Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Green Hydrogen 3 Limited

Northfleet Hydrogen Production Facility
Northfleet Mill
Crete Hall Road
Gravesend
DA11 9AD

Permit number

EPR/MP3624ST

Northfleet Hydrogen Production Facility
Permit number EPR/MP3624ST

Introductory note

This introductory note does not form a part of the permit

The main features of the permit are as follows.

The Northfleet Hydrogen Production Facility produces hydrogen gas through the electrolysis of purified water using electricity supplied from renewable sources. This is a Section 4.2 Part A(1) (a) (i) activity for producing an inorganic gas.

The facility is part of a multiple operator installation with the Northfleet Paper Mill (permit number EPR/BJ7379IZ), which is the sole user of the hydrogen produced.

The hydrogen is produced by six identical proton exchange membrane electrolysers with a total electrical input rating of 15 MWe and maximum hydrogen production rate of approximately 280 kg/hour. The electrolysers are housed in container modules which include the raw water treatment and hydrogen gas purification. There is no compression prior to the hydrogen being sent via a dedicated pipeline for combustion in the boiler plant of the Northfleet Paper Mill. A maximum capacity of 1800 kg of hydrogen may be stored in dedicated storage tanks until required for use.

The electrolyser feedstock water is ordinary towns water provided by agreement with Southern Water, and process effluent from the reverse osmosis treatment process is discharged to foul sewer in line with a trade effluent discharge consent issued by Southern Water. Uncontaminated surface water runoff is discharged direct to the River Thames.

There are emissions to air of hydrogen from the electrolyser vents, and the by-product of oxygen is vented direct to atmosphere. A flare is present for the combustion of the hydrogen inventory in an emergency only.

The site is adjacent to the River Thames and within a mix of industrial and residential areas. The Thames Estuary & Marshes SPA/Ramsar is within 10km of the site and the Swanscombe Peninsula SSSI is within 2km of the site.

The facility's environmental management system adheres to the ISO 14001 standard.

The status log of the permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/MP3624ST/A001	Duly made 19/08/2024	Application for hydrogen production by electrolysis facility.
Additional information received	23/08/2024	Correction to grid reference of final discharge point for treated effluent.
Additional information received	30/08/2024	Updated site condition report.
Additional information received (response to Schedule 5 Notice dated 01/10/2024)	21/10/2024	Further information on: • Purification units. • Wastewater buffer tank. • Water usage and efficiency. • Energy efficiency. • Continuous process venting of hydrogen.
Additional information received	15/01/2024	Site plan showing multiple operator installation boundary.

Status log of the permit		
Description	**Date**	**Comments**
Permit determined EPR/MP3624ST	07/02/2025	Permit issued to Green Hydrogen 3 Limited.

Other Part A installation permits relating to this installation		
Operator	**Permit number**	**Date of issue**
Kimberly-Clark Limited	EPR/BJ379IZ	25/04/2002

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/MP3624ST

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016

Green Hydrogen 3 Limited ("the operator"),

whose registered office is

Beaufort Court
Egg Farm Lane
Kings Langley
Hertfordshire
WD4 8LR

company registration number 14314761

to operate part of an installation at

Northfleet Hydrogen Production Facility
Northfleet Mill
Crete Hall Road
Gravesend
DA11 9AD

to the extent authorised by and subject to the conditions of this permit.

Name	Date
Sandra Cavill	**07/02/2025**

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

1.2.1 The operator shall:

(a) take appropriate measures to ensure that energy is used efficiently in the activities;

(b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

1.3.1 The operator shall:

(a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;

(b) maintain records of raw materials and water used in the activities;

(c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

(d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

1.4.1 The operator shall take appropriate measures to ensure that:

(a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and

(b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

(c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

1.5 Multiple operator installations

1.5.1 Where the operator notifies the Environment Agency under condition 4.3.1 (a) or 4.3.1 (c), the operator shall also notify without delay the other operator of the installation of the same information.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in red on the site plan at schedule 7 to this permit, which is within the area edged in green on the site plan that represents the extent of the installation covered by this permit and that of the other operator of the installation.

2.3 Operating techniques

2.3.1 The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.

2.3.2 If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation ("plan") specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.3 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.4 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:

(a) the nature of the process producing the waste;

(b) the composition of the waste;

(c) the handling requirements of the waste;

(d) the hazardous property associated with the waste, if applicable; and

(e) the waste code of the waste.

2.3.5 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

2.5 Pre-operational conditions

2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.4 have been completed.

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2 and S3.3.

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.1.3 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

3.3.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;

(b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:

(a) point source emissions specified in tables S3.3;

(b) process monitoring specified in table S3.4;

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.

3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 table S3.3 unless otherwise agreed in writing by the Environment Agency.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;

(b) the annual production/treatment data set out in schedule 4 table S4.2; and

(c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.3 Notifications

4.3.1 In the event:

(a) that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—

(i) inform the Environment Agency,

(ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and

(iii) take the measures necessary to prevent further possible incidents or accidents;

(b) of a breach of any permit condition the operator must immediately—

(i) inform the Environment Agency, and

(ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

(c) of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(a) any change in the operator's name or address; and

(b) any steps taken with a view to the dissolution of the operator.

In any other case:

(a) the death of any of the named operators (where the operator consists of more than one named individual);

(b) any change in the operator's name(s) or address(es); and

(c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) the Environment Agency shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.3.7 Where the operator has entered into a climate change agreement with the Government, the Environment Agency shall be notified within one month of:

(a) a decision by the Secretary of State not to re-certify the agreement;

(b) a decision by either the operator or the Secretary of State to terminate the agreement; and

(c) any subsequent decision by the Secretary of State to re-certify such an agreement.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 Activities			
Activity reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
AR1	Section 4.2 Part A(1) (a) (i) – Producing inorganic chemicals such as hydrogen	Production of hydrogen gas by electrolysis of water in six proton exchange membrane electrolysers with a total installed capacity of 15 MWe.	Receipt of raw materials to production of hydrogen gas for use on site (by other operator of installation).
	Directly Associated Activity		
AR2	Water demineralisation	Ion exchange and reverse osmosis treatment.	From the receipt of raw water to the production of demineralised water for consumption in the electrolysis process and including the generation of effluent discharged to sewer.
AR3	Hydrogen purification	Purification by removing trace oxygen in a DeOxo unit and then moisture in a dryer.	From collection of hydrogen gas at electrolyser cathode to the output of purified hydrogen gas from the dryer.
AR4	Storage of hydrogen	Temporary hydrogen gas storage in tanks in the event of its immediate use not being required.	From receipt of hydrogen gas after purification to dispatch for use on site (by other operator of installation). Maximum storage capacity of 1800 kg.
AR5	Electrolyser cooling	Closed loop water cooling system.	Operation of cooling system.
AR6	Emergency venting and flaring	Venting of hydrogen or combustion of hydrogen by flaring.	During emergency events only.
AR7	Transformers	Two electrical transformers.	--
AR8	Surface water drainage	Collection of uncontaminated surface run-off.	From collection of uncontaminated surface water to it joining the surface water drainage system of the other operator of the installation.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application EPR/MP3624ST/A001	The following sections of the Application Pack document (version 1, 25/01/2024): • 2.5 – The proposed installation and classification. • 3 – Process description. • 4 – Emissions and monitoring. • 8 – BAT assessment.	Duly Made 19/08/2024
Response to Schedule 5 Notice dated 01/10/2024	Responses to: • Question 2 detailing management of effluent. • Question 5 detailing techniques for energy efficiency.	21/10/2024

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	Validation of emissions to water risk assessment The operator shall submit a written report to the Environment Agency for assessment and written approval. The report must contain: • The monitoring data from a minimum of 12 samples from emission point S1, obtained under normal operating conditions throughout the first 12 months of operation (post commissioning period). • A comparison of the effluent composition identified by the samples and the expected composition described in application EPR/MP3624ST/A001. • An impact assessment in line with our guidance (Surface water pollution risk assessment for your environmental permit - GOV.UK (www.gov.uk)) for any substances that are present in higher concentrations in the samples compared to the expected composition. This should be based on the final discharge being to a marine environment. • For any substances that do not screen out in the above, the results of modelling. • Where the results of modelling show that a substance is liable to cause pollution, the operator shall cease further discharge of the site effluent to sewer and shall provide proposals and timescales on how to manage the effluent to ensure the discharge has an insignificant impact on receiving waters. The operator must implement any proposals in the report in line with the timescales agreed with the Environment Agency's written approval.	Within 15 months of commencing operation of activity AR1 (post commissioning period).

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC2	Emissions of hydrogen from venting The operator shall submit a written report to the Environment Agency for assessment and written approval. The report must contain the proposed methodology to quantify and report any emissions of hydrogen from venting associated with the operations of the installation. The operator must implement the proposals in the report as agreed with the Environment Agency's written approval.	Within 6 months of commencing operation of activity AR1 (post commissioning period).
IC3	Fugitive emissions and leak detection and repair (LDAR) programme The operator shall submit a written plan to the Environment Agency for assessment and written approval. The plan must contain: • A proposal for a risk-based leak LDAR programme implementing the principles of LDAR to eliminate or reduce fugitive emissions of hydrogen due to its global warming potential. • Details of the monitoring techniques proposed to detect and quantify fugitive emissions of hydrogen, demonstrating how these comply with state-of-the-art emission monitoring for hydrogen, including, when applicable, any guidance issued or recommended by the Environment Agency. The operator must implement the proposals in the plan as agreed with Environment Agency's written approval.	Within 6 months of commencing operation of activity AR1 (post commissioning period).

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
POC1	Environmental Management System (EMS) Prior to commencing the commissioning of activity AR1, the operator shall submit a written report to the Environment Agency for assessment and written approval. The report must contain a summary of the site's EMS, which must be developed in line with the requirements set out in the web guide on developing a management system for environmental permits (found on www.gov.uk). The operator shall make available for inspection all documents and procedures which form part of the EMS, including the site's Accident Management Plan covering environmental risks from potential accidents associated with the operations authorised by this permit. The documents and procedures set out in the EMS shall form part of the written management system referenced in condition 1.1.1 (a) of this permit. The operator must implement the EMS as agreed with the Environment Agency's written approval.

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
POC2	Plant design Prior to commencing the commissioning of activity AR1, the operator shall submit a written report to the Environment Agency for assessment and written approval. The report must contain: • Confirmation and justification of any continuous venting of hydrogen, including expected amounts and with consideration to any such emissions being minimised. • Confirmation and justification of whether bursting discs are required upstream of the pressure safety valves and before the pressure relief valves. • The catalyst and adsorbent to be used in the hydrogen gas purification systems, and their Material Safety Data Sheets. The report shall be part of the site's Environmental Management System as agreed with the Environment Agency's written approval.

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
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Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A19 (Note 1)	Emergency vent and flare stack	No parameters set	No limits set	--	--	--
Vents and relief valves (Note 2)	Six electrolysers	Hydrogen in nitrogen	No limits set	--	--	--
Note 1: As shown on 6551-Drawing 2 submitted with application EPR/MP3624ST/A001. Note 2: A1, A3, A4, A6, A7, A9, A10, A12, A13, A15, A16 and A18 as shown on 6551-Drawing 2 submitted with application EPR/MP3624ST/A001.						

Table S3.2 Point source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
W1 (Note 1)	Uncontaminated surface water run-off	No parameters set	No limits set	--	--	--
Note 1: Discharging to the Northfleet Paper Mill surface water drainage system and eventually the River Thames.						

Table S3.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. Unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
S1 (Note 1)	Process effluent from raw water demineralisation	Flow rate	96 m^3/day	24 hour total	Continuous	MCERTS self-monitoring of flow scheme
Note 1: As shown on 6551-Drawing 2 submitted with application EPR/MP3624ST/A001 and discharging to the Southern Water sewer network and eventually the River Thames at grid reference TQ 6187 7492, via the Northfleet waste water treatment works.						

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Electrolysis process	Energy efficiency (kWh per kg H_2)	Continuous	--	To be reported on an annual basis

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Electrolysis process (including water demineralisation)	Water efficiency (kg water per kg H_2)	Continuous	--	To be reported on an annual basis
Electrolysis process (including hydrogen purification and storage)	Emissions of hydrogen from venting (kg H_2)	Continuous (Note 1)	As agreed in writing by the Environment Agency in response to improvement condition IC2	To be reported on an annual basis
		Event based	As agreed in writing by the Environment Agency in response to improvement condition IC2	To be reported on an annual basis
Electrolysis process (including hydrogen purification and storage)	Fugitive emissions of hydrogen (kg H_2)	Annual	As agreed in writing by the Environment Agency in response to improvement condition IC3	To be reported on an annual basis
Note 1: To be reviewed following the completion of POC2 and as agreed in writing with the Environment Agency.				

Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Emissions to sewer Parameters as required by condition 3.5.1.	S1	Every 12 months	1 January

Table S4.2 Annual production/treatment	
Parameter	**Units**
Hydrogen gas production	tonnes

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Water usage	Annually	tonnes
Water efficiency	Annually	kg water per kg H_2
Energy usage	Annually	MWe
Energy efficiency	Annually	kWh per kg H_2
Emissions of hydrogen from venting	Annually	kg H_2
Fugitive emissions of hydrogen	Annually	kg H_2

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Emissions to sewer	Form ‘Emissions to sewer’ or other form as agreed in writing by the Environment Agency	Version 1, 08/03/2021
Water usage	Form ‘Water usage’ or other form as agreed in writing by the Environment Agency	Version 1, 08/03/2021
Energy usage	Form ‘Energy usage’ or other form as agreed in writing by the Environment Agency	Version 1, 08/03/2021
Other performance parameters	Form ‘Other performance parameters’ or other form as agreed in writing by the Environment Agency	Version 1, 08/03/2021
Process monitoring requirements	Form ‘Process monitoring form’ or other form as agreed in writing by the Environment Agency	Version 1, 08/03/2021

Schedule 5 – Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	**Notification period**

(c) Notification requirements for the breach of permit conditions not related to limits	
To be notified within 24 hours of detection	
Condition breached	
Date, time and duration of breach	
Details of the permit breach i.e. what happened including impacts observed.	
Measures taken, or intended to be taken, to restore permit compliance.	

(d) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B – to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	

Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 – Interpretation

“accident” means an accident that may result in pollution.

“application” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

“authorised officer” means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2016 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission limit.

“groundwater” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“Hazardous property” has the meaning in Annex lll of the Waste Framework Directive as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

“Industrial Emissions Directive” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

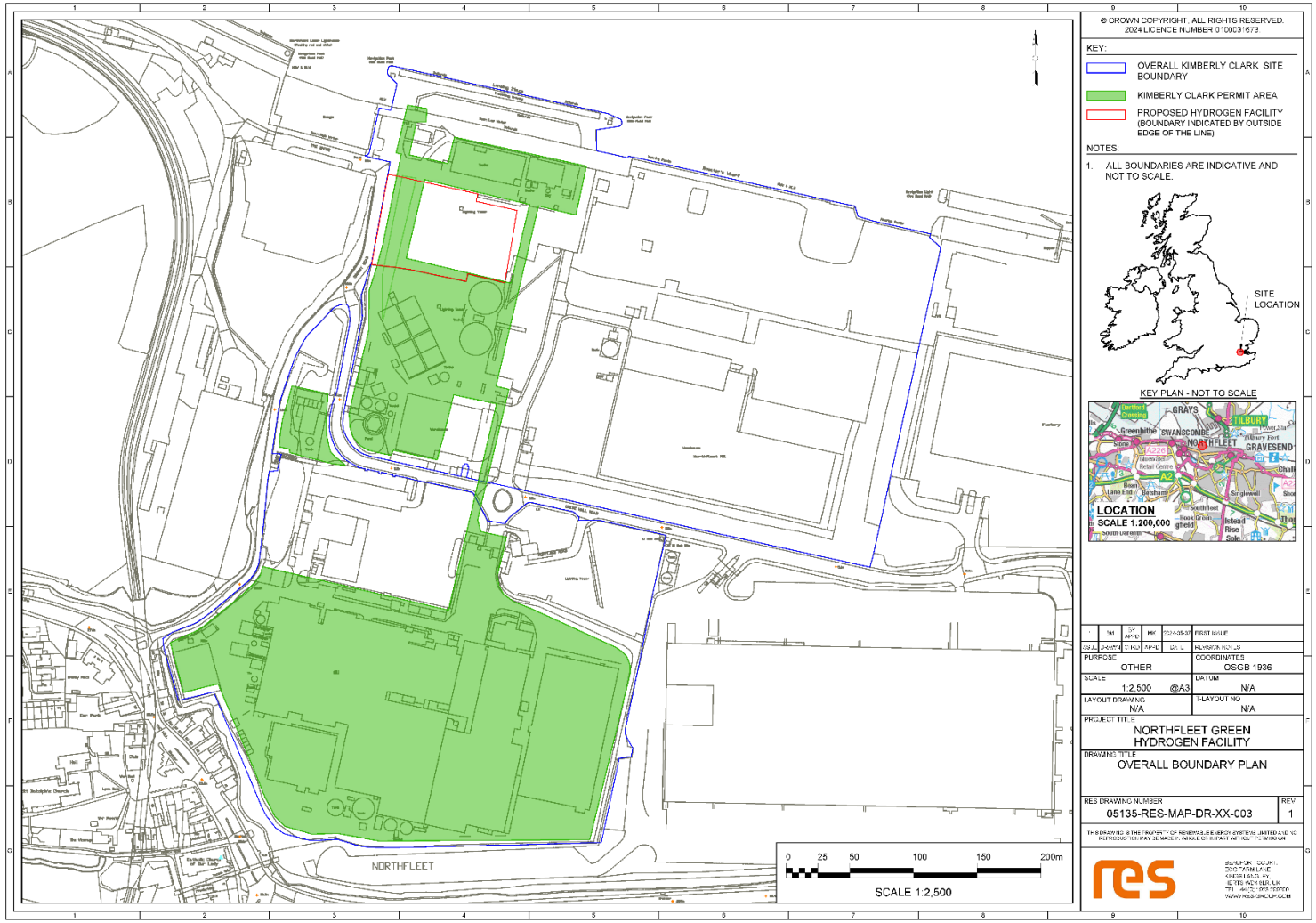
“year” means calendar year ending 31 December.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

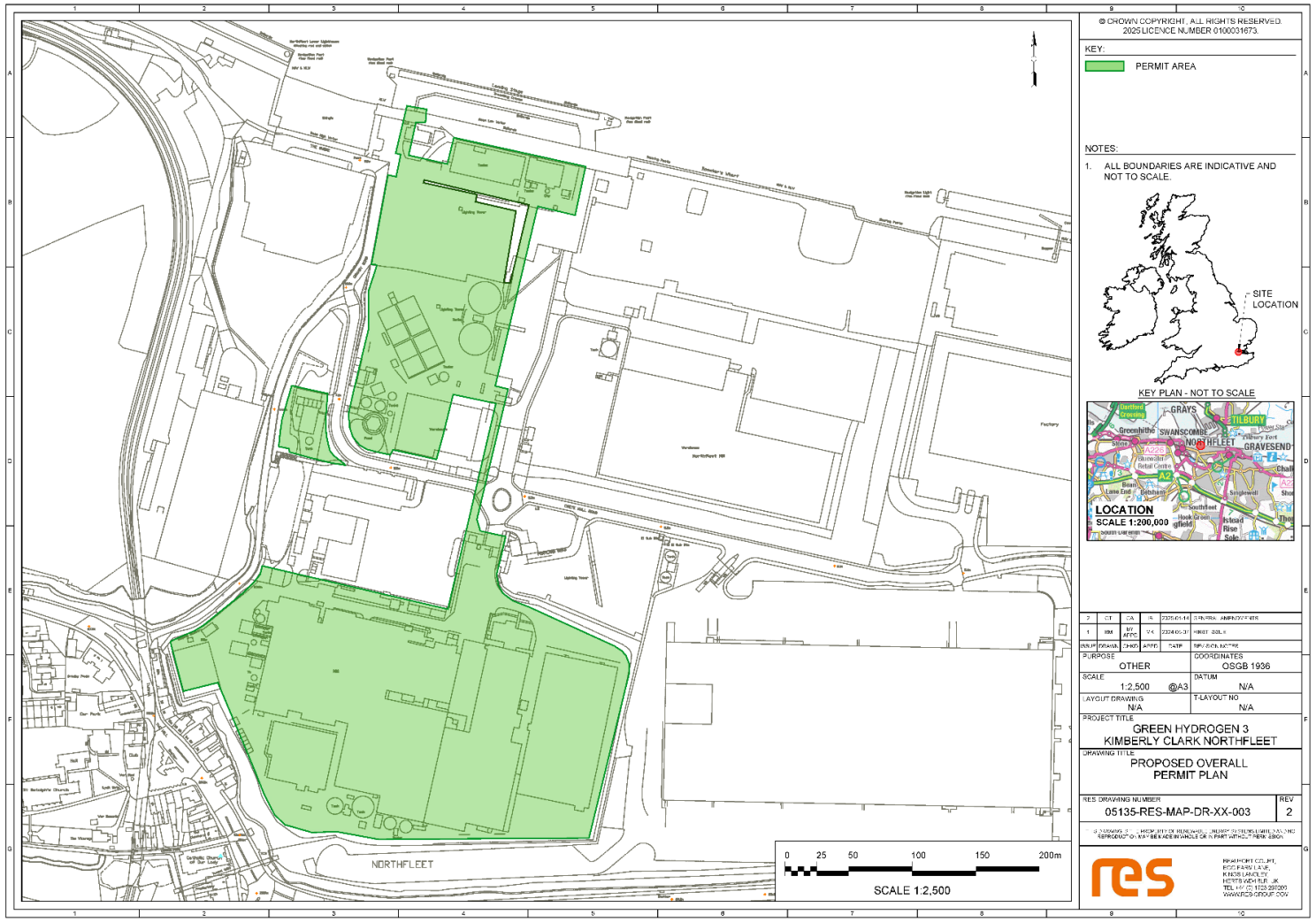
Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or
- in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

Schedule 7 – Site plan



Extent of installation



END OF PERMIT

Reporting Forms

Emissions to Sewer Reporting Form

Permit number: EPR/MP3624ST **Operator:** Green Hydrogen 3 Limited

Facility name: Northfleet Hydrogen Production Facility **Emissions to Sewer Reporting Form: version 1, 08/03/2021**

Reporting of emissions to sewer for the period from *[DD/MM/YY]* to *[DD/MM/YY]*

Emission point	Substance / parameter	Emission Limit Value	Reference period	Test method [1]	Result [2]	Sample dates and times [3]	Uncertainty [4]
[e.g. S1]	*[e.g. Total suspended solids]*	*[e.g. 30 mg/l]*	*[e.g. For 95% of all measured values of periodic samples taken over one month]*	*[e.g. BS EN 872:2005]*	*[State result]*	*[State relevant dates and time periods]*	*[State uncertainty if not 95% confidence interval]*

Emission point	Substance / parameter	Emission Limit Value	Reference period	Test method [1]	Result [2]	Sample dates and times [3]	Uncertainty [4]

Signed: *[Name]* **Date:** *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report your monitoring results.
Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Complete columns 1 to 5 using the information from schedule 3 of your permit. Complete columns 6 to 8 with your monitoring data. Add additional rows as necessary.

[1] Where an internationally recognised standard test method is used, give the reference number. Where another method that has been formally agreed with the Environment Agency, give the appropriate identifier. In other cases state the principal technique, for example gas chromatography.
[2] Give the result as the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, give the result as the 'minimum to maximum' of the measured values.
[3] For non-continuous measurements give the date and time of the sample that produced the result. For continuous measurements give the percentage of the process operating time covered by the result.
[4] Complete if the uncertainty associated with the result is not a 95% confidence interval. Leave blank for 95% confidence intervals.

Process Monitoring Form

Permit number: EPR/MP3624ST **Operator:** Green Hydrogen 3 Limited

Facility name: Northfleet Hydrogen Production Facility **Process Monitoring Form: version 1, 08/03/2021**

Reporting of process monitoring for the period from *[DD/MM/YY]* to *[DD/MM/YY]*

Monitoring point description or source	Parameter	Reference period	Test method [1]	Result [2]	Sample dates and times [3]	Uncertainty [4]
[e.g. Condenser V 2345]	*[e.g. cooling water outlet temperature]*	*[e.g. instantaneous]*	*[if applicable]*	*[State result]*	*[State relevant dates and time periods]*	*[if applicable]*

Operator's comments

Signed: *[Name]* **Date:** *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report your monitoring results.
Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Complete columns 1 to 5 using the information from schedule 3 of your permit. Complete columns 6 to 8 with your monitoring data. Add additional rows as necessary.

[1] Where an internationally recognised standard test method is used, give the reference number. Where another method that has been formally agreed with the Environment Agency, give the appropriate identifier. In other cases state the principal technique, for example gas chromatography.
[2] Give the result as the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, give the result as the 'minimum to maximum' of the measured values.
[3] For non-continuous measurements give the date and time of the sample that produced the result. For continuous measurements give the percentage of the process operating time covered by the result.
[4] Complete if the uncertainty associated with the result is not a 95% confidence interval. Leave blank for 95% confidence intervals.

Water Usage Reporting Form

Permit number: EPR/MP3624ST

Operator: Green Hydrogen 3 Limited

Facility name: Northfleet Hydrogen Production Facility

Water Usage Reporting Form: version 1, 08/03/2021

Reporting of water usage for the year *[YYYY]*

Water source	Water usage (m^3)	Specific water usage (m^3/unit) [2]
Mains water	*[insert annual usage in m^3 where mains water is used]*	*[insert annual usage in m^3/unit where mains water is used]*
Site borehole	*[insert annual usage in m^3 where water is used from a site borehole]*	*[insert annual usage in m^3/unit where water is used from a site borehole]*
River abstraction	*[insert annual usage in m^3 where abstracted river water is used]*	*[insert annual usage in m^3/unit where abstracted river water is used]*
Other – *[specify other water source where applicablel. Add extra rows where needed]*	*[insert annual usage in m^3 where applicable]*	*[insert annual usage in m^3/unit where applicable]*
Total water usage	*[insert total annual water usage in m^3]*	*[insert total annual water usage in m^3/unit]*

Operator's comments

Signed: *[Name]* **Date:** *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report your annual water usage.
Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Add additional rows as necessary.

Energy Usage Reporting Form

Permit number: EPR/MP3624ST

Operator: Green Hydrogen 3 Limited

Facility name: Northfleet Hydrogen Production Facility

Energy Usage Reporting Form: version 1, 08/03/2021

Reporting of energy usage for the year *[YYYY]*

Energy source	Energy consumption / production (MWh)	Specific energy consumption (MWh/unit) [2]
Electricity imported as delivered - source [specify source, e.g. supplied from the national grid]	*[insert annual consumption in MWh where electricity is imported]*	*[insert annual consumption in MWh/unit where electricity is imported]*
Electricity imported as primary energy 1 – conversion factor of [specify conversion factor used to convert electricity delivered to primary energy]	*[insert annual consumption in MWh where electricity is imported]*	*[insert annual consumption in MWh/unit where electricity is imported]*
Natural gas	*[insert annual consumption in MWh where natural gas is used]*	*[insert annual consumption in MWh/unit where natural gas is used]*
Gas oil – conversion factor of [specify conversion factor used to convert tonnes to MWh]	*[insert annual consumption in MWh where gas oil is used]*	*[insert annual consumption in MWh/unit where gas oil is used]*
Imported heat	*[insert annual consumption in MWh where heat is imported]*	*[insert annual consumption in MWh/unit where heat is imported]*
Other – *[specify other energy source and conversion factors where applicable, e.g. renewable fuel. Add extra rows where needed]*	*[insert annual consumption in MWh where applicable]*	*[insert annual consumption in MWh/unit where applicable]*
Electricity exported	*[insert annual production in MWh where electricity is exported]*	Not applicable
Heat exported	*[insert annual production in MWh where heat is exported]*	Not applicable

Operator's comments

Signed: *[Name]* **Date:** *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report your annual energy usage.
Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. Add additional rows as necessary.

[1] Multiply delivered electricity by 2.4 to convert to primary energy where the electricity is supplied from the national grid. If the electricity is supplied from another source, specify the conversion factor used. Add additional rows as needed if electricity is imported from multiple sources.
[2] Divide energy consumption by an appropriate unit of raw material processed or product output.

Other Performance Parameters Reporting Form

Permit number: EPR/MP3624ST **Operator:** Green Hydrogen 3 Limited

Facility name: Northfleet Hydrogen Production Facility **Other Performance Parameters Reporting Form: version 1, 08/03/2021**

Reporting of other performance parameters for the period from *[DD/MM/YY]* to *[DD/MM/YY]*

Parameter	Units
[e.g. Total raw material usage]	*[e.g. tonnes per production unit]*

Operator's comments

Signed: *[Name]* **Date:** *[DD/MM/YY]*

(Authorised to sign as representative of the operator)

Guidance for use: Use this form to report the performance parameters (other than water and energy) required by your permit.
Example text is shown in bracketed grey italics. Replace the example text by entering your own site specific information. The parameters to report and units to be used can be found in the 'Performance parameters' table in schedule 4 of your permit. Add additional rows as necessary.