

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

RWE Generation UK plc

**Pembroke Power Station
West Pennar
Pembroke
Pembrokeshire
SA71 5SS**

***FINAL CONSULTATION DRAFT –
VARIATION V006***

Variation number

EPR/DP3333TA/V006

Permit number

EPR/DP3333TA

Pembroke Power Station

Permit number EPR/DP3333TA

Introductory note

This introductory note does not form a part of the notice.

The following notice gives notice of the variation and consolidation of an environmental permit.

RWE Generation UK plc has applied for a variation to the Environmental Permit (EPR/DP3333TA) issued under the Environmental Permitting (England and Wales) Regulations 2016 (as amended) for the installation located at Pembroke Power Station, Pembrokeshire, SA71 5SS.

The variation requests a new electrolytic Hydrogen Production Facility (HPF) situated within an expanded permitted installation boundary. The HPF constitutes a new listed activity under Section 4.2 Part A(1)(a)(i) – the production of inorganic chemicals such as gases (e.g. hydrogen).

Electrolysis of water involves splitting purified water into hydrogen and oxygen using electricity. Hydrogen gas is released by reduction (within a balanced reaction system) and can be isolated and purified to produce hydrogen fuel.

The HPF is modular and comprises either alkaline water (AEL) or proton exchange membrane (PEM) electrolyser stacks with a combined maximum continuous electrical capacity of 120MWe. In both cases, the electrolyzers will be housed inside a building. The operator has not made a final technology choice, so the permit has been varied to accommodate either (but not both) electrolyser configurations and conditioned to require written confirmation of the selected technology type and configuration before the HPF is commissioned.

The HPF is designed to produce up to 2.0 tonnes of hydrogen per hour (approximately 48.0 tonnes per day) at full production. Raw hydrogen gas is purified, compressed and conveyed via a 1.5km offtake pipeline to a separately operated industrial installation. This is a direct pipeline supply with no on-site bulk hydrogen storage at the installation, although there is incidental storage of hydrogen within the HPF for process safety and control. Treated water (for electrolysis) is supplied by the power station's main water treatment plant, with some final polishing before use.

The HPF is designed to operate continuously and maintain a steady supply of hydrogen via the pipeline. The receiving installation is functionally independent from Pembroke Power Station, and not reliant on the hydrogen supply for its core operations. The offtake pipeline is not included in this installation permit. Oxygen generated as a by-product from AEL or PEM electrolysis will be safely vented via two designated emission points.

The HPF also includes a 20m hydrogen flare stack which is designed to be used during start-up and shutdown of the facility, or in an emergency situation. A small diesel generator (2.61MWth input capacity) provides a backup power supply for the HPF to provide process control and managed shutdown in the event of loss of grid power. There are emissions to air from the hydrogen flare stack and the generator's exhaust.

The installation site boundary has been extended to include the new HPF, the hydrogen flare stack, a dedicated firewater reservoir and an extension of the power station's drainage system to handle clean surface water inputs from the HPF. The varied permit has been conditioned to require an updated Site Condition Report (SCR) for this new area within the permitted installation.

Alongside the operator's requested changes, we have:

- Updated the 'other permits' table forming part of the introductory note
- Updated the status of existing improvement programme requirements listed in table S1.3
- Rationalised Schedule 3 of the permit and removed outdated monitoring tables for air and water emissions
- Corrected minor typographical errors and permit references

The schedules specify the changes made to the permit.

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

Status log of the permit		
Description	Date	Comments
Application EA/EPR/DP3333TA/A001	25/03/10	Date on which application was duly made.
Further information requested	20/07/10	Further information requested relating to impacts on conservation sites.
Further information received	30/07/10	Response to request for further information dated 20/07/10.
Further information requested	04/08/10	Further information requested relating to consideration of Combined Heat and Power (CHP).
Further information received	17/08/10	Revised noise receptor drawing.
Further information requested	24/08/10	Further information requested relating to impact on Limestone Coasts of South-West Wales SAC.
Further information received	01/09/10	Response to request for further information dated 24/08/10 (Limestone Coasts of South-West Wales SAC).
Further information received	03/09/10	Response to request for further information dated 04/08/10 (CHP).
Further information received.	12/10/10	Noise model input data.

Status log of the permit

Description	Date	Comments
Further information requested	22/10/10	Further information requested relating to noise, impacts on terrestrial habitats, water treatment plant effluent composition and findings in respect of the impact of the proposed cooling water discharge on the Pembrokeshire Marine SAC.
Further information received	12/11/10	Noise model input data (including national grid references for noise sources)
Further information received	16/11/10	Response to terrestrial habitats, noise and water treatment plant effluent composition elements of request for further information dated 22/10/10 (water treatment plant element subsequently superseded).
Further information received	26/11/10	Response to elements of request for further information dated 22/10/10 relating to water treatment plant effluent composition and findings in respect of the impact of the proposed cooling water discharge on the Pembrokeshire Marine SAC (water treatment plant element subsequently superseded).
Further information received	30/11/10	NOx conversion information.
Further information received	01/12/10	NOx conversion and noise information.
Further information received	23/12/10	HRSG blow-down information.
Further information requested	14/01/11	Further information relating to noise.
Further information received	17/01/11	First order decay modelling of TRO plume and addendum.
Further information received	28/01/11	Revised response to water treatment plant composition element of request for further information dated 22/10/10 (subsequently superseded).
Further information received	09/02/11	Second addendum to first order decay modelling of TRO plume.
Further information received	18/02/11	Revised response to water treatment plant composition element of request for further information dated 22/10/10 (subsequently superseded).
Further information received	08/03/11	Air quality information
Further information received	15/03/11	Consideration of thermal plume impact on inter-tidal benthos.

Status log of the permit

Description	Date	Comments
Further information received	22/03/11	Consideration of the potential for formation of chlorination by-products and amended permit application documentation (revised Supporting Document for a New Environmental Permit Application).
Further information received	24/03/11	Further information in respect of sodium hypochlorite dosing of the main cooling water system and drum screens (subsequently superseded).
Further information received	29/03/11	Information received in respect of inter-cooling and plan received showing pump house drainage detail. Summary of 2011 noise survey data also submitted.
Further information received	11/04/11	Response to noise further information request dated 14/01/11 (revised noise impact assessment (Chapter 2 of Part II of Volume 2 of the permit application)). This was subsequently superseded.
Further information received	13/04/11	Section 36 stack height information. Revised drainage plan and plan of air and water release points (incorporating revised installation boundary). Both were subsequently superseded.
Further information received	20/04/11	Further information received in respect of noise associated with vessels in the Haven. Information also received in respect of plant thermal inputs and accounting for cooling water pump acoustic panels in the modelling of noise emissions.
Further information received	05/05/11	Revised Appendix 2.3 of permit application (Cooling water system vulnerability to bio-fouling). This has subsequently been superseded.
Further information received	09/05/11	Further information received in respect of BAT for noise minimisation.
Further information received	11/05/11	Revised plan of air and water release points (showing revised installation boundary), revised plan of site layout and installation boundary, and revised plan of permanent operational drainage (showing revised installation boundary). Further information also received in respect of plant thermal inputs (additional to that previously received).
Further information received	17/05/11	Further information received in relation to nutrients.

Status log of the permit		
Description	Date	Comments
Further information received	18/05/11	Further information received in relation to metals and cooling water retention time.
Further information received	27/05/11	Further information received in respect of noise impact (at Pwllcrochan and Hundleton)
Further information received	02/06/11	Further information received on water quality modelling in response to CEFAS queries.
Further information received	10/06/11	Revised short- and long-term assessment of nutrient and metal contributions to W1 discharge from HRSG blow-down, water treatment plant and HRSG chemical clean effluent.
Further information received	13/06/11	Further revised response to water treatment plant composition element of request for further information dated 22/10/10 (subsequently superseded).
Further information received	15/06/11	Further revised Appendix 2.3 of permit application (Cooling water system vulnerability to bio-fouling) and further information on sodium hypochlorite dosing of the main cooling water system and drum screens also received (subsequently superseded). Confirmation of capacity to isolate drum screens received.
Further information received	16/06/11	Further revised noise impact assessment (Chapter 2 of Part II of Volume 2 of the permit application). This supersedes all previous versions. Further revised Appendix 2.3 of permit application (Cooling water system vulnerability to bio-fouling) and further information on sodium hypochlorite dosing of the main cooling water system and drum screens also received (supersedes all previous versions).
Further information received	28/06/11	Confirmation of the use of hydrofluoric acid in the commissioning process.
Further information received	01/07/11	Confirmation that all substances have been accounted for in W1 discharge screening document

Status log of the permit

Description	Date	Comments
Further information received	07/07/11	Further revised Supporting Document for a New Environmental Permit Application, revised Chapter 2 of Part 1 of Volume 2 of the permit application and revised Chapter 3 of Part 2 of Volume 2 of the permit application (all amended to include hydrofluoric acid).
Further information received	27/07/11	Confirmation of TRO dispersion modelling at fixed value of 50µg/l.
Further information received	03/08/11	Confirmation of approach to screening of water treatment plant emissions
Further information received	22/08/11	Further information in respect of nutrient load
Further information received	23/08/11	Further information in respect of phosphorus, nitrogen and unionised ammonia
Further information received	24/08/11	Further information in respect of phosphorus emissions and effects on eelgrass beds
Further information requested	12/09/11	Further information requested in respect of the effect of nutrient emissions on macro-algal growth, the toxicity of phosphonates and updates to the W1 emissions screening report.
Further information received	13/09/11	Information regarding mitigation of phosphate emissions
Further information received	15/09/11	Further information regarding mitigation of phosphate emissions
Further information received	19/09/11	Response to further information request dated 12/09/11 regarding assessment of the impact of nutrient emissions on macro-algal growth
Further information received	23/09/11	Response to further information request dated 12/09/11 regarding phosphonates, updated W1 emissions screening report and revised assessment of the impact of nutrient emissions on macro-algal growth
Further information received	26/09/11	Further revised response to further information request dated 12/09/11 regarding assessment of the impact of nutrient emissions on macro-algal growth
Further information received	27/09/11	Response to further information request dated 12/09/11 (MSDS for new anti-scalant)

Status log of the permit		
Description	Date	Comments
Further information received	29/09/11	Further revised W1 emissions screening report
Further information received	06/10/11	Further updated W1 emissions screening report
Further information received	07/10/11	Further information regarding mitigation of phosphate emissions
Further information received	10/10/11	Further information regarding mitigation of phosphate emissions
Further information received	11/10/11	Further updated W1 emissions screening report, amended to account for the change in the Applicant's proposals from dosing with trisodium phosphate to dosing with sodium hydroxide.
Application determined	10/11/11	Permit issued
Application EPR/DP3333TA/V002	Duly made 07/01/13	Application to vary the permit to include an onsite sewage treatment plant
Variation determined EPR/DP3333TA/V002	26/07/13	Varied permit issued
Regulation 60 Notice sent to the Operator	14/11/14	Issue of a Notice under Regulation 60(1) of the EPR. Natural Resources Wales initiated review and variation to vary the permit under IED to implement the special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V. The permit is also updated to modern conditions.
Regulation 60 Notice response	30/03/15	Response received from the Operator.
Additional information received	30/07/15	Response to request for further information (RFI) dated 08/06/15.
Variation determined EPR/DP3333TA/V003	22/12/2015	Varied and consolidated permit issued in modern condition format. Variation effective from 01/01/2016.
Regulation 61 Notice sent to the Operator	10/05/2018	Issue of a Notice under Regulation 60(1) of the EPR. Natural Resources Wales initiated review and variation to vary the permit, introduce new Emission Limit Values (ELVs) following the publication of the revised Best Available Techniques (BAT) Reference Document (BRef) for Large Combustion Plants (LCP).
Regulation 61 Notice response	16/11/2018	Response received from the Operator.
Additional information received	28/08/2019	Response to request for further information (RFI) dated 10/06/2019

Status log of the permit		
Description	Date	Comments
Variation determined EPR/DP3333TA/V004	02/07/2020	Varied and consolidated permit issued in modern condition format. Variation effective from 02/07/2020.
Application EPR/DP3333TA/V005	Duly made 28/07/2020	Application to vary the permit to regulate an Emergency Back-up Generation Plant.
Variation determined EPR/DP3333TA/V005	16/10/2020	Varied and consolidated permit issued to operator.
Application EPR/DP3333TA/V006 (PAN-027129)	Duly made 25/07/2025	Application to vary the permit to include a new 120MW electrolytic hydrogen production facility.
Further information requested	17/10/2025	Schedule 5 Notice requesting information on air emissions (flare stack, new MCP), hydrogen storage, and clarifying emissions points shown on the site plan.
Additional information received	18/11/2025	Response to Schedule 5 Notice received from the Operator.
Variation determined EPR/DP3333TA/V006	DD/MM/YY YY	Varied and consolidated permit issued

Other permits relating to this installation		
Operator	Permit number	Date of issue
RWE Generation UK plc	GB-EA-ETCO2-1399 (EU ETS permit)	12/02/2008
RWE Generation UK plc	WA/061/0006/0025 (abstraction licence)	Issued 03/02/2009 Renewed 30/09/2025
RWE Generation UK plc	EPR/HP3820XU (water discharge activity permit pertaining to site drainage)	14/06/2011

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

The Natural Resources Body for Wales (“Natural Resources Wales”) in exercise of its powers under regulations 18 and 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies and consolidates

Permit number
EPR/DP3333TA

issued to
RWE Generation UK plc (“the operator”)

whose registered office is
**Windmill Hill Business Park
Whitehill Way
Swindon
Wiltshire
SN5 6PB**

company registration number **03892782**

to operate a regulated facility at

**Pembroke Power Station
West Pennar
Pembroke
Pembrokeshire
SA71 5SS**

to the extent set out in the schedules.

The notice shall take effect from [\[DD/MM/YYYY\]](#)

Signed

Date

[name of authorised person]	[DD/MM/YYYY]
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Authorised on behalf of Natural Resources Wales

Schedule 1

All conditions have been varied by the consolidated permit as a result of the application made by the operator.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

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