Scottish Environment Protection Agency
Buidheann Dìon Àrainneachd na h-Alba

Pollution Prevention and Control Regulations 2012

Part A Permit – Small scale production of hydrogen by electrolysis of water

Energy Centre, The Event Complex Aberdeen

PPC/A/5009808

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Authorisation reference: PPC/A/5009808

Introduction

This introduction does not form part of the authorisation.

Authorisations

Who we are: The Scottish Environment Protection Agency (SEPA) is a non-departmental public body of the Scottish Government. Our purpose is to deliver environmental protection and improvement in ways that, as far as possible, also create health and wellbeing benefits and sustainable economic growth.

Why we issue authorisations: We are responsible for preventing or controlling pollution and improving the environment. One of the tools available to us is the authorisation of activities that present environmental risk. Authorisations give permission for these activities to occur and set conditions that the activities must comply with.

When we issue authorisations: We will issue an authorisation following our determination of an application, when satisfied that the authorised person has put in place measures to protect the environment and is capable of carrying out activities in line with the conditions of an authorisation.

Changes to authorisations: We can amend, suspend or revoke an authorisation in response to changes in legislation, the activities undertaken or authorisation holder performance.

Compliance and enforcement: SEPA Officers may undertake monitoring and inspections to assess compliance with authorisation conditions. All authorisations and inspection reports are publicly available. If an authorised person fails to comply with an authorisation, we may take enforcement action in line with our enforcement policy and guidance.

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Authorisation reference: PPC/A/5009808

General information:

Address:	Energy Centre, The Event Complex, Aberdeen, Forrit Burn Road, Bucksburn, AB21 9TF.
Description of authorised activities:	The production of hydrogen by the electrolysis of water.
Environmental risks SEPA has regulatory powers to control:	The discharge of potentially polluting substances to the air, water and ground.

Grant of Authorisation

This authorisation has been granted by the Scottish Environment Protection Agency in exercise of its powers under Regulation 13 of the Pollution Prevention and Control (Scotland) Regulations 2012. Terms used in this authorisation, unless otherwise specified, are defined in the Interpretation of Terms schedule.

Authorisation reference:	PPC/A/5009808
Authorised Person:	Aberdeen City Council No company number – Local Authority Marischal College, Aberdeen, AB10 1AB
Authorised Activities:	The operation of an installation where the following activities are carried out: The production of hydrogen by the electrolysis of water and any directly associated activities as further detailed in this authorisation falling within Schedule 1, Part 1 Chapter 4 Part A Section 4.2 (a) (i) of the Regulations.
Authorised Place:	Energy Centre, The Event Complex, Aberdeen, Forrit Burn Road, Bucksburn, AB21 9TF.
Conditions applicable to this authorisation:	The conditions contained in the schedules of this authorisation.
Date of Authorisation:	21/01/2026
Effective date of Authorisation:	21/01/2026

Contents

Schedule 1: The Authorised Person and Activities

Purpose: This schedule places responsibility on the authorised person to have systems and procedures in place that ensure compliance with the conditions of this authorisation and details the activities that can be carried out.

1.1 Duty of Authorised Person

1.1.1 The authorised person must ensure compliance with the conditions of this authorisation.

1.2 Authorised Place

1.2.1 The authorised place and installation are outlined in red on the plan in Appendix 1.

1.3 Authorised Activities

1.3.1 This authorisation authorises the operation of the installation in Table 1 to carry out the authorised activities at the authorised place.

Table 1 Installation

Activities:
The production of hydrogen by the electrolysis of water and any directly associated activities as further detailed in this authorisation falling within Schedule 1, Part 1 Chapter 4 Part A Section 4.2 (a) (i) of the Regulations.
Stationary Technical Unit:
Water purification. Alkaline electrolyser system (2 x 500 kW) capable of producing up to 400 kg of hydrogen per day. Hydrogen compression and compressed gas storage.
Directly Associated Activities:
The provision of services to the stationary technical unit (including electricity import).

Schedule 2: General Requirements

Purpose: This schedule sets out the requirements relating to the commissioning and decommissioning of the installation as well as the requirements around resource use.

2.1 Management Systems

2.1.1 The Permitted Installation must be managed and operated in accordance with a written management system.

2.1.2 The written management system required by 2.1.1 must be implemented immediately after commissioning has concluded.

2.1.3 The written management system must be reviewed as required and at least once every four years. All reviews must be recorded, and the results of any review incorporated into the written management systems, and implemented, within a period of 3 months from the end of the review.

2.2 Commissioning

2.2.1 As part of the commissioning of the installation, validation tests must be carried out that demonstrate that the installation can be operated in compliance with the conditions of this authorisation.

2.2.2 An end of commissioning report must be submitted to SEPA within four weeks of completing the commissioning of the installation.

2.3 Decommissioning

2.3.1 SEPA must be notified if there is a planned cessation of all, or any part of authorised activities for any period exceeding 12 months.

2.3.2 On final cessation of activities, measures must be taken to return the installation to a satisfactory state.

2.4 Resource Efficiency

2.4.1 The authorised activities must be undertaken in a manner that uses resources efficiently and minimises the production of waste.

Schedule 3: Pollution Control

Purpose: This schedule requires the authorised person to ensure emissions from the authorised activities are controlled and specified emission limit values are met.

3.1 Start-up and Shut-down

3.1.1 The number of start-ups and shut-downs should be kept to the minimum that is reasonably practicable.

3.1.2 All reasonable steps must be taken to minimise emissions during start up and shut-down.

3.2 Emissions

3.2.1 Measures must be taken to prevent, or where that is not practicable, minimise:

(a) odour;

(b) noise;

from the authorised activities.

3.2.2 Other than condensed water vapour, all releases to the air during normal operations must be free from visible emissions.

3.2.3 Offensive odours from the authorised activities as perceived by a SEPA officer must not be emitted beyond the boundary of the authorised place.

3.2.4 Noise from the authorised activities, which has a significant impact on the environment, people or property, must not be emitted beyond the boundary of the authorised place.

3.2.5 Other than as specifically authorised, the authorised activities must not cause environmental harm.

3.2.6 There must be no discharge of any hazardous substance or pollutant to soil or groundwater.

3.3 Emission Points – Air

3.3.1 Point source emissions to air from the installation must only be made from the emission points and locations specified in Table 2.

3.4 Emission Limit Values – Air

3.4.1 Emissions of substances to the air from the installation must not exceed the emission limit value specified in Table 2.

3.4.2 Air must not be added to dilute emissions in order to achieve the emission limit values specified in Table 2.

3.4.3 The Operator shall record and report the mass emission results for the parameters of the combined emissions specified in Table 3 using the method summarised in Table 3. This information shall be reported annually within two months of the end of the calendar year.

3.4.4 Information used to estimate mass emissions in compliance with 3.4.3 shall be recorded for each estimate.

3.5 Venting

3.5.1 All venting events must be recorded and reported to SEPA within two months of the end of the calendar year. The record must contain:

(a) The date, time and duration of each venting event;

(b) The vent(s) employed;

(c) An estimate of the quantity of hydrogen vented;

(d) The reason for the venting event with identification of the root cause of the event;

(e) Actions taken to minimise emissions during the venting event; and

(f) Actions taken to prevent reoccurrence of the venting event.

Table 2 Emissions: limits and monitoring requirements – Air

Substance	Emission Limit Value (Units)	Emission point number (Appendix 2)	Emission source	Operational mode	Monitoring frequency	Reference period	Monitoring method
Hydrogen	No limit set	P1	Electrolyser 1	Purging, recommissioning, de-pressurisation and emergency venting	-	-	-
Hydrogen	No limit set	P3	Electroyser 2	Purging, recommissioning, de-pressurisation and emergency venting	-	-	-
Hydrogen	No limit set	P5	Compressor	Recommissioning, de-pressurisation and emergency venting	-	-	-
Hydrogen	No limit set	P6	Hydrogen storage	Emergency venting	-	-	-
Hydrogen	No limit set	P7	Hydrogen storage	Storage commissioning & maintenance	-	-	-
Oxygen	No limit set	P2	Electrolyser 1	Normal operation	-	-	-
Oxygen	No limit set	P4	Electroyser 2	Normal operation	-	-	-
Nitrogen	No limit set	P1	Electrolyser 1	Purging	-	-	-
Nitrogen	No limit set	P3	Electroyser 2	Purging	-	-	-
Nitrogen	No limit set	P7	Hydrogen storage	Storage commissioning & maintenance	-	-	-

Table 3 Mass emissions: reporting requirements – Air

Substance	Combined Emissions Points	Method (Summary)	Mass Emissions result to be recorded as:
Hydrogen	P1, P3, P5, P6 & P7	Amount of hydrogen produced minus the sum of the amount of hydrogen exported and the amount of fugitive hydrogen emissions.	kg
Oxygen	P2 & P4	Calculated from the amount of hydrogen produced.	kg
Nitrogen	P1, P3 & P7	Amount of nitrogen used for purging.	kg

3.6 Emission Points – Water

3.6.1 The discharge outfall(s) and sample points must be at the location(s) specified in Table 4.

3.6.2 The discharge from the outfall specified in Table 4 must only consist of de-ionised water from the electrolysis units.

Table 4 Outfall Location(s)

Activity	Discharge to	Outfall NGR	Sample Point NGR
Electrolysis of water	Scottish Water sewer	NJ 88365 10511	N/A

3.7 Soil and Groundwater

3.7.1 Unless specified elsewhere in this Permit, there must be no emission of any pollutants to groundwater or soil from the Permitted Installation.

3.8 Fugitive emissions

3.8.1 Measures must be taken to ensure that fugitive emissions or leaks of hydrogen are prevented.

3.8.2 An on-going annual Leak Detection and Repair Programme (LDAR) designed to reduce fugitive hydrogen emissions to air from the production plants, pipes and tanks must be implemented and maintained.

Schedule 4: Environmental Monitoring

Purpose: This schedule requires the authorised person to monitor emissions.

4.1 Monitoring Requirements

4.1.1 Monitoring must be undertaken as specified in Table 2.

4.1.2 Sample locations must be provided, maintained and appropriately identified so that representative samples may be safely obtained.

4.2 Soil and Groundwater

4.2.1 Soil and groundwater monitoring must be undertaken as specified in Table 5.

Table 5 Monitoring requirements – soil and groundwater

Operational area	Relevant hazardous substance	Frequency	
		Groundwater	Soil
Hydrogen production facility	Potassium Hydroxide solution	5 Years	10 Years

4.2.2 A soil and groundwater monitoring plan to achieve the requirements of Table 5 must be submitted to SEPA at least three months prior to any monitoring taking place.

Schedule 5: Infrastructure

5.1 Liquid Storage

5.1.1 Containers used for the storage of liquids must be kept closed and stored within a bund / secondary containment system that must:

(a) hold at least:

(i) for a single container, 110% of its total capacity; or

(ii) for two or more containers the greater of:

1) 110% of the capacity of the largest container; or
2) 25% of the capacity of all containers together.

(b) catch all spills from the container(s) and related parts;

(c) be leak-proof;

(d) be located and/or protected, to prevent damage as far as reasonably practicable;

(e) be stored away from sources of heat; and

(f) have any spills and/or rainwater removed as soon as reasonably practicable.

Schedule 6: Operation of Process

Purpose: This schedule places responsibility on the authorised person to ensure activities are carried out in accordance with required methods of operation.

6.1 Hydrogen storage

6.1.1 The quantity of hydrogen stored at the installation at any one time must not exceed 1000 kg.

Schedule 7: Record Keeping and Data Submission

Purpose: This schedule requires the authorised person to keep records associated with the operation of the installation and submit certain records to SEPA.

7.1 Record Keeping – general requirements

7.1.1 All information recorded, kept or submitted to SEPA in accordance with a condition of this authorisation must be:

(a) true and accurate,

(a) provided to SEPA upon request, and

(b) kept for the retention period specified in Table 6.

Table 6 Retention of information requirements

Information	Retention period
Soil and groundwater monitoring	Until surrender of authorisation
All records and reports of any environmental event that has, or might have, impacted on the condition of any soil or groundwater	Until surrender of authorisation
All other information	Six years

7.2 Resource Efficiency

7.2.1 Annual data totals of raw materials, energy utilised, emissions, and waste produced within the installation, must be recorded in the relevant section of the "Systematic assessment of resource use and efficiency template" supplied by SEPA

7.2.2 A report detailing a review of resource utilisation at the installation must be submitted annually. The report must:

(a) Include the annual data totals required in 7.2.1;

(b) identify ways to reduce raw materials, water used, energy utilised, emissions, and waste produced; and

(c) demonstrate that where possible resource utilisation is improving at the installation year-on-year.

7.2.3 For the purposes of 7.2.2(a) “raw materials”, “energy” and “fuel” must, as a minimum, include the materials listed in Table 7.

Table 7 Resource type and unit of measurement

Raw material, Energy or Fuel	Unit of measurement
Hydrogen produced	kg
Hydrogen exported	kg
Hydrogen vented and fugitive emissions	kg
Mains Water to the process	kg
Electricity	MWh
Nitrogen imported	kg
Nitrogen emitted	kg
Oxygen emitted	kg
Oxygen exported	kg
Potassium hydroxide solution	kg
Water purifier cleaning products	kg
Effluent discharge to sewer from the process	litres

7.3 Soil and groundwater protection assessment report

7.3.1 At least every four years, an assessment of the condition of the installation and infrastructure designed to prevent emissions from the installation to soil and groundwater must be undertaken and reported to SEPA. The assessment report must include:

(a) a review of the effectiveness of the infrastructure designed to prevent emissions to soil and groundwater;

(b) a review of records of any management actions or procedures used to prevent emissions to soil and groundwater and an assessment of their effectiveness;

(c) details of any actions required to maintain the infrastructure so that it prevents emissions to soil and groundwater;

(d) a CCTV, video or appropriate equivalent survey of the drainage systems and process area to ensure their structural integrity and to identify any remedial actions required;

(e) the details of corrective actions required to remedy any contamination that has occurred as a result of the authorised activities; and

(f) the details of any additional measures that are required to prevent emissions to soil and groundwater.

7.4 Reporting and Notification Requirements

7.4.1 Where any condition of this authorisation requires information to be reported or notified to SEPA, a report or notification must be forwarded to SEPA by the date(s), the period, and the frequency, specified in Table 8.

Table 8 Reporting and notification requirements

Summary of Information to be Reported or Notified	Condition/ section/ schedule	Date/Within period/ Frequency to be Reported	Date First Report Due	Address to send report to
End of Commissioning Report	2.2.2	Within four weeks of completing the commissioning of the installation	Within four weeks of completing the first commissioning of the installation	ppcdatareturns@sepa.org.uk
Notification if there is a planned cessation of all, or any part of authorised activities, for any period exceeding 12 months	2.3.1	At least 1 month before the date of planned cessation	-	ppcdatareturns@sepa.org.uk
Annual mass emission results	3.4.3 & 3.6.3	Annually within 2 months of the end of the calendar year	By 28 February following permit issue	ppcdatareturns@sepa.org.uk
Results of the monitoring of emissions, as described in Schedule 4	4.2.1	No later than two months from the date on which monitoring was undertaken	As required by Schedule 4	ppcdatareturns@sepa.org.uk
Soil and groundwater monitoring plan	4.2.2	At least three months in advance of carrying out the monitoring	At least three months in advance of carrying out first monitoring	ppcdatareturns@sepa.org.uk
Report detailing a review of resource utilisation at the installation	7.2.2	Annually within 2 months of the end of the calendar year	By 28 February following permit issue	ppcdatareturns@sepa.org.uk

Summary of Information to be Reported or Notified	Condition/ section/ schedule	Date/Within period/ Frequency to be Reported	Date First Report Due	Address to send report to
Soil and groundwater protection assessment report	7.3.1	At least every 4 years	Within 4 years of the date of the permit	ppcdatareturns@sepa.org.uk
Notification of an event as required by 8.1.1	8.1.1	As reasonably practicable, and in any case within 24 hours of identification of the event	As required	Via pollution hotline contact 0800 807060
Event notification	8.3.1	Within 14 days of the event	As required	ppcdatareturns@sepa.org.uk

Schedule 8: Environmental Events

Purpose: This schedule requires the cessation, prevention and reporting of any potentially polluting event that may arise from the authorised activities.

8.1 Notification to SEPA

8.1.1 SEPA must be notified via its pollution hotline contact telephone number as soon as reasonably practicable, and in any case within 24 hours of identification of an event, of any of the following:

(a) an event that has caused or could cause adverse impact to the environment or harm to human health;

(b) an event that results, or could result, in an emission to the environment that is not authorised;

(c) an event that has caused a breach of a condition of this authorisation.

In this condition, the meaning of 'event' is as defined in the Interpretation of Terms in Schedule 9: of this authorisation.

8.2 Management of the Event

8.2.1 All measures that are reasonably practicable must be taken to stop an event and to minimise its effect on the environment.

8.3 Reporting of the Event

8.3.1 Within 14 days of an event a report must be submitted to SEPA detailing:

(a) the reason(s) for the event;

(b) the action(s) taken to stop the event and minimise the impacts; and

(c) the action(s) taken to prevent the event from recurring.

Schedule 9: Interpretation of Terms

For the purposes of this authorisation, and unless the context requires otherwise, the following definitions apply.

Term	Definition
authorisation	The permit granted by SEPA under The Pollution Prevention and Control (Scotland) Regulations 2012.
authorised activities	The activities and any directly associated activities which may be carried out under this authorisation.
authorised person	The holder of this authorisation and person responsible for securing compliance with the conditions of it. Has the same meaning as 'operator' as defined in The Pollution Prevention and Control (Scotland) Regulations 2012.
authorised place	The geographic location at which the authorised activities may be carried on.
commissioning	The commencement in operation of the Permitted Installation or part thereof, for the first time following construction, or after any significant modification or change. It includes: the planning and management of the commissioning or the Permitted Installation or part thereof; functional testing of equipment; introducing process materials to the plant; resolution of technical and procedural problems; confirmation that all aspects of the plant operate as designed or planned; and confirmation the plant operates within the conditions of the Permit.
directly associated activity	Any activity which has a technical connection with the activity carried out in the stationary technical unit and which could have an effect on pollution.
dust	Suspended solid particles and liquid droplets suspended in air which may be deposited on surfaces and may cause air pollution and/or nuisance.
emission	The discharge of substances from an installation into the air, land or water

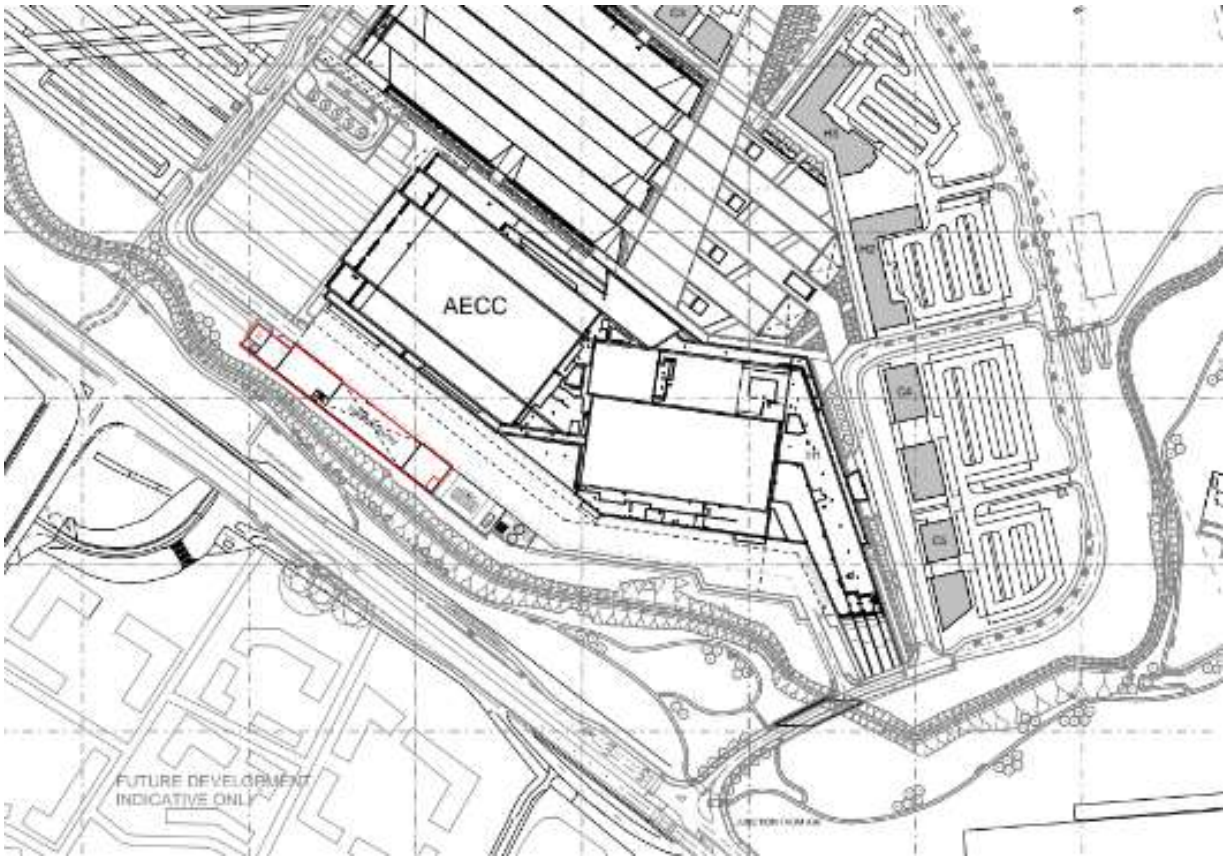
emission limit value	The mass, expressed in terms of specific parameters, concentration or level of an emission, which may not be exceeded during one or more periods of time. All air emission limit values are defined at: (1) a temperature of 273.15K; (2) a pressure of 101.3kPa; (3) after correction for the water vapour content of the waste gases;
environmental harm	(a) Harm to the health of human beings or living organisms, (b) Harm to the quality of the environment, including: (i) harm to the quality of the environment taken as a whole, (ii) harm to the quality of air, water or land, and (iii) other impairment of, or interference with, ecosystems, (c) Offence to the sense of human beings, (d) Damage to property, or (e) Impairment of, or any interference with, amenities or other legitimate uses of the environment.
event	• Any accident which has caused or could cause environmental harm; or • Any malfunction, breakdown or failure of plant, infrastructure or techniques which has caused or could cause environmental harm; or • Force majeure or action taken to save human life or limb.
hazardous substance	substances or mixtures as defined in Article 3 of (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures

installation	(a) a stationary technical unit where one or more activities listed in Schedules 1 or 2 of The Pollution Prevention and Control (Scotland) Regulations 2012 are carried out, and (b) any other location on the same site where any other directly associated activities are carried out, and references to an installation include references to part of an installation.
normal operation	Operation of the authorised activities excluding start-up and shut-down periods.
point source emission	Single, identifiable source of emission.
The Regulations	The Pollution Prevention and Control (Scotland) Regulations 2012.
relevant hazardous substance	hazardous substances that are capable of contaminating soil and groundwater based upon consideration of the chemical and physical properties of the substance.
resource	Resource means materials, water, waste, residues and energy used within or produced from the regulated process(es) and in any ancillary processes on site.
SEPA	Scottish Environment Protection Agency.
SEPA officer	Any person who is authorised in writing under Section 108 of the Environment Act 1995 to carry out duties on behalf of SEPA.
Start-up	The starting or restarting of all or part of a process following shutdown within an authorised activity before reaching minimum stable operating conditions.
Shut-down	A period of time where one or more electrolysers, is intentionally placed in a non-operational condition. This includes but is limited to a planned cold standby, where power to the electrolyser in question is cut off, and a nitrogen purge is conducted to safely isolate the unit. A hot

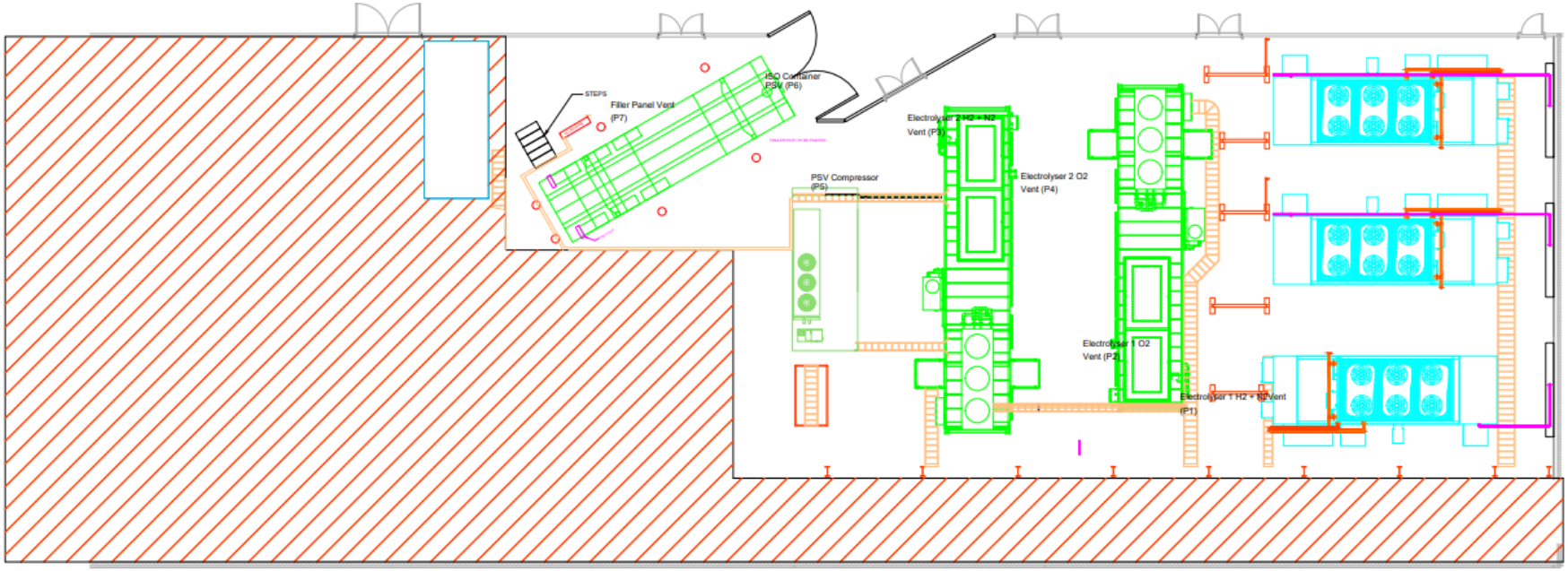
	standby state, where the electrolyser remains in an idle state but fully ready to operate with only dynamic adjustments to power required to recommence production, is not classified as a shutdown.
Venting event	Any venting of hydrogen via emission points P1, P3, P5, P6 or P7.
water environment	has the same meaning as in the Water Environment and Water Services (Scotland) Act 2003 that is all surface water, groundwater and wetlands; and “surface water”, “groundwater” and “wetlands” shall have the same meanings as in the Act.

Except where specified otherwise, any reference to an enactment or statutory instrument includes a reference to it as amended (whether before or after the date of the authorisation) and to any other enactment, which may after the date of the authorisation replace or amend it.

Appendix 1. Authorised Place



Appendix 2. Emission point location plan



Explanatory Notes

These explanatory notes do not form part of the authorisation.

Best Available Techniques (BAT):

Regulation 22 of the Regulations specifies that there is a condition of an authorisation, that the authorised person must use the best available techniques (BAT) for preventing, or where that is not practicable, reducing emissions from the installation or mobile plant. This is referred to as the 'general' BAT condition. This condition does not apply in relation to any aspect of the operation of the installation or mobile plant, which is regulated by a specific condition of the authorisation. Examples of aspects of the operation that have not been regulated by specific conditions are management supervision systems, training and qualifications and maintenance in general.

In considering BAT, SEPA would expect the authorised person to have regard to all relevant PPC sectoral or other technical guidance, including process guidance notes published by the Scottish Government.