Compliance with advertising requirements**
Local Paper : Courier and Advertiser	**01/12/25**	Although Implicitly Notified as a Statutory requirement via the Duly Made e-mail Initial

		Checks both internally and through an internet search failed to identify any advertisement of the Application Follow up requests to Advertise were issued Advertisement completed and evidenced.
Edinburgh Gazette	**05/12/25**	Although Implicitly Notified as a Statutory requirement via Duly Made e-mail Initial Checks both internally and through the dedicated Gazette search failed to identify any advertisement of the Application Follow up requests to advertise were issued advertisement completed and evidenced.

Officer Checking advert: [redacted]	
No of responses received	0
Summary of responses and how they were taken into account during the determination:	
No responses received	
Summary of responses withheld from the public register on request and how they were taken into account during the determination:	
None	

Is PPC Statutory Consultation Required? (if no delete rows below)	**Yes**
Food Standards Agency:	Food Standards Scotland considers it unlikely that there will be any unacceptable effects on the human food chain from the emissions from this installation.
Health Board:	No Comments received
Local Authority	Reply stated they had no comments to make on the application
Health and Safety Executive	No comments received
Discretionary Consultation required? (if yes provide justification and details below, otherwise delete row)	**No**
Enhanced SEPA Consultation required? (if yes provide justification and details below, otherwise delete row)	**No**
"Off site" consultation required (if yes provide justification and details below, otherwise delete row)	**No**
Transboundary Consultation required? (if yes provide justification and details below, otherwise delete row)	**No**
Is Public Participation Consultation Required? (if yes provide justification and details below, otherwise delete rows below)	**Yes**

STATEMENT ON THE PUBLIC PARTICIPATION PROCESS
The Pollution Prevention and Control (Public participation)(Scotland) Regulations 2005 requires that SEPA's draft determination of this application be placed on SEPA's website and public register and be subject to 28 days' public consultation. The dates between which this consultation took place, the number of representations received and SEPA's response to these are outlined below.

Date SEPA notified applicant of draft determination	24/06/26
Date draft determination placed on SEPA's Website	
Details of any other 'appropriate means' used to advertise the draft. Seek advice from the communication department	
Date public consultation on draft permit opened	

Date public consultation on draft permit consultation closed	
Number of representations received to the consultation	
Date final determination placed on the SEPA's Website	
Summary of responses and how they were taken into account during the determination:	
Summary of responses withheld from the public register on request and how they were taken into account during the determination: **REMOVE THIS BOX FROM ANY VERSION OF THIS DOCUMENT TO BE PLACED ON THE WEBSITE OR PUBLIC REGISTER. RETAIN IN THE VERSION FOR THE WORKING FILE.**	
Officer:	

3 Administrative determinations
Determination of the Schedule 1 Activity

Introduction

Hydrogen Production is an activity listed in Schedule 1 Section 4.2 Part A (a) (i) Production in Gaseous form of Hydrogen.

Activities falling under Chapter 4 must meet the interpretation of "Producing" given in that Chapter which is described thus "Producing" as described in Part A of Sections 4.1 to 4.6 means the production by chemical or biological processing on an industrial scale of any listed substance or group of substances.

Whilst the electrolysis unit at Arbikie is a small-scale unit the hydrogen used is to be incorporated into an industrial process as part of a commercial activity. SEPA's guidance states that "If the activity is carried out for "commercial purposes", it should be considered as production on an industrial scale, even if the material is an intermediate product and therefore may not itself be traded". "Commercial purposes" may be taken generally to imply that the activity is being undertaken principally as a professional business activity.

Hence the activity is determined to be an activity under Schedule 4.2 Part A (a) (i) as described

The operator has provided an assessment of the process against the Low impact installation guidance which suggests it should be determined under PPC as a low impact installation.

Low Impact Installation Status

Under SEPA's Pollution Prevention and Control regulatory/charging framework. A site is allowed to apply for what is termed Low Impact Installation Status.
The applicant has provided a summary of the project benchmarking it against the criteria set out within SEPA's 'PPC Technical Guidance Note TG7 entitled Guidance on Determining "Low Impact Installations" under the PPC Charging Scheme', sections 3.2 a) through i).

LII Recommendation
Having reviewed The Arbikie Green Hydrogen installation application it appears to meet all of SEPA's benchmark criteria for treatment as a Low Impact Installation status as defined in the PPC Technical Guidance Note IED-TG-07.

The installation is a small, low risk unit, which under the new EASR would fall under the category of a Low-risk hydrogen production activity attracting a reduced fee within the charging scheme. Owing to delays in the introduction of the new regulations in 2025 (scheduled to enter the statute book in April but later deferred to November 2025) meant that the low-risk application was not available. Following further deliberations, the applicant made application for the project to be granted Low Impact Installation status and from what has been provided there is a clear case under the guidance for accepting the application and granting Low Impact Installation status (and crucially without an in depth assessment or the need for further evidence to be provided.).

Determination of the Stationary Technical Unit to be permitted

The Stationary Technical Unit (or STU) comprises hydrogen production and storage, the initial treatment of process feed water, and wastewater disposal.

Package plant consisting of a 40ft ISO container comprising a 460-kW alkaline electrolyser unit and power unit producing 84 Nm3/hour of 99.5% hydrogen Reverse Osmosis water treatment unit treating a maximum of 80 litres/hour cooling and ventilation unit.

Gas compression skid to compress the hydrogen from the electrolyser from 30 bar to 200 bar allowing for high pressure hydrogen storage on site.

Hydrogen Storage in a series of storage vessels with a combined storage capacity of approximately 11,000 m3.

Determination of Directly Associated Activities

The Directly Associated Activities or DAAs include:

- Wind Turbine and Solar Panels
- Reverse Osmosis Water treatment system
- Pressure reduction & metering
- Soakaway discharge

Green Energy Production (Wind Turbine/Solar Panels)
The Arbikie Green hydrogen facility will be powered by renewable sources including both solar and wind energy generated at the site These are considered to be Directly Associated with the hydrogen production Activity.

Whilst the wind turbine / solar panels were designed with an overall aim of supplying electricity to the grid the applicant has explained that export capacity is not currently possible due to

significant grid capacity constraints at Bridge of Dun Grid Supply Point (GSP). Consequently, all renewable energy generated by the wind turbine/solar units will need to be used to produce green hydrogen until upgrades allow for wider utilisation. Indeed, the applicant was requested by SHEPD, to fit a G100 export relay device specifically to ensure that energy export to the grid does not exceed the pre-agreed maximum export capacity, whilst allowing for grid supply to be used as back-up energy source for the hydrogen production.

Activities not part of the Permitted Installation

Combustion of hydrogen

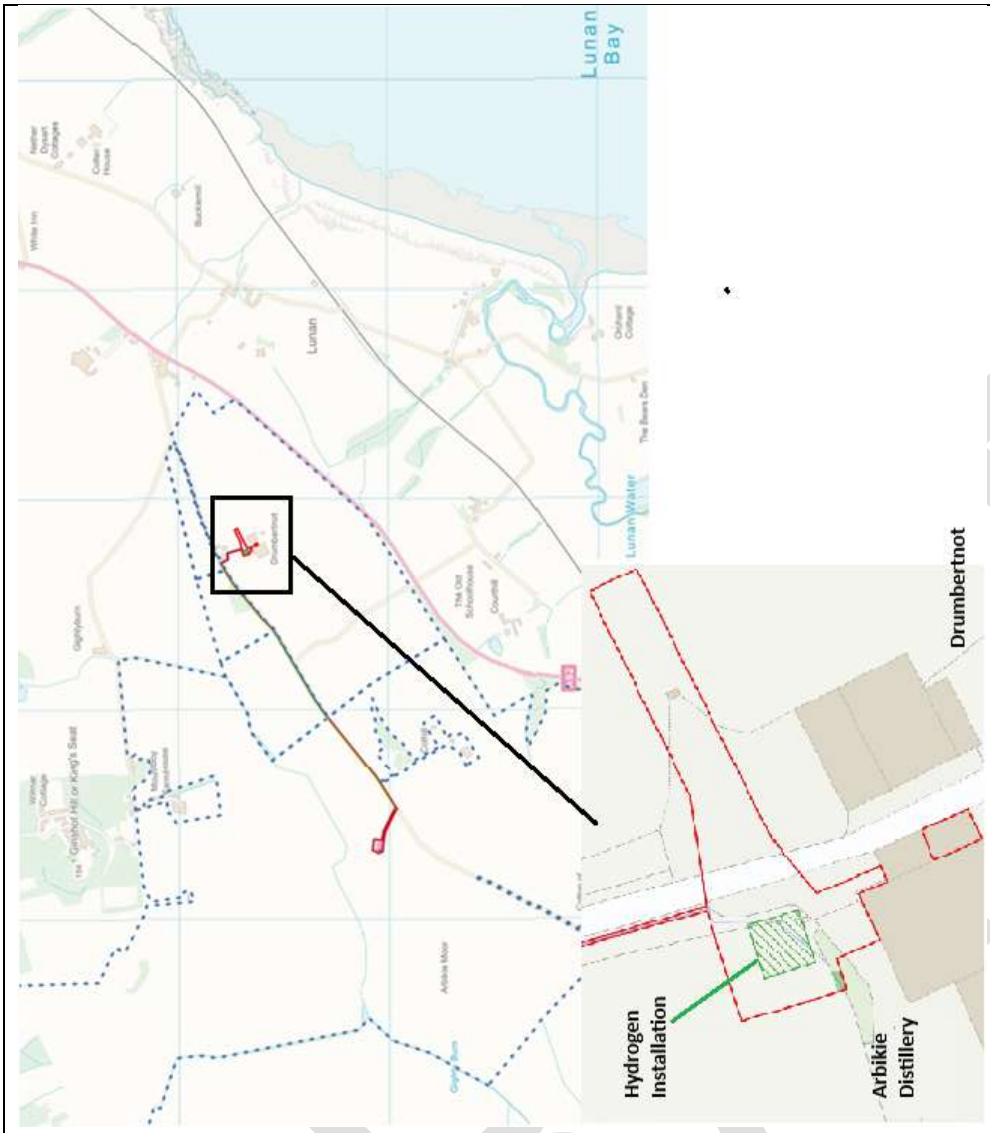
The combustion activity is not carried out within the Permitted Installation it is carried out at the main distillery by Arbikie distilling a separate if associated commercial company, Arbikie distilling are separately authorised under a PPC Part B permit covering a Medium Combustion activity this permit allows them to which allows them to burn both fuel oil and other gaseous fuel (inc hydrogen) to produce steam for an otherwise unregulated industrial activity. The burning of hydrogen has no technical connection with the distillery other than the pipe feeding the dual fuel combustion unit and whilst an associated activity is not directly associated with the production of hydrogen.

Domestic Effluent

Disposal of any Domestic wastewater from welfare or mess facilities provided on site are not part of the permitted installation.

Determination of Site Boundary

The location of the Arbikie Green hydrogen production site is shown below and will be included in the permit together with the site plan with the boundary in red as follows site plan has been provided showing the site boundary drawn in red as follows



Officer:	[redacted]

4 Introduction and Background

4.1 Historical Background to the activity

The Arbikie Distillery Green Hydrogen Project is situated on former agricultural land adjacent to Arbikie Highland Estate Distillery Montrose DD10 9TR Grid Reference 6774 5268 previous land use has consisted of a pasture providing grazing to a small herd of highland cattle as part of a dairy farm.

The current project involves the installation of a small hydrogen production unit to provide hydrogen to the distillery as part of a decarbonisation programme. Currently the distillery's existing boiler uses gas oil releasing approximately 700 tCO2 e/a. The hydrogen produced onsite is expected produce half the thermal demand required by the distilling process and to reduce CO2 emissions by 350 tCO2e/a.

The electricity required for electrolysis will be supplied from existing Wind turbine and solar panels already in place at the distillery with back up supply coming from the mains grid, with the water used in the production process being supplied from water drawn from the pre-existing borehole. A proposal to use spent lees from the distillation process and rainwater, had been proposed in order to improve the use of water at the site facilitating effluent recycling and reducing the requirement to draw water from the aquifer.

The hydrogen will feed a new burner and boiler system which will produce steam for the distillery, the introduction of this plant will see overall emissions from the distillery reduce emissions from the site will reduce however there may be nitrous oxide produced when burning hydrogen and in order to control these emissions flue gas recirculation has been fitted to reduce these emissions to well below acceptable levels.

The project is part of a decarbonisation strategy for the Whisky Industry in Scotland.

4.2 Description of activity

Producing hydrogen in gaseous form being an activity described in Schedule 1 Section 4.2 Part A (a) (i) of the Pollution Prevention and Control (Scotland) Regulations 2012.

4.3 Outline details of the Activity applied for

Small scale production of Hydrogen gas from the electrolysis of a water- effluent mix using green energy for use as fuel boiler producing steam and thermal energy for a commercial distillery.

4.4 Guidance/directions issued to SEPA by the Scottish Ministers under Reg.60 or 61.

None

4.5 Identification of important and sensitive receptors

SEPA guidance states in its guidance on the Indicative Distance Criteria for GIS Screening of Applications for Possible Effects on SSSIs, SACs, and SPAs -from PPC Permitting that for an activity falling within Schedule 1 Section 4.2 Part A of the PPC Regulations (Inorganic Chemicals). The minimum recommended screening Distance for emissions to air is 10 km from the site. The 10km screening assessment for air emissions carried out using SEPA's GIS mapping system identified the following:

267 Sites of Special Scientific Interest contained within 5 Designated areas

Rossie Moor (Inland Site)
Montrose Basin (Tidal Basin)
St Cyrus to Kinnaber Links (coast
Rickle Craig to Scurdie Ness (coast)
Whiting Ness to Ethie Haven (coast)

2 Special Protected Areas
Montrose Basin
River South Esk

1 Special Area of Conservation
River South Esk

The presence of these designated sites within the screening distance has required the CO to undertake an assessment under SEPA's Nature Conservation Procedure (see section 6 below)

Screening for water emissions is not required as there is no direct discharge to the water environment.

The nearest residential property is 80m from the site and is part of the distillery/farm complex AS a DAA linked to the hydrogen production activity the effects of the Wind Turbine on the environment and human health require to be considered as part of this application. However, SEPA recognises that these issues have already been fully addressed by SEPA during the design and build of the Wind turbine at the planning stage and are satisfied noise generation and the effect on the local ecology (bird and bat populations) from the Wind turbine have been fully addressed in respect of the Green hydrogen application. (see section 5.4 below). Protection of groundwater is a primary concern and as such measures have been taken to ensure the soakaway is correctly designed and appropriately sized and that the effluent discharged does not pose a risk to the environment or harm to human health (Drinking Water).

Officer:	[redacted]

5 Key Environmental Issues

5.1 Summary of significant environmental impacts

The installation does not release any significant polluting substances to air, land, or water.

The applicant describes how the installation produces intrinsically low emissions through the use of appropriately specified equipment. Describing how Emissions to air during the hydrogen combustion process are controlled through standard combustion design and process control. No additional abatement systems are required (other than those already agreed and approved by both SEPA and Environmental Health during the design of the flue system at the planning stage) None of the emissions were considered to be significant under normal operating conditions.

5.2 Emissions to Air

Point Source emission to air:

The production of hydrogen from the electrolysis of water produces Oxygen as a waste gas in the process. As part of the maintenance and start up Nitrogen is used to purge the system hydrogen oxygen and nitrogen are the only three gasses likely to be released in significant amounts in the point source emissions from this activity. Under general conditions hydrogen, oxygen and nitrogen are harmless when vented and dispersed to atmosphere.

Routine emissions:

The Arbikie PID shows that there are two routine point source emissions to air from the Arbikie electrolyser system, one for each of the two electrolysers (denoted E100 and E101 on the PID). These vent the oxygen generated during the splitting of water to atmosphere.

As this is inherently a wet process it is worth pointing out that whilst the permit condition requires there should be no visible emissions from the installation, under normal operation, it makes an exception for water vapour.

Emergency Venting

Electrolysers
The PID for the unit details that each electrolyser has a secondary safety relief valve for oxygen discharging through a separate vent together with a further two hydrogen separate hydrogen vents one for “normal venting” with the other being a safety relief vent in case of over pressurisation The hydrogen vents will release infrequent emissions of hydrogen and nitrogen.

The main hydrogen and both hydrogen and Oxygen safety vents should only operate for short periods when there is an emergency scenario, nitrogen is not produced in and plays no part in the electrolysis it is used to purge the system and is only released during the purging operation.

There are no environmental assessment levels for hydrogen, or nitrogen in the H1 risk assessment tool and as oxygen and nitrogen are the main constituents of air, the nitrogen releases would not cause any significant changes to the air quality in the local area. Hydrogen will need to be released in a controlled manner in order to meet health and safety guidelines and again is not expected to cause any significant changes to the air quality in the local area, however hydrogen is recognised as an indirect greenhouse gas with global warming potential.

Nitrogen Tank
The Arbikie PID shows that there is a pressure relief valve on nitrogen feed line from the external nitrogen tank which it is used to ensure the correct pressure of nitrogen for purging this should vent should only operate if the pressure in the feed line exceeds the operating pressure and should close automatically once the pressure returns to normal.

Hydrogen Tanks

Hydrogen is stored in tanks which are compliant with the Transportable Pressure Equipment Directive compliant tanks fitted with Pressure Safety Valves on the line to storage tanks ensure that the tanks are protected from over pressurisation should over pressurisation occur the system venting is described as being at height and vertical. The emissions from the PSV will consist solely of hydrogen and should only operate for a short period. An automatic shutdown system has been fitted to the storage system should a release of hydrogen be detected.

Final comments

There are no environmental assessment levels or emission limit values set for oxygen in the H1 risk assessment tool and as oxygen and nitrogen are the main constituents of air, the releases would not cause any significant changes to the air quality in the local area.

Regulation 22 (i) describes how it is "a condition in a permit for a Part A installation…that the operator must use the best available techniques for preventing or reducing emissions from an installation under therefore SEPA has included start up and shut down conditions in the permit to introduce additional controls to minimise emissions of hydrogen and nitrogen during these operational phases.

As the hydrogen production activity is part of a wider scheme to reduce emissions from the site it is expected that the Operator will take all appropriate and reasonable measures to minimise venting of hydrogen in line with the condition that "The authorised activities must be undertaken in a manner that uses resources efficiently and minimises the production of waste."

Fugitive emissions to air:

Hydrogen gas naturally occurring in the atmosphere although non-toxic is highly flammable can escape through worn or damaged seals and through emergency pressure relief venting
Nitrogen Gas naturally occurring in the atmosphere non-toxic and used in purging of the gas lines and systems system.

Once granted, it is a condition of a PPC Part A permit that the operator must use the best available techniques for preventing or, where that is not practicable, reducing emissions from an installation or mobile plant." as such fugitive emissions must be prevented or, where that is not practicable, reduced.

This would include regular inspection (e.g. oof valves pumps, joints, and seals) and where required routine leak testing and inspection.

Standard conditions are included in the LRHA template outlining the measures that should be taken to demonstrate BAT.

Odour:

The electrolysis of water is not envisaged to give rise to any odour release Hydrogen Nitrogen and Oxygen are odourless gasses odour. No volatile or organic materials are present in the process, and the site has no history of odour complaints.

5.3 Emissions to Water

Point Source Emissions to Surface Water and Sewer:

There are no point source emissions to either surface water or sewer from the Hydrogen Production activity.

Point Source Emissions to Groundwater:

There is no direct point source emission to Groundwater however, the soakaway provides an indirect pathway to groundwater which needs to be controlled.

The applicant initially outlined that the installation would generate a maximum of 1 m^3/day of wastewater, in the flow figures provided to SEPA in the application in respect of the Soakaway provided. The latest figures provided in April 2026 show that both the Soakaway throughput and blended Spent Lees figures both suggest this is uprated to 3.5m^3/day. The primary source would remain the discharge from the Directly Associated Reverse Osmosis feedwater conditioning system. If balanced correctly this would equate to an increase in flow from 0.011574l/s to 0.0405l/s As this increase was identified late on in the application it is unclear given the long delay regarding the placing of Adverts, in the relevant publications, whether the volume/flow figures were updated prior to the publication of the advertisement. It is therefore unclear whether it was available for view during that consultation stage. As the change does not significantly impact the environment and given the confusion surrounding the initial stages of the processing of the application the most appropriate course of action is to identify the change and discuss and record it along with the other additional information submitted during the determination then subject it to public scrutiny, review and comment at the Public Participation Stage. It must be remembered this is one of the last PPC applications received and that the newly introduced EASR 2025 no longer requires Industrial emissions permit applications to be advertised.

The information presented in the supporting information on the discharge is as follows:

This discharge is to be directed to a soakaway, located on free-draining pastureland which is described as having suitable underlying ground conditions. The effluent is described as neutral in character, with a pH range of 6–8, a conductivity of approximately 2000 µS/cm, and with no treatment chemicals or hazardous substances present in it.

Under the Controlled Activities Regulations (CAR 2011) as this is an Inorganic Discharge of >15pe and >10m3/d it would currently be determined as a Registration level Activity however as part of a PPC Part A permit there are a number of additional constraints SEPA must apply to the discharge over and above the base CAR requirements.

Initial SEPA Concerns

Within the initial application the applicant had not explained why a soakaway was considered to be the Best Available Technique for disposing of effluent from the hydrogen production unit nor had they provided details of the area of land the soakaway occupies nor the data required for SEPA to assess the efficacy of a soakaway as both a low risk and appropriate effluent discharge method. The information provided lacked the information initially provided lacked details regarding the size, dimensions, throughput and percolation value of the soakaway. Although the applicant had undertaken trial pit investigations and sunk boreholes showing a bedrock at 0.7m overlayed with gravel and the basic effluent details (see values below) the lack of detailed design including the porosity test i.e. the Vp assessment made it impossible to determine the application.

Effluent Details

The effluent has been described as being about 3 x drinking water standard but other than that
Max conductivity: ~2000µS
pH : 6-8
Average temperature : ambient + 5K
Maximum volume per day of effluent : 1m3.

Spent Lees/rainwater use
The applicant has also proposed to use a distillery wastewater stream to reduce the need for additional raw water abstraction:
The information provided on this additional proposal was deemed insufficient as there was no information regarding copper in the discharge, a well-known pollutant in distillery wastewater streams.

SEPA can condition the risks out for any distillery effluent passing through the process by applying a suitable limit on the discharge water exiting the treatment building and either requiring discharge water testing and applying discharge standards or emission standards before such effluent is used in the process and subsequently discharged.

Resolution of concerns
A BAT assessment and. design details for the soakaway were requested from the operator through the Schedule 4 Further information notice issued December 2025 which addressed several questions. SEPA still had on the application which included a request for additional information on the proposal by the operator to replace abstracted groundwater with a mix of Spent Lees and rainwater.

Justification for further information
The justification for requesting this information lies within the statutory instruments relating to protection of ground water under the Scottish Government Water Standards Direction (2024) which outlines that:

The threshold value for GW conductivity of 1000 µS indicative of saline intrusion "good Status"
Any other pollutant Mean concentration (µg/l) 0.75 x maximum admissible concentration for the relevant drinking water standard

The Limits values that would apply to the current discharge would be as follows:

Sodium 200mg/l

Chloride 250 mg/l

Conductivity 2500µS

pH 6.5 to 9.5

Although the discharge has been increased from 1m^3/d to 3.5 m^3/d this is still around 1/3 h the max allowable flow under a registration (equating to that of the hydraulic loading of around 18 people) with the predicted pollutants present being narrow/defined in scope and of relatively low chemical risk.

Soakaways
Soakaways require to conform to Building Standards requirements and whilst this has been assessed to be a low-risk activity it can still have an effect on the local environment the biggest concerns are the hydrological properties of the soakaway, namely the degree of permeability and the risk of waterlogging.

In the PPC applicable guidance WAT- RM-06 “Trade Effluent Discharges to Groundwater” it clearly states that:

"The risk to groundwater depends on the rate of the discharge, the nature and concentration of pollutants and the vulnerability of the groundwater".

Part I is to be completed for all discharges, PART 2 DOES NOT APPLY AS THIS IS A LOW LOADING CLASSIFICATION DISCHARGE.

Concentration in the discharge (mg/l) X discharge rate (m3/d)
/Compliance concentration for contaminant (e.g. DWS) (mg/l)

Result Less than 1200 <1200 for list 2 and other non-listed pollutants

The required information for the proposed discharge includes :

1. Composition
2. Ground Conditions.
3. Relevant environmental quality standards "The Water Supply (Water Quality) (Scotland) Regulations 2001"
4. Impact on the environment i.e. effluent quality that the proposed *system should produce*

In order to comply with the water regulations in place at the time of the application [pre-November 2025] The guidance stated a number of requirements the key ones were that SEPA must determine environmental standards for inputs of all hazardous substances to groundwater.
The environmental standards determined in accordance with this requirement must be applied immediately prior to the point of entry into groundwater of any hazardous substance.

Soakaway design parameters
The FIN issued by SEPA included a request to undertake a percolation test after a delay due to adverse weather and ground conditions caused by the significant snow fall during late December, January followed by the subsequent snow melt in February the percolation test was undertaken in mid-March with the results provided in April 2026.

These are summarised below

Following consultation with SEPA water permitting staff the soakaway was found to have been designed using a SUDS infiltration test rather than an Effluent percolation test. As the two are closely connected it was possible through a calculation to derive a percolation Vp value which was subsequently agreed with the operator to be acceptable.

BAT AELs
As this is an Industrial Emissions activity there is an additional requirement the operator to meet the requirements the "Best Available Techniques Associated Emission Levels (BAT-AELs) for emissions to water from the activity of the Pollutants listed in the relevant BAT Conclusion.

Although this application is For a Low Impact installation it is still an application for a Chemical Sector Industrial Emissions permit and therefore requires assessment against the CWW BREF and BAT Conclusions documents issued by the European Commission 30 May 2016, [whilst the UK was still in the European Union] and entitled "Common Waste Water and Waste Gas

Treatment/Management Systems in the Chemical Sector [abbreviated and subsequently referred to as the CWW BATC]. The CWW BATC document describes that for a direct discharge to water that SEPA is required to impose a BAT AEL on any pollutant present in the discharge that exceeds the mass emission trigger limits described in the BATC document and, that the BAT-AELs apply at the point where the emission leaves the installation.

With this PPC Low Impact Installation the use of a soakaway raises the question as to whether the imposition of a BAT AEL is applicable at Arbikie as it is not a direct discharge to Surface or Ground waters.

That being said the use of groundwater and the size of the hydrogen scheme mean that the annual calculated load for those determinands present in the discharge and listed in the BATC are well below the "trigger" level that would require BAT-AEL's to be applied and therefore they would not apply.

Whilst the feed water consists of local groundwater the main pollutant of interest would be Nitrate, due in large part to initial raw borehole water samples showing that the average Nitrate level in the abstracted groundwater is above the indicative EQS limit in the background borehole water. SEPA water staff have assessed that providing the combined discharge water remains within the 3x the concentrations listed in the Drinking Water standard then there should be no risk of a significant deterioration in groundwater quality. One of the factors in granting PPC Low Impact Installation Status to the site was the use of a relatively small volume of local groundwater as the sole feedwater would be that the discharge would be very similar in composition to the base groundwater at the site and therefore highly unlikely to result in an increased risk of pollution of groundwater.

The proposed Use of Spent Lees blended with rainwater

The primary concern for SEPA was the proposed replacement of abstracted water with a blend of rainwater and Spent Lees. Spent Lees introduces a number of additional determinands of interest not least Copper which is a "specific pollutant" present in the Spent Lees from the distillation of alcohol in copper stills [which the proposal indicates at some point may form part of the Hydrogen production feed water].

Analysis of the status of the groundwater (abstraction samples) indicates there is sufficient capacity to absorb the rise in concentration in post process groundwater (caused by the reduction in the volume of water in the hydrogen production process) … should any fugitive emission enter the groundwater. The soakaway is designed to prevent direct discharge to groundwater however the disposal method needs to be controlled and as such the following may apply.

Initially the proposal for the future switch to the blended Spent Lees did not contain analysis results for copper and as such a request was made in the form of a further information notice (FIN) asking for analysis of the copper content of the Spent Lees and information regarding the discharge from, and operation of, the Reverse Osmosis System. Following the provision of the information requested in the FIN a number of concerns were raised Correspondence on the matter is summarised below.

The proposal from the operator is utilise the 2000 litres/day of Spent Lees from the associated distillery and blend it 1:1 with rainwater Analysis shows that the copper content is 19.7 mg/l As there is no additional treatment and no copper is added to the process then the annual copper loading in the discharge is solely derived from the Spent Lees. This equates to a 19.7 x 2000 to

give a daily loading of 39,400mg/day (39.4g/d) annually that would equate to a copper loading in kg of approximately 14.4 kg/yr which would significantly exceed the Trigger level of 5kg/yr stated in the BAT conclusions at which point BAT AEL's would need to be applied [if it was determined that the discharge to soakaway was a direct discharge the groundwater regulatory provisions categorise a soakaway as an indirect discharge] However BAT AEL may be applied where there is a risk of environmental or human health impact.

Unlike the use of the groundwater which appears to pose little risk the use of Spent Lees whilst still being Green hydrogen production [with an added benefit of reducing additional abstraction burdens] does pose a risk to soil and groundwater due to the additional pollutants it contains. The discharge of process waters which include a significant copper concentration, to a soakaway, without pretreatment/ treatment is a cause for concern and one seemingly supported by the soakaway design company who consultants stated was going to look at 'nature-based solutions' that are suitable for handling this effluent.

BAT for Chemical Industry sites requires that where wastewater discharges are made, they should be subject to some form of treatment [BATC 10 BATC 11 and BATC 12 of the Common Wastewater and Waste Gas Treatment/Management Systems in the Chemical Sector (CWW) BAT Conclusions].

SEPA are not opposed to blended Spent Lees being used as feedwater moving forward however, we would require further information on the level of pollutants and some form of pretreatment or treatment prior to discharge to remove copper and any other identified pollutants to an acceptable level. As SEPA would require to include conditions within the permit that restrict the use of the alternative feedwater until pretreatment /treatment is in place and that for this further delay would be necessary to investigate the potential pollution issues and review the BAT of the various treatment options.

SEPA would require monitoring and testing to ensure the pollution risks associated with the discharge to soakaway where distillery effluent is used in the feed water are minimised. These would be applied prior to the treated effluent being discharged to the soakaway. This is in line with Discharge guidance which states that:

"Effluent quality conditions should be set on the effluent immediately after the treatment system and prior to discharge to the soakaway/groundwater."

Adding that

"If descriptive conditions are not appropriate, numeric standards must be used and single tier standards should be used for discharges that will not be sampled"

The guidance cautions that
"Inadequate maintenance is one of the major causes of problems with small treatment plants".

A discussion was held with consultants in late April 2026 during which the operator agreed to proceed with the application using only borehole water as feedwater.

The BAT-AELs apply at the point where the emission leaves the installation.

Table 1

BAT-AELs for direct emissions of TOC, COD and TSS to a receiving water body

Parameter	BAT-AEL (yearly average)	Conditions
Total organic carbon (TOC) ([10]) ([11])	10-33 mg/l ([12]) ([13]) ([14]) ([15])	The BAT-AEL applies if the emission exceeds 3,3 t/yr.
Chemical oxygen demand (COD) ([10]) ([11])	30-100 mg/l ([12]) ([13]) ([14]) ([15])	The BAT-AEL applies if the emission exceeds 10 t/yr.
Total suspended solids (TSS)	5,0-35 mg/l ([16]) ([17])	The BAT-AEL applies if the emission exceeds 3,5 t/yr.

Table 2

BAT-AELs for direct emissions of nutrients to a receiving water body

Parameter	BAT-AEL (yearly average)	Conditions
Total nitrogen (TN) ([18])	5,0-25 mg/l ([19]) ([20])	The BAT-AEL applies if the emission exceeds 2,5 t/yr.
Total inorganic nitrogen (N_{inorg}) ([18])	5,0-20 mg/l ([19]) ([20])	The BAT-AEL applies if the emission exceeds 2,0 t/yr.
Total phosphorus (TP)	0,50-3,0 mg/l ([21])	The BAT-AEL applies if the emission exceeds 300 kg/yr.

Table 3

BAT-AELs for direct emission of AOX and metals to a receiving water body

Parameter	BAT-AEL (yearly average)	Conditions
Adsorbable organically bound halogens (AOX)	0,20-1,0 mg/l ([22]) ([23])	The BAT-AEL applies if the emission exceeds 100 kg/yr.
Chromium (expressed as Cr)	5,0-25 µg/l ([24]) ([25]) ([26]) ([27])	The BAT-AEL applies if the emission exceeds 2,5 kg/yr.
Copper (expressed as Cu)	5,0-50 µg/l ([24]) ([25]) ([26]) ([28])	The BAT-AEL applies if the emission exceeds 5,0 kg/yr.
Nickel (expressed as Ni)	5,0-50 µg/l ([24]) ([25]) ([26])	The BAT-AEL applies if the emission exceeds 5,0 kg/yr.
Zinc (expressed as Zn)	20-300 µg/l ([24]) ([25]) ([26]) ([29])	The BAT-AEL applies if the emission exceeds 30 kg/yr.

Fugitive Emissions to Water:

The main fugitive emissions would be from spills or escapes of sodium hydroxide [soda lye] solution, hydraulic and lubricating oils, and any cleaning chemicals required to maintain the efficiency of the electrolysers.

The applicant has advised that there will be no raw materials stored on site and as such there is a limited risk of contamination by the sodium hydroxide [soda lye] solution during electrolyte changeout. As this will occur within the electrolyser unit then providing appropriate measures are taken during the change out, then this task should pose minimal environmental risk.

5.4 Noise

Planning consideration 8.20 of the Angus Council planning report no 196/22 linked to planning application REFERENCE : 21/01002/FULL pertaining to:

Erection of a wind turbine (up to 76.5m Blade Tip), underground cables, formation of hydrogen electrolysis and storage compound, including installation or hydrogen electrolysis plant and cooling equipment and other ancillary works including a flue. at Arbikie Distillery Drumbertnot Montrose DD10 9TR for Arbikie Distilling Ltd.

proffered that:

The environmental health service has reviewed the submitted Noise Assessment and other submitted noise data and has indicated that appropriate planning conditions could be used to control predicted operational noise from the proposed infrastructure.

Adding that:

Conditions, as recommended by environmental health, are proposed to deal with operational noise from the hydrogen plant and the wind turbine.

During the planning process (prior to PPC application) a formal assessment of noise was undertaken which looked at operational noise emissions from the overall greening project Wind Turbine, Green Hydrogen Production and Combustion at the Arbikie site) The report indicated that Sound levels at the installation boundary were not predicted to exceed residual noise by more than 3 dB LAeq under any normal or foreseeable operating scenario. SEPA raised no objection at the planning stage.

The Noise Impact Assessment (NIA) carried out for the planning process used BS 4142:2014,to establish noise levels at the closest receptors. This assessment was carried out to the relevant standards and was in line with the SEPA Guidance – Noise and vibration management: environmental permits.

The noise impact methodology, assessments and conclusions have been submitted as part of the supporting information for this application.

A preliminary assessment of the potential noise impacts associated with the operation of Green Hydrogen Project at Arbikie Distillery has been undertaken.

Industrial noise levels related to the operation of the hydrogen generating plant have been assessed according to BS4142. The report concluded that although the worst-case predictions of specific sound levels had been carried out the direct link between the operation of the wind turbine and the operation of the hydrogen generating plant, made it impossible during the survey to calculate typical Rating Levels.

The noise consultants stated that although no background sound levels were not undertaken, the initial results of the noise assessment indicated that the development as a whole, did have the potential to generate significant adverse noise impacts at residential properties neighbouring the site. Adding the caveat that the monitoring did not take into account the specific context of the site including very low background sound levels, noise output related to wind speeds & cooling requirements and the potential financial involvement of the nearest residential receptors.

The major source of noise at the permitted installation will be from the Directly Associated Activity at the Wind Farm which is totally dependent on the wind speed as it will increases with the increased speed of rotation of the turbine blades. The applicant points out that the ETSU-R-97, Guidance entitled "The Assessment and Rating of Noise from Wind Farms" recommends that a fixed lower limit of 45 dB LA90 is appropriate for financially involved properties surrounding a wind turbine development.

When looking at the hydrogen production activity itself, it is the cooling equipment that has been identified as the major source of noise however given the theoretical rating of the cooling unit it is predicted to generate less than 45 dB LAeq at the nearest receptor (as a worst-case) and modelling shows that it is more than likely to be significantly lower (10 dB) if a noise barrier is used reducing the level to below 35 dB LAeq.

Referring to the previous 1997 version of BS4142 (modern iteration doesn't provide these details) … The supporting information details that background noise levels below about 30 dB LA90 and rating levels below about 35 dB can be considered as very low. and the impact of a rating below 35 dB) at any noise sensitive property, would be considered to be negligible.

As a result for the hydrogen activity, they assert that the results show that contextual assessment of the site suggests that the actual Rating Levels are likely to be at, or close to, an acceptable level.

It was pointed out by the consultants when addressing the council during the planning stage that the residential properties closest to the hydrogen plant are owned by the Arbikie Estate who also own and operate the distillery. The tenants of the properties also work for the Estate and there is therefore a distinct financial link between the residents who are most likely to be affected by noise and the Distillery.

In relation to "Financial Interest" is defined as either: -

a. owning, or having a share in ownership, of the land on which the turbine is to be sited;

b. leasing the land on which the turbine is sited, such lease shall be for a period exceeding 26 years;

c. being a current employee of the operator of the wind turbine/ hydrogen plant

The following noise limits were imposed on the applicant at the planning stage.

14. Cumulative noise levels from all plant and equipment associated with the hydrogen generation process shall not exceed the limits specified in table A below.

Table A: Hydrogen generation plant noise limits

Day	Time	Average Period (t)	Noise limits for properties financially involved	Noise limits for properties not financially involved	Notes
Monday - Sunday inclusive	0700 - 2300	1 hour	45 dBA LAr,Tr	40 dBA LAr,Tr	1,2,4
Monday - Sunday inclusive	0700 - 2300	15 minutes	NR35	NR30	3,4
Monday - Sunday inclusive	2300 - 0700	15 minutes	45 dBA LAr,Tr	40 dBA LAr,Tr	1,2,4
Monday - Sunday inclusive	2300 - 0700	N/A	45 dBA Lmax fast response	45 dBA Lmax fast response	3,4
Monday - Sunday inclusive	2300 - 0700	15 minutes	NR25	NR20	3,4
Monday - Sunday inclusive	2300 - 0700	8 hours	30 dBA Leq t	30 dBA Leq t	3,4

Notes for Table A

1. The assessment location shall be free field within the exterior amenity space of any noise sensitive receptor. For the avoidance of doubt sensitive receptors includes all residential properties, hospitals, schools and office buildings or any other similar premises.
2. As measured and rated in accordance with BS4142:1997 – Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas as amended.
3. The assessment location shall be within a bedroom with a window open 50mm for natural ventilation.
4. Where the noise measurement position is not the same as the assessment location the received noise levels shall be predicted using an appropriate methodology.

BAT Discussion

The overall approach to noise under PPC/IED is that where noise emissions are capable of causing pollution (i.e. capable of causing annoyance or loss of amenity at a Noise Sensitive Receptor (NSR), then a noise monitoring survey will be required. Adding that *"This will be the case in most circumstances; however, it should be noted that the test is to establish the level of noise pollution and not the number of actual complaints"*

Such that If noise is audible at an NSR then it is regarded as having an impact, the result is that where noise is having, or has the potential to have, an impact it must be assessed to determine what the impact is and consequently how much work needs to be done to prevent or minimise noise pollution.

The Noise Impact assessment undertaken for the planning application was designed to *"deal with operational noise from the hydrogen plant and the wind turbine."* And is therefore applicable to the present application which has the wind farm as a Directly Associated activity of the Low Risk Green Hydrogen Production Activity.

There do not appear to be any noise related BAT Conclusions within the WCG and therefore the operator has to solely meet the noise related BATC in the CWW BAT Conclusions two BAT conclusions numbered BAT 22. And BAT 23.

BAT 22 requires the operator to set up and implement a noise management plan, as part of the environmental management system, however the applicability note in the BAT C restricts this BAT Conclusion to cases where noise nuisance "can be expected or has been substantiated".

At which point as it has already been determined that the residents who are most likely to be affected by noise have a financial interest in the project then it could be asserted that it is unlikely that the noise limits agreed to during the planning would constitute a nuisance under PPC therefore it is not clear that the noise in this case can be considered "more than is tolerable" and therefore a nuisance… as one legal scholar stated . What is "tolerable" will depend on the facts and circumstances of each case – including the nature of the locality. Or whether it would be substantiated, that being said the approach taken in SEPA guidance is that the test is to "establish the level of noise pollution and not the number of actual complaints"

BAT 23 applies primarily to existing plant and covers the techniques which need to be applied when undertaking operational and technological changes at the site (under notifications of change and variations).

Conclusion
The original Noise assessment was undertaken by the Angus environmental health department where the windfarm and its associated hydrogen plant were viewed as a Local Authority regulated site The responsibility for noise emissions from hydrogen production passes to SEPA as they are emitted from a Part A site especially as the windfarm supplies all its energy to the LRHP unit making it a DAA under the PPC regulations. The planning permission included a number of Noise conditions which would normally appear in the EMS (BAT Conclusion 1) as BAT 22 of the CWW BAT-C, requires the EMS to contain a noise management plan therefore SEPA will adopt the Local Authority approach and require a Noise management plan as part of the EMS of the site.

In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to set up and implement a noise management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:

(i) a protocol containing appropriate actions and timelines;

(ii) a protocol for conducting noise monitoring;

(iii) a protocol for response to identified noise incidents;

(iv) a noise prevention and reduction programme designed to identify the source(s), to measure/estimate noise exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures.

It is certainly the case that SEPA would require the operator to implement the requirements of BAT 23 of the CWW BATC detailed below. Especially with respect to operational and technological changes at the site (notifications of change and variations).

BAT 23. In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques given below.

	Technique	Description	Applicability
(a)	Appropriate location of equipment and buildings	Increasing the distance between the emitter and the receiver and using buildings as noise screens.	For existing plants, the relocation of equipment may be restricted by a lack of space or excessive costs.
(b)	Operational measures	This includes: (i) improved inspection and maintenance of equipment; (ii)closing of doors and windows of enclosed areas, if possible; (iii)equipment operation by experienced staff; (iv)avoidance of noisy activities at night, if possible; (v)provisions for noise control during maintenance activities.	Generally applicable.
(c)	Low-noise equipment	This includes low-noise compressors, pumps and flares.	Applicable only when the equipment is new or replaced.
(d)	Noise-control equipment	This includes: (i) noise-reducers; (ii)equipment insulation; (iii)enclosure of noisy equipment; (iv)soundproofing of buildings.	Applicability may be restricted due to space requirements (for existing plants), health, and safety issues.
(e)	Noise abatement	Inserting obstacles between emitters and receivers (e.g. protection walls, embankments and buildings).	Applicable only to existing plants; since the design of new plants should make this technique unnecessary. For existing plants, the insertion of obstacles may be restricted by a lack of space.

During the planning stage the consultants advised that the level of uncertainty that is present in the current assessment suggested that a noise assessment should be undertaken following construction of the proposed development.

SEPA could impose a tighter standard or could request a further assessment however it is uncertain whether there would be any environmental benefit given that the noise issue have been addressed to the satisfaction of the sensitive receptors. SEPA has therefore included the noise standards currently imposed through the planning process as noise limits in the Arbikie PPC Part A permit.

5.5 Resource Utilisation

Water use

One of the ultimate aims of the design of the plant at Arbikie is to minimise any additional water required to be drawn from the borehole. Although the initial process will use solely borehole water the aim of the scheme is that ultimately the water used in the hydrogen production process will be a mix of water drawn from the pre-existing borehole, combined with both spent lees (from the distillation process) and rainwater, By recycling effluent it is hoped to reducing the draw off of water from the aquifer.

Energy use and generation

The installation's main energy comes from on-site renewable power sources comprising a single wind turbine and roof top solar panels which provides an annual renewable electricity generation of approximately 2.6 GWh, of electricity. Grid electricity is designed only to be used as a back-up for when on site renewable load falls during "unfavourable" weather conditions.
The hydrogen produced is to be used in a combustion plant where it will replace carbon based "Fossil fuel" energy sources currently used in the distillation process. The Combustion plant has a thermal input well below 3 MW. The operator has stated that the scale, operational profile, and efficiency meet the criteria for Low Impact Installations.

The Operator is required to record and report electricity use by source under the resource efficiency conditions contained in the permit.

Raw Materials Selection and Use

The raw feedwater comprises groundwater drawn from the Arbikie Distillery borehole.

5.6 Waste Management and Handling

Waste Minimisation

The installation will generate combined waste volumes well below the 1 tonne per day figure quoted in the guidance, under normal operation no special waste is expected to be produced. Although as in most processes small amounts of waste will be generated, these are predicted to be low, predictable, and fully controlled, consistent with SEPA's Low Impact Installation criteria.

The nature of the Activity being carried out produces minimal and limited amounts of waste in the electrolysis process itself.

Most waste is associated with replacement of filters and spent process fluids eg changeout of soda lye and replacement of hydraulic (and where used transformer oils). Additionally, there will be s small amount of domestic waste from welfare facilities at the site. Any domestic waste produced should be streamed as per the Local Authority collection guidelines.
The Operator has advised that mineral oils and spent lye will be collected and sent for recovery and or disposal to appropriately licensed waste handling companies.

SEPA will include additional conditions in the permit to require the operator to develop an appropriate waste management plan to ensure that all wastes are handled, stored and disposed of correctly.

These conditions will place on the operator a limit on the time waste can be stored on site and require them to produce and maintain a register of raw materials and waste wastes a requirement on the Operator shall prepare and thereafter maintain a register of the raw materials and wastes. This register will include the source quantity, and type of waste, how and where it is stored and the date of both generation and removal of the waste to be updated frequently.

Waste Handling
No extra waste handling is required over and above that normal required on a small industrial plan.t
Waste Recovery or Disposal
Waste will be dealt with under the waste hierarchy with appropriate streaming of waste being undertaken to minimise disposal and facilitate recovery and recycling where possible.

5.7 Management of the site

Environmental Management System
When assessing whether the EMS proposed for the permitted activity is compliant with the CWW and WCG BAT Conclusions, SEPA must take into account the applicability requirement common to both BAT Conclusions this states that "The level of detail and the degree of formalisation of the EMS will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have". The Arbikie Green hydrogen activity is part of an overall "greening" project at the distillery and is covered by an "in place" Environmental management system which has been described in the application. This is compliant with the requirements of ISO9001:2015, ISO14001:2015, ISO45001:2018 and ISO17020:2012 Taking into account the applicability requirement in the two BAT C documents (outlined above) a separate EMS for the hydrogen production activity is not required and the application indicates that in general the EMS will be in line with the requirements of BAT 1 of both the CWW and WGC BAT-C The one are of concern is Noise requirements The WGC BAT 1 C contains no reference to Noise in the list of features it should cover, the CWW BAT 1 C states. *In some cases, the following features are part of the EMS*: *(xiii) odour management plan (see BAT 20);* *(xiv) noise management plan (see BAT 22).* The standard management system conditions will be included in the permit As there is no odour generating process linked to the activity being carried out (Section 5.2 above) then an odour Management plan is not required. Noise however is generated on site (Section 5.4 above) and as a result a Noise management plan is required either as part of the EMS under the CWW BAT 1 Conclusion or as a separate Noise Management Plan required under the CWW BAT 22 Conclusion. SEPA will look to add a condition requiring that a noise management plan is included as part of the site EMS.
Accidents and their Consequences
The supporting information shows that the hydrogen production plant is located in open, well-ventilated areas with no environmentally sensitive receptors nearby.

Formal HAZID and HAZOP studies, have been undertaken and the installation complies fully with ATEX and DSEAR requirements The studies which showed that the risk of serious environmental harm for Arbikie is low and that appropriate measures have been taken to manage any residual risk. This has been achieved through the controls built into the design and layout of the system and do not rely on complex safety systems (these include pressure relief, hydrogen detection, intrinsically safe components, and automated shutdown systems).

The main environmental risk will be from the accidental release of potassium hydroxide solution or the release of one of the various lubricants and oils used on the site. These risks can be reduced through the use of BAT to avoid spills, and the use of appropriate containment measures for the storage of these liquids.

SEPA will therefore include conditions within the permit to cover the storage of liquids on site liquid storage conditions to the permit.

In the event of a gaseous release, the main risk is from the flammability of hydrogen which is primarily a H&S issue, the current guidance on this states that the hydrogen vent should be 2m above the oxygen vent and that the electrolysis unit should be at least 5 m from any combustion source. From an environmental point of view the small volumes being produced when combined with the physical properties of hydrogen oxygen and nitrogen suggests that any environmental harm from an accidental release of these gasses would be negligible.

Although the site will store hydrogen it is not subject to the requirements of the Control Of Major Accident Hazards and (COMAH) Regulations 2015 as the quantity stored does not exceed the lower tier threshold of five tonnes.

A number of additional safety features have been incorporated into the site which minimise the risk or duration of events that could impact the environment. The system at Arbikie is installed with hydrogen detection for safety and to minimise hydrogen emissions during production. If hydrogen is detected, then the system shuts down and all actuated valves close to contain hydrogen within the system. All hydrogen pipework is 316L stainless steel, and pressure tested to 1.5 times working pressure as well as leak tested. The system is regularly maintained to minimise any leaks from the system.

To qualify as a low-risk hydrogen activity under the new regulations EAS regulations, the standard permit template contains a condition which states “The volume of hydrogen stored at the installation at any one time must not exceed 2 tonnes.

In determining the application with respect to SEPA has taken into account planning condition 16. Contained within the Angus Council planning report for planning application REFERENCE: 21/01002/FULL pertaining to;

Erection of a wind turbine (up to 76.5m Blade Tip), underground cables, formation of hydrogen electrolysis and storage compound, including installation or hydrogen electrolysis plant and cooling equipment and other ancillary works including a flue. at Arbikie Distillery Drumbertnot Montrose DD10 9TR for Arbikie Distilling Ltd.

in which Angus Council state:

In order to prevent the storge of a larger amount of hydrogen which could give rise to materially different impacts on the health and safety of the area without full consideration of the acceptability of those impacts by the planning authority.

16. The amount of hydrogen stored on the site at any one time shall be less than 1 tonne.

SEPA has therefore included in the condition that "The volume of hydrogen stored at the installation at any one time must not exceed 1 tonne".

This does not restrict Arbikie Green Hydrogen Limited from applying to vary the permit to increase this limit at which point any application will be a matter for consultation with Angus council or any replacement Local Authority. The current amount proposed to be stored in the application is 11,000m3 which converted to tonnes equates to approximately 922kg (0.922 tonnes) which is below the planning restriction.

The overall size and scale of the hydrogen production activity, and the types and substances being used in the process suggests that the installation presents a relatively very low environmental accident risk; particularly so if the correct operating procedures and containment are put in place.

Closure

There are no site-specific decommissioning and closure issues identified as such the standard permit template conditions are sufficient to cover site decommissioning and closure of the site.

5.8 Site Condition report

The Authorised location is stated in the application as a "greenfield site" which prior to the current development provided grazing for a dairy herd. The Applicant applied for a baseline waiver for the site given the small size of the Installation the restricted number (cleaning compounds and lubricating oils), low volume and contained use of relevant hazardous substances used on the installation.

There will be no storage of relevant hazardous substances on site The request was viewed in light of IED guidance on the matter. The production of hydrogen from the electrolysis of water is a relatively low risk activity involving the use a limited number of relevant hazardous substances In the case of Arbikie these consist primarily of potassium hydroxide solution, a small amount of transformer and lubricant oils and an ethylene glycol containing (25%) aqueous coolant. The applicant has stated that these compounds will not be stored on site and the application shows that that appropriate containment measures are in place to prevent any accidental releases to soil and groundwater during their use.

The applicant had a ground survey undertaken as part of the wider green energy project at the Arbikie in 2022. The investigation included the excavation of two trial pits (12 and 13) where the electrolyser is now located these trial pits found no evidence of "man-made" activity in the area of the hydrogen production unit, confirming the "greenfield" nature of the site. Although only limited analysis was undertaken on the soil samples, the analysis of borehole water drawn from the adjacent groundwater supply point showed no presence for any of the pollutants associated with the hydrogen production activity proposed at the Arbikie site.

Given the evidence already available from previous investigations and the information provided regarding the risks of pollution from the Arbikie site (small scale limited hazardous substance no on-site storage etc). It was determined that an additional site investigation was deemed unnecessary.

The baseline waiver was discussed and agreed at the very start of the project (2024) the basis for this was the very low risk of soil or groundwater contamination from their use due to the following:

The size and scale of the activity proposed,
The limited number of hazardous substances used, their properties and the amounts used
The fact that there would be no storage of hazardous substances on the production site
The use in sealed units/ contained conditions.
The provision of secondary containment
Implementation of maintenance and top up procedures
Implementation of spill and clean up procedures.

5.9 Monitoring

Air

No air monitoring is required for the Hydrogen Oxygen or Nitrogen produced in the electrolysis process

There is no combustion carried out within the permitted installation. The hydrogen "fuel" produced will be piped to the distillery where it will be used to reduce/replace the fuel oil currently used in the distillery boilers. These boilers produce steam/thermal energy required in the distillation and are regulated though a PPC Part B permit covering Medium Combustion Plant (PPC/ /B/5007929) issued to Arbikie Distilling Limited a separate company. The Distillery will continue to operate a dual fuel system with hydrogen supplying 50% of the fuel for the distillery and is therefore not at present considered a Directly Associated activity As the combustion hydrogen may give rise to the production of Nitrous Oxide any change in fuel at the associated distillery may require additional monitoring of emissions to include Nitrous Oxide if not already included in the emissions inventory for that site.

As has been the case at another hydrogen production site two additional conditions (3.4.4 and 3.4.5 as detailed below) will be added to the permit These will require the operator to report the mass emissions of hydrogen and oxygen and nitrogen to air so that the overall impact of the low impact installation / Low Risk Green Hydrogen facility can be assessed.

3.4.4 The Operator shall record and report the mass emission results for the parameters of the combined emissions specified in Table 3 using the method agreed in writing with SEPA (as summarised in Table 3). This information shall be reported in a format agreed in writing with SEPA.

3.4.5 Information used to estimate mass emissions in compliance with Condition 3.4.4 shall be recorded for each estimate.

These requirements will be specified in Table 3 of the permit

Water

There are no direct discharges to water therefore no water monitoring is required.

Soil and Groundwater

Discharges to Groundwater
No List I or List II substances (as defined in the Groundwater Directive and CAR) are handled or discharged. Site investigations confirm the absence of contamination and no sensitive receptors within the zone of potential influence.

Threshold values indicative of risks of saline intrusion into the body of groundwater	Mean electrical conductivity (micro-siemens/cm)	1,000 for electrical conductivity.
Threshold values indicative of other significant environmental risks including those affecting the ability of groundwater to support human uses	(i) Mean conductivity (micro-siemens/cm) for electrical conductivity. (ii) Annual mean	(i) 1000 for electrical conductivity. (ii) The threshold value should be set at 75% of the value determined using the hierarchy in Table 2. If no values can be derived using the hierarchy the threshold value should be set at the laboratory detection limit. Threshold values for radioactive substances are based on dose and risk from ionising radiation, applied to the representative person and to populations of representative organisms [iv], [v], [vi], [vii] [viii].

The only area of concern was the original plan to use spent lees from the distillery, as a feedwater. Like most distilleries Arbikie has stills made from copper. The initial analysis of the feedwater failed to provide any analysis as to the level of copper in the feedwater. Copper is a recognised "specific pollutant" and an inhibitor of electrolysis in the Further Information Notice SEPA has requested that the copper concentration of the feedwater be provided along with evidence that the discharge of effluent would not cause the EQS for copper to be breached and that there was a net benefit from using spent lees in the event that inhibition of electrolysis occurred.

The use of groundwater as a feedwater, the size and scale of the activity being carried out and the limited relevant hazardous substances present on site: potassium hydroxide solution, transformer and lubricating Oil and small amounts of glycol then SEPA would look to set the monitoring period for groundwater as every five years and for soil every 10 years – these have been incorporated into the standard conditions. This may require to be reassessed before Spent Lees is introduced as a feedwater.

Waste
No additional waste monitoring is required at the site other than that required under 5.6 above
5.10 Consideration of BAT and compliance with BAT-Cs if appropriate

6 Other Legislation Considered	
Nature Conservation (Scotland) Act 2004 & Conservation (Natural Habitats &c.) Regulations 1994	
Is there any possibility that the proposal will have any impact on site designated under the above legislation?	**No**

As there are designated sites identified within the screening distance (See Screening map in Section 4.5 above) there is always a possibility that a release would have an impact. The H1 assessment of air emissions undertaken as part of the screening process does not however list Hydrogen, Nitrogen and Oxygen as pollutants and no EAL's or EQS are assigned… (not unsurprising given that both nitrogen and oxygen gases comprise 98-99% of the atmosphere, and hydrogen is so light it will rapidly rise through the atmosphere). As the applicant has stated there will be no use, or generation, of volatile organic compounds in the process then there are no listed pollutants under the H1 assessment.

As there are SPA and SAC sites within the screening area the application requires the CO to undertake a Part 2 assessment under the Nature Conservation procedure NCP-P-01 step B1.2. This requires an assessment of the Likely Significant Effect of the proposal on the qualifying habitat or species interests of the SAC or SPA, and to also considers the possible effects on the additional designated features of any SSSI within the screening distance. In the view of SEPA, the size and non-harmful nature of the releases from this proposed activity means that it is is not likely to have a significant effect on the qualifying interests of the listed SAC or SPA nor is it likely to cause any additional damage to any SSSI interests at the sites identified. As a result, the guidance advises that the statutory SAC/ SPA and SSSI processes have been completed for this application and **consultation with Nature Scotland is therefore <u>NOT</u> required for this application** and the CO may proceed to determine the application for the proposed activity.

Screening distance(s) used	10km
Is there any other legislation that was considered during determination of the permit (for example installations that may be impacted by the requirements of legislation involving Animal By Products, Food Standards, Waste, WEEE regulations etc).	**No**
Officer	[redacted]

7 Environmental Impact Assessment and COMAH

How has any relevant information obtained or conclusion arrived at pursuant to Articles 5, 6 and 7 of Council Directive 85/337/EEC on the assessment of the effects certain public and private projects on the environment been taken into account?
N/A
How has any information contained within a safety report within the meaning of Regulation 7 (safety report) of the Control of Major Accident Hazards Regulations 1999 been taken into account?
N/A

Officer:	[redacted]

8 Details of the permit

Do you propose placing any non-standard conditions in the Permit?	**No**
Officer:	[redacted]

9 Emission Limit Values or Equivalent Technical Parameters/Measures	
Are you are dealing with either a permit application, or a permit variation which would involve a review of existing ELVs or equivalent technical parameters?	**No**
Officer:	[redacted]

10 Peer Review	
Has the determination and draft permit been Peer Reviewed?	**Yes**

Comments made:

There were several typographical errors in this Document and the NTS which were subsequently corrected.

The dates on which the advertisement of the application had been published had not been recorded… these were checked and recorded in the Decision Document.

The tables did not reference the Appendix in which the plans attached to the permit could be found the words “in Appendix 1” were added.

One of the Tables had a blank column (no entries in it) identified this was found to be superfluous to the permit and was subsequently deleted.

Questions were raised regarding the lack of detail regarding the background investigation for the Baseline Waiver Site Report Further details were supplied in the relevant section of the decision Document (see section 5.8 above).

A query was raised regarding the e-mail address which was given in the PPC template for Data Returns to be sent to SEPA this was checked as a number of e-mail addresses have been updated to reflect the introduction of the Environmental Authorisations (Scotland) Amendment Regulations 2025.

Reviewed on 22 June 2026, changes indicated above are complete and permit can be issued.

During an Admin Final check two further changes were recommended to this document.

The wording in the final paragraph of section 5.3 above was changed to remove the words “*borehole water only”* to read:

A discussion was held with consultants in late April 2026 during which the operator agreed to proceed with the application using only borehole water as feedwater.

There was what appeared to be an anomalous reference to a paragraph 4 in Section 5.9 Monitoring Air above. On first review it appeared a typographical error however a further check revealed that the paragraph referred to conditions 3.3.4 and 3.5.5 and on checking the draft permit it was found these conditions were actually numbered 3.4.4 and 3.4.5 and referenced to Table 3 in the draft permit. They had originally been additional conditions in a previous

Hydrogen permit and were added to maintain conformity across the sector. Although they were inserted into the permit correctly the explanation in section 5.9 above had not been altered to reflect the new numbering. The paragraph has been amended to read:

As has been the case at another hydrogen production site two additional conditions (3.4.4 and 3.4.5 as detailed below) will be added to the permit These will require the operator to report the mass emissions of hydrogen and oxygen and nitrogen to air so that the overall impact of the low impact installation / Low Risk Green Hydrogen facility can be assessed.

3.4.4 The Operator shall record and report the mass emission results for the parameters of the combined emissions specified in Table 3 using the method agreed in writing with SEPA (as summarised in Table 3). This information shall be reported in a format agreed in writing with SEPA.

3.4.5 Information used to estimate mass emissions in compliance with Condition 3.4.4 shall be recorded for each estimate.

These requirements will be specified in Table 3 of the permit.

Officer:	[redacted]

11 Final Determination

Issue of a Permit - Based on the information available at the time

Issue a Permit – Based on the information available at the time of the determination SEPA is satisfied that

- The applicant will be the person who will have control over the operation of the installation/mobile plant,
- The applicant will ensure that the installation/mobile plant is operated so as to comply with the conditions of the Permit,
- The applicant is a fit and proper person (specified waste management activities only),
- Planning permission for the activity is in force (specified waste management activities only),
- That the operator is in a position to use all appropriate preventative measures against pollution, in particular through the application of best available techniques.
- That no significant pollution should be caused.

Appendix A – Compliance with relevant BAT Conclusions

1. **Primary Activity**

The primary activity at the installation is the production of hydrogen by electrolysis of water as described in Schedule 1, Part 1, Chapter 4, Section 4.2 (a)(i) of the Regulations.

This activity is covered by the following published BAT Conclusions (BATC), these are reviewed below:

2. Common waste gas management and treatment systems in the chemical sector BAT-C compliance assessment:

BATC	Description	Summary of BATC and discussion	Complies with BATC?
1	Environmental Management Systems (EMS)	**In order to improve the overall environmental performance, BAT is to elaborate and implement an environmental management system (EMS) that incorporates all of the listed features**. See section 5.7 of main document. A number of the BAT C requirements are included in the EMS required under BAT C 1 however the WGC BAT C does not include Noise BAT Conclusions as being part of the EMS	Yes
2	Inventory of air emissions	**In order to facilitate the reduction of emissions to air, BAT is to establish, maintain and regularly review (including when a substantial change occurs) an inventory of channelled and diffuse emissions to air, as part of the environmental management system (see BAT 1), that incorporates all of the listed features**. See section 5.2 of main document.	Yes
3	Other than Normal Operating Conditions (OTNOC).	**In order to reduce the frequency of the occurrence of OTNOC and to reduce emissions to air during OTNOC, BAT is to set up and implement a risk-based OTNOC management plan as part of the environmental management system (see BAT 1) that includes all of the listed features.** As described in main decision document The hydrogen production activity carried out at Arbikie Distillery involves a relatively small and simple process; hydrogen production can be stopped by cutting off the supply of electricity to the electrolysers, so other than normal operating conditions should be very limited. An EMS is required by the conditions contained within 2.2 of the permits, this should be inspected to ensure that it includes all relevant features as a relevant risk based OTNOC management plan.	Yes
4	Integrated waste gas management and treatment strategy.	**In order to reduce channelled emissions to air, BAT is to use an integrated waste gas management and treatment strategy that includes, in order of priority, process integrated recovery and abatement techniques.**	Yes

		See section 5.2 of main document. The hydrogen production process is a relatively simple process with limited air emissions of substances which although they have process safety concerns, are relatively benign to the environment. As such waste gas treatment is not required	
5	Minimisation of emission points.	**In order to facilitate the recovery of materials and the reduction of channelled emissions to air, as well as to increase energy efficiency, BAT is to combine waste gas streams with similar characteristics, thus minimising the number of emission points.** See section 5.2 of main document.	Yes
6	Waste gas treatment system design.	**In order to reduce channelled emissions to air, BAT is to ensure that the waste gas treatment systems are appropriately designed (e.g. considering the maximum flow rate and pollutant concentrations), operated within their design ranges, and maintained (through preventive, corrective, regular and unplanned maintenance) so as to ensure optimal availability, effectiveness and efficiency of the equipment.** See section 5.2 of main document.	Yes
7	Monitoring of key process parameters.	**BAT is to continuously monitor key process parameters (e.g. waste gas flow and temperature) of waste gas streams being sent to pretreatment and/or final treatment**. See section 5.2 of main document.	Yes
8	Monitoring of emissions to air.	**BAT is to monitor channelled emissions to air with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.** The process does not emit any of the substances listed in BAT 8 and as such there are no BAT-C monitoring requirements	Yes
9		This BAT-C applies to organic compounds sent to the final waste gas treatment. As no organic compounds are emitted from the process, this BAT-C is not applicable.	N/A
10	Energy efficiency in relation to final waste gas treatment.	**In order to increase energy efficiency and to reduce the mass flow of organic compounds sent to the final waste gas treatment, BAT is to send**	Yes

		process off-gases with a sufficient calorific value to a combustion unit that is, if technically possible, combined with heat recovery. **BAT 9 has priority over sending process off-gases to a combustion unit**. The small size of the Arbikie Distillery production activity when combined with the intermittent release of gases "with sufficient calorific content" (during an emergency, and annual maintenance) means the use of a combustion unit inviable. As a result, the use of safety vents as specified in the process diagrams is regarded as BAT.	
11		This BAT-C applies to channelled emissions to air of organic compounds, As there are no emissions of organic compounds to air from the facility, the BAT-C is not applicable.	N/A
12		This BAT-C applies to channelled emissions to air of PCDD/F from thermal treatment of waste gases containing chlorine and/or chlorinated compounds. As there is no thermal treatment at the facility, the BAT-C is not applicable.	N/A
13-14		These BAT-Cs apply to emissions of dust and particulate-bound metals. As there are no emissions of dust and particulate-bound metals to air from the facility, the BAT-C is not applicable.	N/A
15	Resource efficiency in relation to waste gas treatment.	**In order to increase resource efficiency and to reduce the mass flow of inorganic compounds sent to the final waste gas treatment, BAT is to recover inorganic compounds from process off gases by using absorption and to reuse them.** The process gives rise to emissions of hydrogen, oxygen, and nitrogen (Inorganic gases). hydrogen and nitrogen or only emitted in an emergency or prior annual maintenance The size of the production unit and the infrequent nature of the emissions make emission profile recovery impractical and therefore the use of safety vents is considered to be BAT. Whilst oxygen is produced as a by-product from the process it will routinely be vented to atmosphere, this is common practice at most hydrogen plants of this type and is considered to be BAT. As part of the resource efficiency review SEPA would expect the operator to look for a possible use of the oxygen produced and where viable capture/re-use of this by-product	Yes
16		This BAT-C applies to channelled emissions to air of CO, NOX and SOX from thermal treatment. As there is no thermal treatment at the facility, the BAT-C is not applicable.	N/A

17	This BAT-C applies to channelled emissions to air of ammonia from the use of selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) for the abatement of NOX emissions (ammonia slip). As neither SCR or SNCR are required to be used at the facility the BAT-C is not applicable.	N/A
18	This BAT-C applies to channelled emissions to air of inorganic compounds other than channelled emissions to air of ammonia from the use of selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) for the abatement of NOX emissions), channelled emissions to air of CO, NOX and SOX from the use of thermal treatment, and channelled emissions to air of NOX from process furnaces/heaters. As none of these techniques are required to be used at the facility the BAT-C is not applicable.	N/A
19-23	These BAT-Cs apply to emissions of Volatile organic compounds. The facility does emit volatile organic compounds and so the BAT-Cs are not applicable.	N/A
24-35	These BAT-Cs apply to the production of polymers and synthetic rubbers and so are not applicable to hydrogen production	N/A
36	This BAT-C applies to process furnaces and heaters; the facility does not have either a furnace or a heater and so the BAT-C is not applicable.	N/A

3. **Common waste water and gas treatment/management systems in the chemical sector BAT-C compliance assessment:**

BATC	Description	Summary of BATC and discussion	Complies with BATC?
1	Environmental Management Systems (EMS)	**In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the** [*listed]* **features:** Adding **In some cases, the following features are part of the EMS:** **(xiii) odour management plan (see BAT 20);** **(xiv) noise management plan (see BAT 22).** See section 5.7 of main document. There is no odour generating process linked to the activity being carried out and as such an Odour Management Plan is not required. Noise is generated on site and as a result a Noise Management plan is required either as part of the	Yes

		EMS or as a separate Noise Management Plan required under CWW BAT 22 below	
2	Establish and to maintain an inventory of wastewater and waste gas streams.	**In order to facilitate the reduction of emissions to water and air and the reduction of water usage, BAT is to establish and to maintain an inventory of wastewater and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the** [listed] **features**.	Yes
3	Monitoring key process parameters.	**For relevant emissions to water as identified by the inventory of wastewater streams (see BAT 2), BAT is to monitor key process parameters (including continuous monitoring of wastewater flow, pH and temperature) at key locations (e.g. influent to pretreatment and influent to final treatment).** As no emission limit values apply under the BAT-AELs, no monitoring requirements have been set in the permit. The Operator is however required to ensure the effluent discharged to the soakaway does not exceed 3 x the Drinking Water Standard (as an alternative technical measure	Yes
4	Monitoring of emissions to water.	As the discharge is below BAT-AELs then no monitoring requirements have been set in the permit. However, there is a BAT requirement on the Operator, to ensure that the effluent discharged to the soakaway does not exceed 3 x the Drinking Water Standard (as an alternative technical measure)	Yes
5		This BAT-C applies to diffuse VOC emissions to air. As there are no VOC emissions from the facility the BAT-C is not applicable.	N/A
6	Monitoring of odour emissions.	**BAT is to periodically monitor odour emissions from relevant sources in accordance with EN standards.** See Section 5.2 of the main document The hydrogen production process will not result in the generation of odour as hydrogen is odourless.	Yes
7	Reduction in the usage of water and the generation of wastewater.	**In order to reduce the usage of water and the generation of wastewater, BAT is to reduce the volume and/or pollutant load of wastewater streams, to enhance the reuse of wastewater within the production process and to recover and reuse raw materials.** Given that water is the main raw material feed for the process, the amount of wastewater generated is directly related to the amount of hydrogen produced.	Yes

		Efficient operation of the water preparation process should ensure that water is not disposed of unnecessarily. The operator is looking at alternative sources of water to produce hydrogen which includes distillery effluent and rainwater	
8	Segregation of uncontaminated wastewater streams from wastewater streams that require treatment.	**In order to prevent the contamination of uncontaminated water and to reduce emissions to water, BAT is to segregate uncontaminated wastewater streams from wastewater streams that require treatment.** Wastewater is disposed of via a pipe to a soakaway	Yes
9	Prevention of uncontrolled emissions to water.	**In order to prevent uncontrolled emissions to water, BAT is to provide an appropriate buffer storage capacity for waste water incurred during other than normal operating conditions based on a risk assessment (taking into account e.g. the nature of the pollutant, the effects on further treatment, and the receiving environment), and to take appropriate further measures (e.g. control, treat, reuse)**. As only a low volume of wastewater is produced in the process and it is discharged to a soakaway and taking into consideration the fact that if the process stops… the production of wastewater stops, Additional buffer storage capacity is considered unnecessary.	Yes
10	Integrated wastewater management and treatment strategy.	**In order to reduce emissions to water, BAT is to use an integrated wastewater management and treatment strategy that includes an appropriate combination of the listed techniques.** See section 5.3 of main document.	Yes
11	Pretreatment of wastewater that contains pollutants that cannot be dealt with adequately during final wastewater treatment.	**In order to reduce emissions to water, BAT is to pretreat wastewater that contains pollutants that cannot be dealt with adequately during final wastewater treatment by using appropriate techniques.** See section 5.3 of main document.	Yes
12	Final wastewater treatment.	**In order to reduce emissions to water, BAT is to use an appropriate combination of final wastewater treatment techniques.** See section 5.3 of main document.	Yes
13	Waste management plan.	**In order to prevent or, where this is not practicable, to reduce the quantity of waste being sent for disposal, BAT is to set up and implement a waste management plan as part of the environmental management system (see BAT 1)**	Yes

		that, in order of priority, ensures that waste is prevented, prepared for reuse, recycled or otherwise recovered. A waste management plan is required by Condition 2.6 of the permit.	
14	Reduction in the volume of wastewater sludge requiring further treatment or disposal.	**In order to reduce the volume of wastewater sludge requiring further treatment or disposal, and to reduce its potential environmental impact, BAT is to use one or a combination of the listed techniques.** Given the size of the plant involved and the water input it is unlikely that any sludge will be generated within he regulated activity and as a result no further techniques are required on site.	Yes
15	Enclosure of emission sources and treatment of emissions.	**In order to facilitate the recovery of compounds and the reduction of emissions to air, BAT is to enclose the emission sources and to treat the emissions, where possible.** Due to the nature and size of the process, the recovery of compounds from wastewater will be difficult to carry out There are no emissions to air from the wastewater. On this basis emissions sources do not require enclosure or treatment.	Yes
16		This BAT-C applies to the use of an integrated waste gas management and treatment strategy that includes process-integrated and waste gas treatment techniques. Emissions to air are limited and do not require treatment before release, therefore the BAT-C is considered to not be applicable.	N/A
17	Flaring.	**In order to prevent emissions to air from flares, BAT is to use flaring only for safety reasons or non-routine operational conditions (e.g. start-ups, shutdowns) by using one or both of the listed techniques**. Releases of hydrogen during emergencies and prior to maintenance, will be vented rather than flared. Flares give rise to potential visual and noise issues which can be safely avoided using a vent. Safety vents have been installed and is regarded as BAT.	
18		This BAT-C applies to emissions to air from flares. As there is no flare at the facility the BAT-C is not applicable.	N/A
19		This BAT-C applies to diffuse VOC emissions to air. As there are no VOC emissions from the facility the BAT-C is not applicable.	N/A

20	Odour management plan.	**In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the *[listed]* elements.** See section 5.2 of main document. As stated, the process is odourless and therefore including a requirement for an Odour Management Plan is pointless Especially given that BAT 1 (above) suggests that the requirement for a OMP is not applied in all cases. **BAT 1 C CWW BAT Conclusion** *"In some cases, the following features are part of the EMS:* *(xiii) odour management plan (see BAT 20);*	Yes
21	Reduction in odour emissions from wastewater collection and treatment and from sludge treatment.	**In order to prevent or, where that is not practicable, to reduce odour emissions from wastewater collection and treatment and from sludge treatment, BAT is to use one or a combination of the listed techniques.** Due to the nature and size of the activity it is unlikely to produce malodorous compounds Indeed the bulk of the wastewater from hydrogen production consists of concentrated constituents of the water supply itself and therefore not odorous.	Yes
22	Noise management plan.	**In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to set up and implement a noise management plan, as part of the environmental management system (see BAT 1), that includes all of the** [*listed*] **elements:** See section 5.4 of main document. Noise is generated on site and as a result a Noise Management Plan is required either as part of the EMS or as a separate Noise Management Plan	Yes
23	Reduction in noise emissions.	**In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the listed techniques.** See section 5.4 of the main document.	Yes