Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

NNB Generation Company (HPC) Limited

Operational water discharge activities at Hinkley Point C Power Station
Near Bridgwater
Somerset
TA5 1UD

Variation application number

EPR/HP3228XT/V005

Permit number

EPR/HP3228XT

Operational water discharge activities at Hinkley Point C Power Station Permit number EPR/JP3122GM

Introductory note

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

Under the Environmental Permitting (England & Wales) Regulations 2016 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Hinkley Point C (HPC) power station will consist of two UK EPR™ nuclear reactors, namely Unit 1 and Unit 2, each capable of producing a thermal output of 4500MWTH and a net electrical output of 1630MWE for export to the national grid.

NNB Generation Company (HPC) Limited (the operator) was issued an environmental permit to carry out Water Discharge Activities (WDAs) at HPC. The WDAs relate to the discharge of trade effluents (comprising of cooling water and process effluents) and treated sewage effluent (WDAs A1 to A6). The discharges will arise during the Hot Functional Testing (HFT) phase of commissioning and during the subsequent operation of the power station. The permitted activities are limited in scope to the discharge of non-radioactive liquid effluents.

The operation of HPC will require a continual supply of cooling water abstracted from the Bristol Channel via 2 intake tunnels, to serve the steam turbine condensers and various auxiliary systems. Following use within the power station the abstracted seawater will be returned to the Bristol Channel at a higher temperature, in a continual discharge, via 2 outlets (diffuser heads) at the end of a single outfall tunnel.

A small proportion of the abstracted seawater will be returned to the Bristol Channel via a Fish Recovery and Return (FRR) system via a separate outfall tunnel. The FRR system is designed to retrieve fish and other biota from the abstracted seawater prior to it passing through the cooling water system and return it to the water environment it was abstracted from. A proportion of this biota will be dead and/or moribund (close to dying) and is therefore considered polluting matter due to its potential impact on water quality.

This variation includes the discharge from the FRR system (waste stream H) as a WDA (activity reference A7). It also removes references to an Acoustic Fish Deterrent (AFD) system, as an AFD system is not required to reduce the pollution risk from the FRR system discharge. Emission limits have been imposed (table S3.1) on this activity to limit the amount of biota, and therefore polluting matter, that can be discharged. An additional improvement condition (IC4, table S1.3) has been included to ensure the proportions of impinged species and therefore discharged are monitored over time. An additional pre-operation measure (PO18, table S1.4) has also been included to ensure an appropriate monitoring data review plan is developed and agreed that will provide the sampling and monitoring requirements of that Improvement Condition. This monitoring data review plan will be implemented as an additional operating technique (OT13, table S1.2) once agreed, that the operator must then comply with.

This variation also updates several other conditions into modern format to represent current regulatory requirements. Notably, within table S1.1, waste streams (individually or combined) have been distinguished as individual WDAs (A1 to A7). Schedule 1 of the notice specifies the conditions that have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made. Only the variations specified in schedule 1 are subject to a right of appeal.

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**
Permit determined EPR/HP3228XT	13/03/2013	Permit issued to NNB Generation Company Limited (company registration number 06937084)
Variation determined EPR/HP3228XT/V002	03/12/2015	Variation to amend operator name (company number did not change)
Variation determined EPR/HP3228XT/V003	13/02/2018	Variation to amend operator address
Variation deemed refused EPR/HP3228XT/V004	04/08/2020	Applicant served notice of deemed refusal under Schedule 5, Part 1, paragraph 15(1) of the Environmental Permitting (England and Wales) Regulations 2016
Application EPR/HP3228XT/V005 (variation and consolidation)	Duly made 30/12/2022	Application to remove conditions that relate to an Acoustic Fish Deterrent (AFD) and add a water discharge activity (waste stream H, activity reference A7) for discharge from the Fish Recovery and Return system (FRR)
Variation determined EPR/HP3228XT	DRAFT	Draft for consultation

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies and consolidates

Permit number

EPR/HP3228XT

Issued to

NNB Generation Company (HPC) Limited ("the operator")

whose registered office is

90 Whitfield Street
London
W1T 4EZ

company registration number 06937084

to operate water discharge activities at

Hinkley Point C Power Station
Near Bridgwater
Somerset
TA5 1UD

to the extent set out in the schedules.

The notice shall take effect from xx/xx/xxxx.

Name	Date
DRAFT	**DRAFT**

Authorised on behalf of the Environment Agency

Schedule 1

Only conditions 2.3.1, 2.4.1, 2.5.1, 3.1.1, 3.3.1, 4.2.2, 4.3.6, Schedule 1 Table S1.1, Table S1.2, Table S1.3 and Table S1.4, Schedule 3 Table S3.1, Table S3.2 and Table S3.3, Schedule 4 Table S4.1 and Table S4.2, and Schedule 7 have been varied by the consolidated permit EPR/HP3228XT as a result of the application made by the operator.

Conditions 1.1.3, 2.1.1, 2.2.1, 2.3.2, 3.2.1, 3.2.2, 3.3.2, 3.3.4, 4.1.1, 4.1.2, 4.3.1, 4.3.2, 4.4.2, Schedule 5 and Schedule 6 have also been varied by the consolidated permit to update the conditions into modern format as a consequence of the application made by the operator.

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/HP3228XT

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/HP3228XT/V005 authorising,

NNB Generation Company (HPC) Limited (“the operator”),

whose registered office is

90 Whitfield Street
London
W1T 4EZ

company registration number 06937084

to operate water discharge activities at

Hinkley Point C Power Station
Near Bridgwater
Somerset
TA5 1UD

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

Name	Date
DRAFT	DRAFT

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 so far as is reasonably practicable, including those risks arising from operations, maintenance, accidents, incidents, non-conformances 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 the permit.

2 Operations

2.1 Permitted activities

2.1.1 The only activities authorised by the permit are the activities specified in schedule 1 table S1.1.

2.2 The site

2.2.1 The discharge activities shall take place at the discharge points marked on the site plans at schedule 7 to this permit, and as listed in table S3.2; and, the operating techniques that are the subject of conditions prefixed by 2.3 shall be applied at the locations shown, or otherwise described, in schedule 7.

2.3 Operating techniques

2.3.1 For the activities A1 to A7 referenced in schedule 1, table S1.1 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 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.

2.4 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

3.1.1 The limits given in schedule 3 table S3.1 shall not be exceeded.

3.1.2 Samples of the incoming and discharge water shall be taken on each sampling occasion. The difference between the discharge and the incoming measurements will be calculated for each sampling occasion.

3.2 Emissions of substances not controlled by emission limits

3.2.1 The operator shall take appropriate measures to minimise so far as reasonably practicable the polluting effects of the emissions of substances in the discharge not controlled by emission limits (excluding odour).

3.2.2 For the activities A1 to A7 referenced in schedule 1, table S1.1 all oils or chemicals stored 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 Monitoring

3.3.1 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 S3.1 and S3.3.

(b) the inlet quality specified in tables S3.1 and S3.3.

and the environmental monitoring specified in the environmental monitoring plan approved in accordance with pre-operational measure PO11 in table S1.4 in schedule 1 to this permit.

3.3.2 The operator shall maintain records of all monitoring required by this permit.

3.3.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.3.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.

3.3.4 Accessible monitoring points shall be provided and maintained to enable the emissions monitoring programme and other monitoring to be carried out at the monitoring points specified in table S3.3 of schedule 3 and shown marked on the site plans in schedule 7.

4 Information

4.1 Records

4.1.1 All records required to be made by schedule 3, 4 and 5 to 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.

4.1.2 The operator shall maintain convenient access, in either electronic or hard copy, to the records, plan and management system required to be maintained by this permit.

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 Within the time period after the end of the reporting period specified in schedule 4 table S4.1 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 monitoring 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 S4.2; and

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

4.3 Notifications

4.3.1 The Environment Agency shall be notified as soon as reasonably practicable following detection, within the site of the regulated facility of:

(a) 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; and

(b) any breach of a limit specified in schedule 3 table S3.1.

Any other significant adverse environmental effects, which may have been caused by the activities, shall also be notified to the Environment Agency as soon as reasonably practicable following detection.

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

4.3.3 The Environment Agency shall be notified in writing at least one month in advance of any periods of planned maintenance when the power station will be subject to operation in RF3 maintenance configuration. The notification shall contain the intended start date for, and the proposed duration of the maintenance works. Confirmation of the start date shall be received in writing by the Environment Agency within 1 week of commencement of the maintenance period.

4.3.4 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.

4.3.5 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:

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

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

4.3.6 Where the operator proposes to make a change in the nature of the activities by increasing the concentration of, or the addition of, or allowing the introduction of, a substance to the activities to an extent that the operator considers could have a significant adverse environmental effect on the receiving waters, and the change is not permitted by emission limits specified within schedule 3 table S3.1 or the subject of an application for approval under the EP Regulations or under the terms of this permit:

(a) the Environment Agency shall be notified in writing at least 14 days before the increase or addition or allowing the introduction; and

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

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 "as soon as reasonably practicable", in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 Activities		
Activity reference	**Description of activity**	**Limits of specified activity**
A1	Discharge of trade effluent consisting of returned abstracted seawater (Waste stream A) via Outlets 1 and 2	Chlorination/injection of biocide shall take place at an appropriate location downstream of the drum screens but upstream/before the condensers
A2	Discharge of trade effluent generated by operations within the nuclear island waste monitoring and discharge system (Waste stream B) combined with the steam generator blowdown system that cannot be recycled (Waste stream C) via Outlets 1 and 2	The trade effluent shall be treated to remove hydrazine prior to being discharged
A3	Discharge of trade effluent generated from the turbine hall and uncontrolled area floor drains, excluding effluent from the Stream Generator Blowdown System (Waste stream D) via Outlets 1 and 2	The trade effluent shall be treated to remove hydrazine prior to being discharged
A4	Discharge of trade effluent generated from the site drainage system, including drainage from road and roof surfaces, uncontaminated water from oily water network and atmospheric condensate from chillers (Waste stream E) via Outlets 1 and 2	
A5	Discharge of trade effluent generated from the production of demineralised water (Waste stream F) via Outlets 1 and 2	
A6	Discharge of treated domestic sewage effluent generated from the site's administration, welfare and mess facilities (Waste stream G) via Outlets 1 and 2	
A7	Discharge of trade effluent composed of returned abstracted seawater from the fish recovery and return (FRR) system (Waste stream H) via Outlet 3	

Table S1.2 Operating techniques			
Activity reference	**Description of documentation**	**Parts**	**Date Received**
A1 to A7	OT1 - Environmental permit application for Hinkley Point C, application reference EPR/HP3228XT/A001 – Main document	Sections 2.3.2 - 2.3.7 - description of the treatment systems used to remove contaminants prior to discharge Section 2.6.2 - Prevention of Unplanned Emissions of Oils from Heat Exchangers Section 2.7.2 - Hot Functional Testing Section 3.1.3 - Minimisation of Impingement and Entrainment of Marine Organisms (excluding references to behavioural deterrents) Section 3.5 - Oily Water Treatment Section 3.7.3 - Strategy for Minimising Chlorination Section 3.8 - Sanitary Effluent Section 3.11 - Outfall Design	23/09/2011
A1 and A7	OT2 – Further information in response to Schedule 5 Notice	Response to Question 25 confirming the injection of biocide will be downstream of the drum screens but before the condensers	23/12/2011
A2 and A3	OT3 - Further information in response to Schedule 5 Notice	Response to Question 9 confirming the maximum expected pre-dilution substance concentrations in waste streams B & C (combined), and waste stream D	29/03/2012
A5	OT4 - Further information in response to Schedule 5 Notice	Response to Question 13 confirming the maximum expected pre-dilution substance concentrations in waste stream F	14/02/2012

Table S1.2 Operating techniques			
Activity reference	**Description of documentation**	**Parts**	**Date Received**
A1 to A7	OT5 - Emissions Management Plan	As approved in accordance with pre-operational measure PO5 in table S1.4	To be received in accordance with pre-operational measure submission timescales in Table S1.4
A1 to A7	OT6 - Commissioning Discharges Management Plan	As approved in accordance with pre-operational measure PO6 in table S1.4	
A1 and A7	OT7 - Operational strategy for the control of biofouling	As approved in accordance with pre-operational measure PO7 in table S1.4	
A1 and A7	OT8 - Commissioning Plan for the FRR system	As approved in accordance with pre-operational measure PO8 in table S1.4	
A1	OT9 - Forebay de-silting Plan	As approved in accordance with pre-operational measure PO9 in table S1.4	
A2 and A3	OT10 - Hydrazine Removal Plan	As approved in accordance with pre-operational measure PO10 in table S1.4	
A1 to A7	OT11 - Environmental Monitoring Plan	As approved in accordance with pre-operational measure PO11 in table S1.4	
A1 to A7	OT12 - Priority Hazardous Substances Plan	As approved in accordance with pre-operational measure PO12 in table S1.4	
A1 to A7	OT13 - Effluent Monitoring Plan	As approved in accordance with pre-operational measure PO15 in table S1.4	
A1 to A7	OT14 - Hydrodynamic Modelling Review Plan	As approved in accordance with pre-operational measure PO16 in table S1.4	
A7	OT15 – Monitoring Data Review Plan	As approved in accordance with pre-operational measure PO18 in table S1.4	

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The operator shall submit a written report to the Environment Agency on the implementation of its environmental management system (EMS) and the progress made in the accreditation of the system by an external body, or, if appropriate, submit a schedule by which the EMS will be subject to accreditation.	The report shall be submitted within 12 months of the date on which the hot functional testing phase of commissioning commences
IC2	The operator shall review its hydrodynamic modelling for the purpose of post-scheme appraisal within 5 years of the commencement of the commercial operation of UK EPR™ unit 2, to validate its modelling predictions. The review shall include re-calibration and validation of the hydrodynamic model(s) if necessary, as well as a reassessment of the assumptions concerning the near-field behaviour of the discharges. The operator shall submit a written report to the Environment Agency on the review of its hydrodynamic modelling within one month of completion of the review.	As specified in Improvement Condition IC2

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC3	The operator shall review its hydrodynamic modelling and associated impact assessment in light of the following: • best available climate change projections • operational performance of the power station • the output from post scheme appraisal studies within 5 years of the commencement of the commercial operation of UK EPR™ unit 2, and every 10 years thereafter unless otherwise agreed in writing by the Environment Agency. The review will assess how the climate change projections could influence the operation of the power station in the future. The results of the review must be reported to the Environment Agency in writing within one month of completing each review.	As specified in Improvement Condition IC3
IC4	The operator shall review its monitoring data, including but not restricted to, that data available via the effluent monitoring plan (OT13) for the FRR system discharge (WDA A7), to identify any shift in fish species being impinged (as might occur due to climate change). The shift being away from the species distribution observed in the Pisces (2009 to 2010) and Cefas (2021 to 2022) monitoring that was the basis of the FRR system discharge water quality impact assessments in TR515* and AR001**. This shall be achieved by long-term, periodic monitoring of fish species and abundance impinged. The monitoring data review shall be completed within 5 years of commencement of the hot functional testing phase of commissioning of UK EPR™ unit 1, and every 10 years thereafter unless otherwise agreed in writing by the Environment Agency. The monitoring data review will assess how any shift in fish species and abundance being impinged could influence the effluent load from the FRR system discharge permitted under WDA A7. The results of the review must be reported to the Environment Agency in writing within one month of completing each review.	As specified in Improvement Condition IC4

* TR515 – HPC Water quality effects of the fish recovery and return system. NNB Generation Company (HPC) Limited, London. 2020.

** AR001 - Fish Recovery and Return System Discharge Assessment Report. Environment Agency, Bristol. 2023.

Table S1.4 Pre-operational measures		
Reference	**Pre-operational measures**	**Date**
PO1	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit a summary of the site environment management system (EMS) to the Environment Agency, and make available for inspection all documents and procedures which form part of the EMS. The EMS shall be developed in line with our guidance on development of management systems for environmental permits, and shall include an accident management plan for the water discharge activities. The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.	At least one calendar month prior to the commencement of the hot functional testing phase of commissioning
PO2	Prior to the commencement of the hot functional testing (HFT) phase of commissioning the operator shall submit to the Environment Agency for approval a report which includes a completed, as-built description of the plant and infrastructure relevant to the water discharge activities (WDAs) A1 to A7. Note that the report shall take into account the whole cooling water system, including the design of the fish recovery and return (FRR) system. In addition, the report shall contain an updated site plan clearly showing all relevant buildings and structures and the route of the associated pipework, including all land-based infrastructure associated with the cooling water system and the FRR system. Should the final design vary from that described in the permit application, the report shall include, as appropriate, a risk assessment to demonstrate how the changes will prevent or minimise impacts on the receiving water environment, and ensure compliance with this permit.	At least three calendar months prior to the commencement of the hot functional testing phase of commissioning
PO3	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval a report which reviews the proposed substance loadings and emissions to surface water from Hinkley Point C. The report shall include, but not be restricted to the following: • a summary of the lessons learnt through design evolution and/or commissioning and operating the EPR™ at Flamanville 3 in France, or any other EPR™ site worldwide • information from designers and suppliers which has influenced the final design with respect to the flow and composition of effluents • reference to outputs from the demineralisation plant (expected to be based on the use of mains water supply only and no desalination technology in variance to the data provided in GDA and the permit application) The report shall validate the proposed substance loadings and emissions from Hinkley Point C, fully describing and justifying: • any expected variances from the substance loadings and emissions proposed in the permit application • any additional mitigation measures required to ensure compliance with this permit	At least three calendar months prior to the commencement of the hot functional testing phase of commissioning

Table S1.4 Pre-operational measures		
Reference	**Pre-operational measures**	**Date**
PO4	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval a scoping document for development of an emissions management plan, to show how emissions not covered by emission limits in Table S3.1, will be prevented, or where that is not practicable, minimised.	At least three calendar months prior to the commencement of the hot functional testing phase of commissioning
PO5	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval an emissions management plan in accordance with the scope agreed under PO4.	At least two calendar months prior to the commencement of the hot functional testing phase of commissioning
PO6	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval a commissioning discharges management plan. The plan shall describe how the operator intends to undertake hot functional testing (HFT). The plan shall include, but not be restricted to, the following: • the timetable for HFT of both UK EPR™ units • a description of the HFT process • a description of associated effluent treatment measures • confirmation of the expected substance loadings and emissions to surface water • confirmation of the expected thermal loading, including the expected temperature of the discharge • proposals for effluent monitoring during the HFT process The plan should also demonstrate how the operator's management and engineering controls will ensure that substance loadings and emissions to surface water do not exceed the levels stated in the permit application, with particular reference to how: • environment impacts will be prevented or minimised; and • compliance with this permit will be achieved	At least three calendar months prior to the commencement of the hot functional testing phase of commissioning

Table S1.4 Pre-operational measures		
Reference	**Pre-operational measures**	**Date**
PO7	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval a report which confirms and justifies its operational strategy for the control of biofouling of the cooling water system. The report shall include, but not be restricted to, the following: • an appraisal of the operational conditions and chlorination strategy used at Hinkley Point B power station, and a description of how this has been taken into account in defining the proposed strategy for HPC • the lessons learnt through design evolution and/or commissioning and operating the EPR™ at Flamanville 3 in France or any other EPR™ site worldwide • details of how the operational strategy has been optimised to reduce the need for chemical dosing and the subsequent discharge of total residual oxidant (TRO) and the formation of chlorinated by-products (CBPs) • validation of the impacts of the proposed dosing regime, to include reference to numerical modelling and ecotoxicological studies, as appropriate.	At least three calendar months prior to the commencement of the hot functional testing phase of commissioning
PO8	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval a commissioning plan for the fish recovery and return (FRR) system. The plan shall include, but not be restricted to the following: • a description of how the operator intends to optimise the FRR system to minimise impacts upon fish • details of the monitoring proposed to facilitate optimisation and meet the above objective • confirmation of the timetable associated with the commissioning of the FRR system • proposals for demonstrating the effectiveness of the optimisation process to the Environment Agency prior to the start of active commissioning of the first HPC UK EPR™ unit • the lessons learnt through design evolution and/or commissioning and operating any other EPR™ site worldwide	At least three calendar months prior to the commencement of the hot functional testing phase of commissioning
PO9	Prior to the commencement of the hot functional testing (HFT) phase of commissioning begins the operator shall submit to the Environment Agency for approval a forebay de-silting plan for the removal of accumulated silt from within the cooling water forebays. The plan shall include, but not be restricted to, the following: • verification of the initial impact assessment findings detailed in the permit application • a method statement for carrying out the de-silting activity • the lessons learnt through design evolution and/or commissioning and operating any other EPR™ site worldwide	At least one calendar month prior to the commencement of the hot functional testing phase of commissioning

Table S1.4 Pre-operational measures		
Reference	**Pre-operational measures**	**Date**
PO10	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval a hydrazine removal plan which details how hydrazine shall be treated and removed from waste streams B, C and D prior to discharge (WDAs A2 and A3). The plan shall include, but not be restricted to, the following: • the methodology to be followed in treating and removing hydrazine prior to discharge • proposals for monitoring during commissioning (HFT) to demonstrate that the required level of hydrazine in (i) waste streams B and C (combined) and (ii) waste stream D, is below the Limit of Detection (LOD) of the analytical method, the use of which shall be approved by the Environment Agency • proposals for ongoing process monitoring to ensure that the hydrazine removal process maintains its effectiveness • details to ensure that an appropriate analytical method and limit of detection (LOD) for monitoring of hydrazine is implemented, the use of which shall be approved by the Environment Agency • details of contingency plans to deal with equipment failure and/or breakdown, or other reasonably foreseeable incidents which may compromise the effectiveness of the hydrazine removal process • the lessons learnt through design evolution and/or commissioning and operating any other EPR™ site worldwide	At least three calendar months prior to the commencement of the hot functional testing phase of commissioning

Table S1.4 Pre-operational measures		
Reference	**Pre-operational measures**	**Date**
PO11	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval an environmental monitoring plan for the purpose of post-scheme validation. The plan shall propose monitoring methods to determine the physical, chemical and biological characteristics of the area of the projected plumes along with monitoring locations and frequencies. It shall also include the procedures for assessing any effects and reporting the results of the monitoring and assessment to the Environment Agency. The plan shall include, but not be restricted to, the following aspects: • thermal plume monitoring • chemical plume monitoring • subtidal and intertidal benthic ecology • water quality monitoring • sediment quality monitoring • the quality assurance procedures in place • discharges of dead and moribund biomass, and wet weight biomass as potential sources of polluting matter • FRR system discharges monitoring • review of the limit of detection for environmental monitoring techniques • the progress towards MCERTS certification or MCERTS accreditation, unless otherwise agreed in writing by the Environment Agency, and, if necessary, a timetable for achieving the MCERTS standard	At least three calendar months prior to the commencement of the hot functional testing phase of commissioning
PO12	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval a priority hazardous substances (PHS) management plan. The plan shall describe how the operator intends to manage the use of chemicals so as to gradually cease or phase out discharging hazardous substances, in accordance with the environmental objectives set out under the Water Framework Directive. The plan will make reference to, among other things, the cadmium and mercury which is present as trace contaminants in bulk raw materials, and will propose a timetable for the gradual phasing out of the use of such chemicals.	At least one calendar month prior to the commencement of the hot functional testing phase of commissioning
PO13	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency confirmation of the final National Grid references (NGRs) for the individual diffuser heads on the cooling water outfall tunnel, and the fish recovery and return (FRR) system outlet on the FRR outfall tunnel, to refine the NGRs in the permit application which were submitted with a 50m limit of deviation to allow for tunnel drilling contingency. Following written approval by the Environment Agency, the NGRs shall be deemed to be incorporated under Table S3.2 of this permit.	At least one calendar month prior to the commencement of the hot functional testing phase of commissioning

Table S1.4 Pre-operational measures		
Reference	**Pre-operational measures**	**Date**
PO14	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency: • confirmation of the NGRs for the compliance monitoring points associated with each waste stream (WDAs A1 to A7), as listed in Table S3.3 • confirmation of the monitoring point references, to be prefixed by 'M', for the waste stream compliance monitoring points • detailed site plan(s) showing the exact location of the waste stream compliance monitoring points Following written approval by the Environment Agency, the NGRs and monitoring point references shall be deemed to be incorporated under Table S3.3 of this permit. The site plan(s) shall be deemed to be incorporated under Schedule 7 of this permit.	At least one calendar month prior to the commencement of the hot functional testing phase of commissioning
PO15	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval an effluent monitoring plan which specifies the monitoring techniques and assessments to be used for monitoring of water discharge activity (A1 to A7) effluents under this permit. The plan shall also include, but not be restricted to, the following: • the quality assurance procedures in place • review of the limit of detection for effluent monitoring techniques • the incorporation of outcomes from the monitoring data review specified in IC4 • the progress towards MCERTS certification or MCERTS accreditation, unless otherwise agreed in writing by the Environment Agency, and if necessary, a timetable for achieving the MCERTS standard	At least three calendar months prior to the commencement of the hot functional testing phase of commissioning
PO16	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval a hydrodynamic modelling review plan. The plan shall include a description of the sampling and monitoring regimes that will be put in place to meet the requirements of improvement conditions IC2 and IC3 in Table S1.3 of this permit.	At least one calendar month prior to the commencement of the hot functional testing phase of commissioning
PO17	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval a site plan detailing the location of where the operating techniques specified in table S1.2 will be applied. Following written approval by the Environment Agency, the site plan shall be deemed to be incorporated under Schedule 7 of this permit.	At least one calendar month prior to the commencement of the hot functional testing phase of commissioning
PO18	Prior to the commencement of the hot functional testing (HFT) phase of commissioning, the operator shall submit to the Environment Agency for approval a monitoring data review plan. The plan shall include a description of the sampling and monitoring regimes that will be put in place to meet the requirements of improvement condition IC4 in Table S1.3 of this permit.	At least one calendar month prior to the commencement of the hot functional testing phase of commissioning

Schedule 2 – Waste types, raw materials and fuels

Schedule 2 not in use.

Schedule 3 – Emissions and monitoring

For the purpose of this schedule the following interpretations shall apply:

- "Daily load" shall be calculated as follows:

  (a) for waste streams B & C (combined) and for waste stream D, by multiplying the volume of effluent released from an effluent tank by the release concentration in that effluent tank. Where more than one effluent tank is discharged per day then the daily load for each substance shall be calculated by summing the individual loads discharged from each tank

  (b) for cadmium and mercury arising from waste streams B & C (combined) and waste stream D, by summing the calculated loads from each contributory waste stream

  (c) for waste stream F, unless otherwise stated, by recording the amount of substance used in the demineralisation plant over that day.

- "Annual load" shall be calculated by summing the daily loads in a fixed calendar year from 1 January to 31 December inclusive.

- "Hourly" limits for total residual oxidant require a minimum of one sample result to be recorded should the dosing period be less than sixty minutes.

- "Percentile" limits apply over a fixed calendar year from 1 January to 31 December inclusive, with the data return for the calendar year being at least 99%.

- "Planned" (in the context of RF3 maintenance) means work that is specified within the operator's standard maintenance schedule, whether short or long term. It does not include any unscheduled, reactive, or emergency maintenance work.

- The maximum rate of discharge for waste stream A (Unit 1 & Unit 2 combined) shall be calculated by summing the 15-minute instantaneous or integrated flow in Unit 1 and the 15 minute instantaneous or integrated flow in Unit 2, i.e.

  $$Q_{UNIT\ 1\ \&\ UNIT\ 2} = Q_{UNIT\ 1} + Q_{UNIT\ 2}$$

  where: Q refers to the 15-minute instantaneous or integrated flow

- "RF3 maintenance" means the situation when Hinkley Point C power station is operating with only three of the four main cooling water pumps (CRF pumps) running, with the remaining CRF pump under maintenance. This means that one EPR™ unit will have both of its CRF pumps running, while the other EPR™ unit will have only one of its two CRF pumps running. The increased temperature differential permitted during RF3 maintenance can only apply to one EPR™ unit at any given time, that being the EPR™ unit running with reduced pump capacity due to the maintenance work.

- The maximum temperature for waste stream A (Unit 1 & Unit 2 combined) shall be calculated by mass balance, a follows:

  $$T_C = (Q_{UNIT\ 1} \times t_{UNIT\ 1}) + (Q_{UNIT\ 2} \times t_{UNIT\ 2}) / (Q_{UNIT\ 1} + Q_{UNIT\ 2})$$

  where:
  - T_C refers to the temperature of the combined flow from Unit 1 and Unit 2
  - Q refers to the 15-minute instantaneous or integrated flow
  - t refers to the instantaneous absolute temperature

  All values for flow and temperature must be coincident in time, i.e. measured over the same time period.

- "Tidal mean" is defined as an average of 15 minute data over 12.5 hours, as computed every 15 minutes.
- "Total combined wet weight biomass" is defined as all taxonomic groups of marine fauna with the exclusion of gelatinous zooplankton (e.g. ctenophores and jellyfish).

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent(s) and discharge point(s)	**Parameter**	**Limit (including unit)**	**Reference Period**	**Limit of effective range**	**Monitoring frequency**	**Compliance Statistic**
A1: Waste stream A via Outlets 1 and 2	Maximum rate of discharge	127 m^3/second	Instantaneous (spot sample)	EPR units 1 and 2 combined	Continuous	Tidal mean
		134.6 m^3/second	Instantaneous (spot sample)	EPR units 1 and 2 combined	Continuous	98 percentile
	15-minute instantaneous or averaged flow	No limit set. Record as l/s	15 minute	EPR unit 1	Continuous	N/A
		No limit set. Record as l/s	15 minute	EPR unit 2	Continuous	N/A
	Temperature	35 °C	Instantaneous (spot sample)	EPR units 1 and 2 combined	Continuous	99.5 percentile
		11.8 °C	Instantaneous (spot sample)	EPR unit 1: During normal (day-to-day) operation	Continuous	Maximum increase compared to inlet as a tidal mean. Condition 3.1.3 applies
		11.8 °C	Instantaneous (spot sample)	EPR unit 2: During normal (day-to-day) operation	Continuous	Maximum increase compared to inlet as a tidal mean. Condition 3.1.3 applies
		22.2 °C	Instantaneous (spot sample)	EPR unit 1: During planned RF3 maintenance, as referenced within 'interpretations'	Continuous	Maximum increase compared to inlet as a tidal mean. Condition 3.1.3 applies
		22.2 °C	Instantaneous (spot sample)	EPR unit 2: During planned RF3 maintenance, as referenced within 'interpretations'	Continuous	Maximum increase compared to inlet as a tidal mean. Condition 3.1.3 applies

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent(s) and discharge point(s)	**Parameter**	**Limit (including unit)**	**Reference Period**	**Limit of effective range**	**Monitoring frequency**	**Compliance Statistic**
A1: Waste stream A via Outlets 1 and 2	Total residual oxidant (TRO)	200 µg/l	Instantaneous (spot sample)	EPR unit 1	In accordance with the effluent monitoring plan as approved in accordance with pre-operational measure PO15 in table S1.4	Maximum
		200 µg/l	Instantaneous (spot sample)	EPR unit 2	In accordance with the effluent monitoring plan as approved in accordance with pre-operational measure PO15 in table S1.4	Maximum
	pH	6 to 9	Instantaneous (spot sample)	EPR unit 1	N/A	Minimum and maximum
		6 to 9	Instantaneous (spot sample)	EPR unit 2	N/A	Minimum and maximum
	Visible oil or grease	No significant trace present so far as is reasonably practicable	Instantaneous (visual examination)	EPR unit 1	N/A	No significant trace
		No significant trace present so far as is reasonably practicable	Instantaneous (visual examination)	EPR unit 2	N/A	No significant trace
A2: Combined waste streams B and C via Outlets 1 and 2	Maximum daily discharge volume	1,500 m^3/day	Total daily volume	EPR units 1 and 2 combined	Continuous	Maximum
	Maximum rate of discharge	35 litres/second	Instantaneous (spot sample)	EPR units 1 and 2 combined	Continuous	Mean

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent(s) and discharge point(s)	**Parameter**	**Limit (including unit)**	**Reference Period**	**Limit of effective range**	**Monitoring frequency**	**Compliance Statistic**
A2: Combined waste streams B and C via Outlets 1 and 2	15-minute instantaneous or averaged flow	No limit set. Record as l/s	15 minute	N/A	Continuous	N/A
	pH	6 to 9	Instantaneous (spot sample)	EPR unit 1	N/A	Minimum and maximum
	pH	6 to 9	Instantaneous (spot sample)	EPR unit 2	N/A	Minimum and maximum
	Visible oil or grease	No significant trace present so far as is reasonably practicable	Instantaneous (visual examination)	EPR unit 1	N/A	No significant trace
	Visible oil or grease	No significant trace present so far as is reasonably practicable	Instantaneous (visual examination)	EPR unit 2	N/A	No significant trace
	Boron (as B)	984 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		2,448 kg/year	N/A		Daily	Maximum
	Lithium (as Lithium Hydroxide)	4.4 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		8.73 kg/year	N/A		Daily	Maximum
	Morpholine	75 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		210 kg/year	N/A		Daily	Maximum
	Ethanolamine	15 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		65 kg/year	N/A		Daily	Maximum
	Nitrogen (as N)	8 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		10 kg/year	N/A		Daily	Maximum
	Ammoniacal nitrogen (expressed as NH_4^+)	1.83 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		15 kg/year	N/A		Daily	Maximum

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent(s) and discharge point(s)	**Parameter**	**Limit (including unit)**	**Reference Period**	**Limit of effective range**	**Monitoring frequency**	**Compliance Statistic**
A2: Combined waste streams B and C via Outlets 1 and 2	Phosphate (as PO_4^{3-})	150 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		602.5 kg/year	N/A		Daily	Maximum
	Detergents	270 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		3200 kg/year	N/A		Daily	Maximum
	COD	39.27 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		600.95 kg/year	N/A		Daily	Maximum
	Aluminium (total) as Al	0.09 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		0.41 kg/year	N/A		Daily	Maximum
	Chromium (total) as Cr	0.14 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		0.65 kg/year	N/A		Daily	Maximum
	Copper (total) as Cu	0.01 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		0.03 kg/year	N/A		Daily	Maximum
	Iron (total) as Fe	0.6 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		2.7 kg/year	N/A		Daily	Maximum
	Manganese (total) as Mn	0.06 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		0.26 kg/year	N/A		Daily	Maximum
	Nickel (total) as Ni	0.01 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		0.03 kg/year	N/A		Daily	Maximum
	Lead (total) as Pb	0.01 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		0.02 kg/year	N/A		Daily	Maximum
	Zinc (total) as Zn	0.1 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		0.46 kg/year	N/A		Daily	Maximum

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent(s) and discharge point(s)	**Parameter**	**Limit (including unit)**	**Reference Period**	**Limit of effective range**	**Monitoring frequency**	**Compliance Statistic**
A3: Waste stream D via Outlets 1 and 2	Maximum daily discharge volume	1,500 m^3/day	Instantaneous (spot sample)	N/A	N/A	Maximum
	Maximum rate of discharge	35 litres/second	Instantaneous (spot sample)	EPR units 1 and 2 combined	Continuous	Mean
	15-minute instantaneous or averaged flow	No limit set. Record as l/s	15 minute	N/A	Continuous	N/A
	pH	6 to 9	Instantaneous (spot sample)	EPR unit 1	N/A	Minimum and maximum
	pH	6 to 9	Instantaneous (spot sample)	EPR unit 2	N/A	Minimum and maximum
	Visible oil or grease	No significant trace present so far as is reasonably practicable	Instantaneous (visual examination)	EPR unit 1	N/A	No significant trace
	Visible oil or grease	No significant trace present so far as is reasonably practicable	Instantaneous (visual examination)	EPR unit 2	N/A	No significant trace
	Morpholine	17.25 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		1,464 kg/year	N/A		Daily	Maximum
	Ethanolamine	9.75 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		854 kg/year	N/A		Daily	Maximum
	Nitrogen (as N)	320 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		10,120 kg/year	N/A		Daily	Maximum
	Ammoniacal nitrogen (expressed as NH_4^+)	71.3 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		12,994 kg/year	N/A		Daily	Maximum

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent(s) and discharge point(s)	**Parameter**	**Limit (including unit)**	**Reference Period**	**Limit of effective range**	**Monitoring frequency**	**Compliance Statistic**
A3: Waste stream D via Outlets 1 and 2	Phosphate (as PO_4^{3-})	202.5 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		187.5 kg/year	N/A		Daily	Maximum
	COD	290.7 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		4,449 kg/year	N/A		Daily	Maximum
	Aluminium (total) as Al	1.01 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		4.85 kg/year	N/A		Daily	Maximum
	Chromium (total) as Cr	1.56 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		7.72 kg/year	N/A		Daily	Maximum
	Copper (total) as Cu	0.07 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		0.39 kg/year	N/A		Daily	Maximum
	Iron (total) as Fe	6.55 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		32.27 kg/year	N/A		Daily	Maximum
	Manganese (total) as Mn	0.61 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		3.07 kg/year	N/A		Daily	Maximum
	Nickel (total) as Ni	0.08 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		0.41 kg/year	N/A		Daily	Maximum
	Lead (total) as Pb	0.05 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		0.28 kg/year	N/A		Daily	Maximum
	Zinc (total) as Zn	1.1 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum
		5.54 kg/year	N/A		Daily	Maximum

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent(s) and discharge point(s)	**Parameter**	**Limit (including unit)**	**Reference Period**	**Limit of effective range**	**Monitoring frequency**	**Compliance Statistic**
A4: Waste stream E via Outlets 1 and 2	Maximum daily discharge volume	240 m^3/day	Total daily volume	N/A	N/A	Maximum
	pH	6 to 9	Instantaneous (spot sample)	N/A	Daily	Minimum and maximum
	Visible oil or grease	No significant trace present so far as is reasonably practicable	Instantaneous (visual examination)	N/A	Daily	No significant trace
A5: Waste stream F via Outlets 1 and 2	Maximum daily discharge volume	4,000 m^3/day	Total daily volume	N/A	Continuous	Maximum
	Maximum rate of discharge	46 litres/second	Instantaneous (spot sample)	N/A	N/A	Maximum
	15-minute instantaneous or averaged flow	No limit set. Record as l/s	15 minute	N/A	Continuous	N/A
	pH	6 to 9	Instantaneous (spot sample)	N/A	N/A	Minimum and maximum
	Visible oil or grease	No significant trace present so far as is reasonably practicable	Instantaneous (visual examination)	N/A	N/A	No significant trace
	Detergents	624 kg/year	N/A	N/A	Daily	Maximum
	Amino tri-methylene phosphonic acid (ATMP)	45 kg/day	N/A	N/A	Daily	Maximum
		9,100 kg/year	N/A	N/A	Daily	Maximum
	Hydoxy ethylidene diphosphonic acid (HEDP)	4.5 kg/day	N/A	N/A	Daily	Maximum
		890 kg/year	N/A	N/A	Daily	Maximum

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent(s) and discharge point(s)	**Parameter**	**Limit (including unit)**	**Reference Period**	**Limit of effective range**	**Monitoring frequency**	**Compliance Statistic**
A5: Waste stream F via Outlets 1 and 2	Acetic acid	0.1 kg/day	N/A	N/A	Daily	Maximum
		14 kg/year	N/A	N/A	Daily	Maximum
	Phosphoric acid	0.1 kg/day	N/A	N/A	Daily	Maximum
		12 kg/year	N/A	N/A	Daily	Maximum
	Sodium polyacrylate	40 kg/day	N/A	N/A	Daily	Maximum
		8,030 kg/year	N/A	N/A	Daily	Maximum
	Acrylic acid	1 kg/day	N/A	N/A	Daily	Maximum
		165 kg/year	N/A	N/A	Daily	Maximum
	Iron (total) as Fe	250 kg/day	Instantaneous (spot sample)	N/A	Daily	Maximum
		46,000 kg/year	Instantaneous (spot sample)	N/A	Daily	Maximum
A2 (combined waste streams B and C), **A3** (waste stream D) and **A5** (waste stream F) all via Outlets 1 and 2	Cadmium	0.005 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum (A2, A3 and A5 combined)
		0.37 kg/year	N/A		Daily	Maximum (A2, A3 and A5 combined)
	Mercury	0.001 kg/day	N/A	EPR units 1 and 2 combined	Daily	Maximum (A2, A3 and A5 combined)
		0.1 kg/year	N/A		Daily	Maximum (A2, A3 and A5 combined)
A6: Waste stream G via Outlets 1 and 2	Maximum daily discharge volume	175 m^3/day	Total daily volume	N/A	Continuous	Maximum
	15-minute instantaneous or averaged flow	No limit set. Record as l/s	15 minute	N/A	Continuous	N/A
	ATU-BOD as O_2	20 mg/l	Instantaneous (spot sample)	N/A	Weekly	Maximum

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent(s) and discharge point(s)	**Parameter**	**Limit (including unit)**	**Reference Period**	**Limit of effective range**	**Monitoring frequency**	**Compliance Statistic**
A6: Waste stream G via Outlets 1 and 2	Suspended solids (measured after drying at 105°C)	30 mg/l	Instantaneous (spot sample)	N/A	Weekly	Maximum
	Ammoniacal nitrogen (expressed as N)	20 mg/l	Instantaneous (spot sample)	N/A	Weekly	Maximum
	Visible oil or grease	No significant trace present so far as is reasonably practicable	Instantaneous (visual examination)	N/A	Weekly	No significant trace
A7: Waste stream H via Outlet 3	Maximum daily discharge volume	108,864 m^3/day	Total daily volume	N/A	Continuous	Maximum
	Maximum rate of discharge	1260 litres/ second	Instantaneous (spot sample)	N/A	Continuous	Maximum
	15-minute instantaneous or averaged flow	No limit set. Record as l/s	15 minute	N/A	Continuous	N/A
	Total wet weight biomass	747 kg	Daily mean (90 day rolling average)	Total combined wet weight biomass includes all taxonomic groups of marine fauna with the exclusion of gelatinous zooplankton (e.g. ctenophores and jelly fish).	In accordance with the FRR systems commissioning plan, environmental monitoring plan and effluent monitoring plan as approved in accordance with pre-operational measures PO8, PO11 and PO15 in table S1.4	Maximum

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent(s) and discharge point(s)	**Parameter**	**Limit (including unit)**	**Reference Period**	**Limit of effective range**	**Monitoring frequency**	**Compliance Statistic**
A7: Waste stream H via Outlet 3	Total wet weight biomass	502 kg	Daily mean (12 month rolling period (annual average))	Total combined wet weight biomass includes all taxonomic groups of marine fauna with the exclusion of gelatinous zooplankton (e.g. ctenophores and jelly fish).	In accordance with the FRR systems commissioning plan, environmental monitoring plan and effluent monitoring plan as approved in accordance with pre-operational measures PO8, PO11 and PO15 in table S1.4	Maximum

Table S3.2 Discharge points				
Activity reference	**Effluent Name**	**Discharge Points**	**Discharge point NGRs**	**Receiving water/ Environment**
A1	Trade effluent consisting of returned abstracted seawater (waste stream A)	Outlet 1 and Outlet 2	ST 19176 47521 and ST 19128 47578 Final discharge point NGRs to be confirmed in accordance with pre-operational condition PO13	Bristol Channel
A2	Trade effluent generated by operations within the nuclear island waste monitoring and discharge system (Waste stream B) combined with the steam generator blowdown system that cannot be recycled (Waste stream C)			
A3	Trade effluent generated from the turbine hall and uncontrolled area floor drains, excluding blowdown from the steam generator blowdown system (waste stream D)			
A4	Trade effluent generated from the site drainage system, including drainage from road and roof surfaces, uncontaminated water from oily water network and atmospheric condensate from chillers (waste stream E)			
A5	Trade effluent generated from the production of demineralised water (waste stream F)			
A6	Treated domestic sewage effluent generated from the site's administration, welfare and mess facilities (waste stream G)			
A7	Trade effluent composed of returned abstracted seawater from the fish recovery and return (FRR) system (waste stream H)	Outlet 3	ST 20230 46685 Final discharge point NGR to be confirmed in accordance with pre-operational condition PO13	Bristol Channel

Table S3.3 Monitoring points				
Activity reference	**Effluent(s) and discharge point(s)**	**Monitoring type**	**Monitoring point NGR**	**Monitoring point reference***
A1	Discharge of trade effluent consisting of returned abstracted seawater (waste stream A) via Outlets 1 and 2	Influent sample point(s)	NGRs to be specified in accordance with pre-operational measure PO14	Monitoring point references to be specified in accordance with pre-operational measure PO14
		Effluent sample point(s) from EPR unit 1		
		Effluent sample point(s) from EPR unit 2		
		MCERTs flow monitoring point(s)		
A2	Trade effluent generated by operations within the nuclear island waste monitoring and discharge system (Waste stream B) combined with the steam generator blowdown system that cannot be recycled (Waste stream C) via Outlets 1 and 2	Effluent sample point(s) from EPR unit 1	NGRs to be specified in accordance with pre-operational measure PO14	Monitoring point references to be specified in accordance with pre-operational measure PO14
		Effluent sample point(s) from EPR unit 2		
		MCERTs flow monitoring point(s)		
A3	Trade effluent generated from the turbine hall and uncontrolled area floor drains, excluding blowdown from the steam generator blowdown system (waste stream D) via Outlets 1 and 2	Effluent sample point(s) from EPR unit 1	NGRs to be specified in accordance with pre-operational measure PO14	Monitoring point references to be specified in accordance with pre-operational measure PO14
		Effluent sample point(s) from EPR unit 2		
		MCERTs flow monitoring point(s)		
A4	Trade effluent generated from the site drainage system, including drainage from road and roof surfaces, uncontaminated water from oily water network and atmospheric condensate from chillers (waste stream E) via Outlets 1 and 2	Effluent sample point(s)	NGRs to be specified in accordance with pre-operational measure PO14	Monitoring point references to be specified in accordance with pre-operational measure PO14
		MCERTs flow monitoring point		
A5	Trade effluent generated from the production of demineralised water (waste stream F) via Outlets 1 and 2	Effluent sample point(s)	NGRs to be specified in accordance with pre-operational measure PO14	Monitoring point references to be specified in accordance with pre-operational measure PO14
		MCERTs flow monitoring point		
A6	Treated domestic sewage effluent generated from the site's administration, welfare and mess facilities (waste stream G) via Outlets 1 and 2	Effluent sample point	NGRs to be specified in accordance with pre-operational measure PO14	Monitoring point references to be specified in accordance with pre-operational measure PO14
		MCERTs flow monitoring point		

Table S3.3 Monitoring points				
Activity reference	**Effluent(s) and discharge point(s)**	**Monitoring type**	**Monitoring point NGR**	**Monitoring point reference***
A7	Trade effluent composed of returned abstracted seawater from the fish recovery and return (FRR) system (waste stream H) via Outlet 3	Effluent sample point	NGRs to be specified in accordance with pre-operational measure PO14	Monitoring point references to be specified in accordance with pre-operational measure PO14
		MCERTs flow monitoring point		

*All monitoring points to be appropriately labelled

Schedule 4 – Reporting

For the purposes of this schedule the following interpretations shall apply:

- Substance loading data for A2 (waste streams B and C combined), A3 (waste stream D) and A5 (waste stream F) shall be reported as:
  (a) the calculated load for each substance; and
  (b) the corresponding effluent volume and effluent concentration;

unless monitoring is based on a record of the amount of the substance used, in which case that data shall be reported.

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

Table S4.1 Reporting of monitoring data

Discharge activity	Parameter	Monitoring point reference	Reporting period	Period begins
A1: Waste stream A	15-minute flow	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Reports to be provided to the Environment Agency upon request Report to be submitted within 28 days unless otherwise specified in writing by the Environment Agency	Upon request by the Environment Agency
	Temperature and total residual oxidant (TRO)	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary Report to be submitted within 2 months of the end of the calendar year	1 January

Table S4.1 Reporting of monitoring data				
Discharge activity	**Parameter**	**Monitoring point reference**	**Reporting period**	**Period begins**
A2: Combined waste streams B and C	Total daily discharge volume	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary Report to be submitted within 2 months of the end of the calendar year	1 January
	15-minute flow	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Reports to be provided to the Environment Agency upon request Report to be submitted within 28 days unless otherwise specified in writing by the Environment Agency	Upon request by the Environment Agency
	Boron (as B), lithium hydroxide, hydrazine, morpholine, ethanolamine, nitrogen (as N), ammoniacal nitrogen (as NH_4^+), phosphate (as PO_4^{3-}), detergents, COD, aluminium, chromium, copper. iron, manganese, nickel, lead and zinc	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary Report to be submitted within 2 months of the end of the calendar year	1 January
A3: Waste stream D	Total daily discharge volume	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary Report to be submitted within 2 months of the end of the calendar year	1 January

Table S4.1 Reporting of monitoring data				
Discharge activity	**Parameter**	**Monitoring point reference**	**Reporting period**	**Period begins**
A3: Waste stream D	15-minute flow	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Reports to be provided to the Environment Agency upon request Report to be submitted within 28 days unless otherwise specified in writing by the Environment Agency	Upon request by the Environment Agency
	Hydrazine, morpholine, ethanolamine, nitrogen (as N), ammoniacal nitrogen (as NH_4^+), phosphate (as PO_4^{3-}), COD, aluminium, chromium, copper, iron, manganese, nickel, lead and zinc	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary and in accordance with the effluent monitoring plan as approved in accordance with pre-operational measure PO15 Report to be submitted within 2 months of the end of the calendar year	1 January
A4: Waste stream E	pH, visible oil and grease	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary and in accordance with the effluent monitoring plan as approved in accordance with pre-operational measure PO15 Report to be submitted within 2 months of the end of the calendar year	1 January
A5: Waste stream F	Total daily discharge volume	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary. Report to be submitted within 2 months of the end of the calendar year	1 January

Table S4.1 Reporting of monitoring data				
Discharge activity	**Parameter**	**Monitoring point reference**	**Reporting period**	**Period begins**
A5: Waste stream F	15-minute flow	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Reports to be provided to the Environment Agency upon request Report to be submitted within 28 days unless otherwise specified in writing by the Environment Agency	Upon request by the Environment Agency
	Detergents, amino tri-methylene phosphonic acid (ATMP), hydoxy ethylidene diphosphonic acid (HEDP), acetic acid, phosphoric acid, sodium polyacrylate, acrylic acid and iron	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary Report to be submitted within 2 months of the end of the calendar year	1 January
A2 (combined waste streams B and C), **A3** (waste stream D) and **A5** (waste stream F)	Cadmium and mercury	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary Report to be submitted within 2 months of the end of the calendar year	1 January
A6: Waste stream G	Total daily discharge volume	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary Report to be submitted within 2 months of the end of the calendar year	1 January

Table S4.1 Reporting of monitoring data				
Discharge activity	**Parameter**	**Monitoring point reference**	**Reporting period**	**Period begins**
A6: Waste stream G	15-minute flow	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Reports to be provided to the Environment Agency upon request Report to be submitted within 28 days unless otherwise specified in writing by the Environment Agency	Upon request by the Environment Agency
	ATU-BOD as O_2, suspended solids (measured after drying at 105°C), ammoniacal nitrogen (expressed as N) and visible oil or grease	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary Report to be submitted within 2 months of the end of the calendar year	1 January
A7: Waste stream H	Total daily discharge volume	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
			Annual summary Report to be submitted within 2 months of the end of the calendar year	1 January
	15-minute flow	Monitoring point references to be specified in accordance with pre-operational measure PO14	Quarterly Report to be submitted within 28 days from the end of the reporting period unless otherwise specified in writing by the Environment Agency	1st of month
		Monitoring point references to be specified in accordance with pre-operational measure PO14	Reports to be provided to the Environment Agency upon request Report to be submitted within 28 days unless otherwise specified in writing by the Environment Agency	Upon request by the Environment Agency

Table S4.1 Reporting of monitoring data				
Discharge activity	**Parameter**	**Monitoring point reference**	**Reporting period**	**Period begins**
A7: Waste stream H	Total combined wet weight biomass	Monitoring point references to be specified in accordance with pre-operational measure PO14	In accordance with effluent monitoring plan as approved in accordance with pre-operational measure PO15	

Table S4.2 Reporting forms		
Activity	**Parameter**	**Reporting format**
A1: Waste stream A	15-minute flow	WISKI or other electronic format as agreed in writing by the Environment Agency
	Temperature and total residual oxidant (TRO)	Electronic format as agreed in writing by the Environment Agency
A2: Combined waste streams B and C	Total daily discharge volume	Electronic format as agreed in writing by the Environment Agency
	15-minute flow	WISKI or other electronic format as agreed in writing by the Environment Agency
	Boron (as B), lithium hydroxide, hydrazine, morpholine, ethanolamine, nitrogen (as N), ammoniacal nitrogen (as NH_4^+), phosphate (as PO_4^{3-}), detergents, COD, aluminium, chromium, copper, iron, manganese, nickel, lead and zinc	Electronic format as agreed in writing by the Environment Agency
A3: Waste stream D	Total daily discharge volume	Electronic format as agreed in writing by the Environment Agency
	15-minute flow	WISKI or other electronic format as agreed in writing by the Environment Agency
	Hydrazine, morpholine, ethanolamine, nitrogen (as N), ammoniacal nitrogen (as NH_4^+), phosphate (as PO_4^{3-}), COD, aluminium, chromium, copper, iron, manganese, nickel, lead and zinc	Electronic format as agreed in writing by the Environment Agency
A4: Waste stream E	pH, visible oil and grease	Electronic format as agreed in writing by the Environment Agency

Table S4.2 Reporting forms		
Activity	**Parameter**	**Reporting format**
A5: Waste stream F	Total daily discharge volume	Electronic format as agreed in writing by the Environment Agency
	15-minute flow	WISKI or other electronic format as agreed in writing by the Environment Agency
	Detergents, amino tri-methylene phosphonic acid (ATMP), hydoxy ethylidene diphosphonic acid (HEDP), acetic acid, phosphoric acid, sodium polyacrylate, acrylic acid and Iron	Electronic format as agreed in writing by the Environment Agency
A2 (combined waste streams B and C), **A3** (waste stream D) and **A5** (waste stream F)	Cadmium and mercury	Electronic format as agreed in writing by the Environment Agency
A6: Waste stream G	Total daily discharge volume	Electronic format as agreed in writing by the Environment Agency
	15-minute flow	WISKI or other electronic format as agreed in writing by the Environment Agency
	ATU-BOD as O_2, suspended solids (measured after drying at 105°C), ammoniacal nitrogen (expressed as N) and visible oil or grease	Electronic format as agreed in writing by the Environment Agency
A7: Waste stream H	Total daily discharge volume	Electronic format as agreed in writing by the Environment Agency
	15-minute flow	WISKI or other electronic format as agreed in writing by the Environment Agency
	Total combined wet weight biomass	Electronic format as agreed in writing by the Environment Agency

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 unless otherwise agreed in writing by the Environment Agency	
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/type or nature of effluent released	
Best estimate of the quantity or rate of release of substances and/or duration of discharge	
Best estimate of the environmental impact of the discharge	
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 specified in schedule 3 table S3.1	
The information specified below is to be notified to the Environment Agency as soon as reasonably practicable following detection.	
Monitoring point reference/ source	
Self monitoring regime (where relevant)	
Type of failure	
Date of sample/event	
Parameter	
Result and units	
Limit and units	

(c) 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 reasonably practicable unless otherwise agreed in writing by the Environment Agency

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/breach/exceedance	
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	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 – Interpretation

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

"annually" means once every year.

“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.

“appropriate measures” for the purposes of the emission of substances not controlled by emission limits condition (condition 3.2.1) do not require the operator to undertake treatment to a level beyond that specified in schedule 1 table S1.1, or to carry out routine monitoring for substances not controlled by emission limits.

“ATU-BOD as O_2” means the biochemical oxygen demand (measured after 5 days at 20^{o}C with nitrification suppressed by the addition of allylthiourea).

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the permitted activities, which are not controlled by an emission limit.

“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.

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

"quarter" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

“significant pollution” means a category 1 or category 2 incident indicated by the Common Incident Classification Scheme (CICS).

“year” means calendar year ending 31 December.

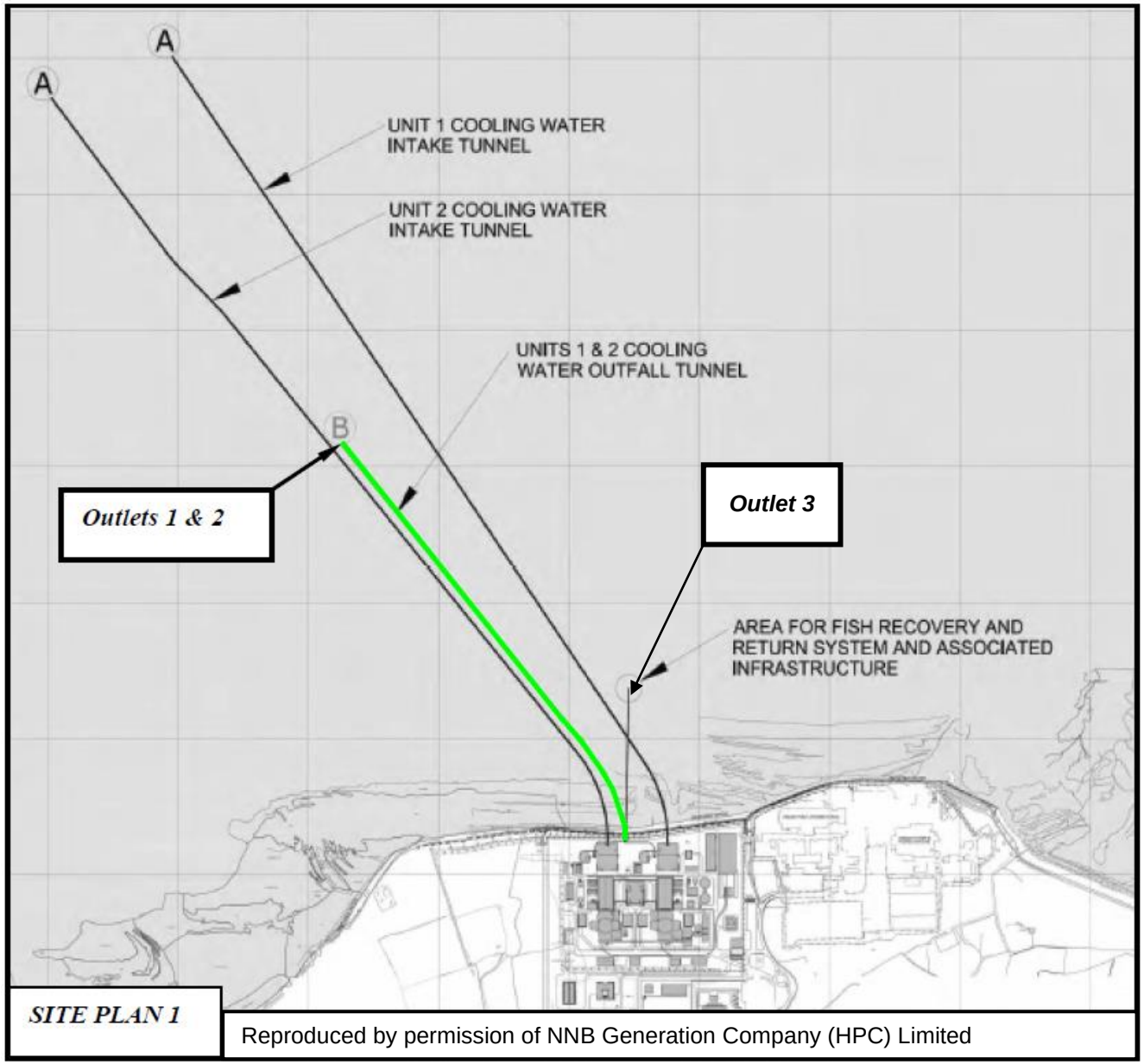
“m^3/day” means cubic metres per day

“m^3/second” mean cubic metres per second

“mg/l” means milligram per litre

“µg/l” means microgram per litre

Schedule 7 – Site plans



KEY to buildings and structures

14 - Effluent tanks (waste streams B, C & D)

16 - Turbine Halls (waste stream A)

22 - Hydrazine and ammonia storage

25 - Cooling water pumphouses

26 - Cooling water forebays

27 - Outfall ponds (all waste streams)

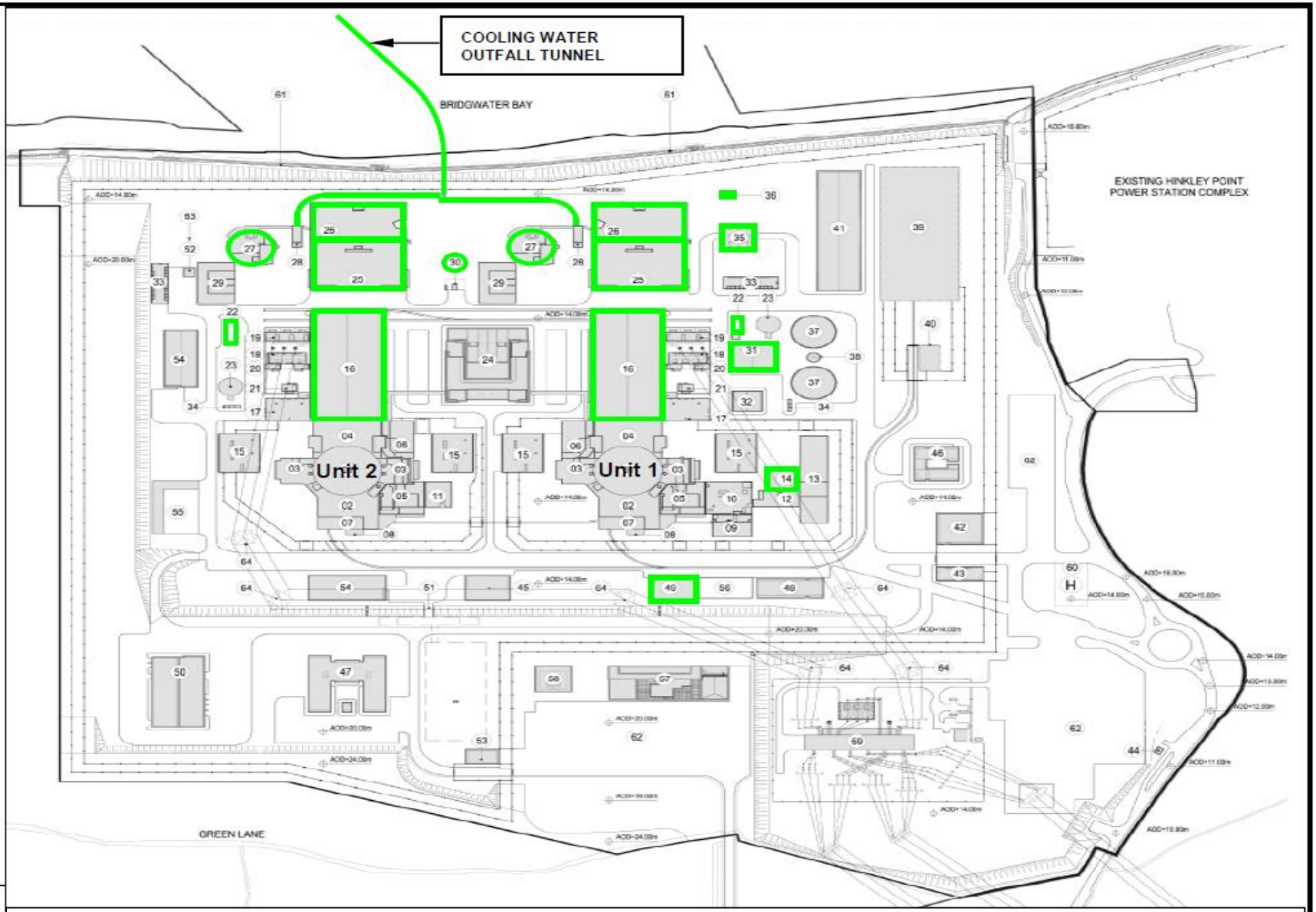
30 - Attenuation pond (waste stream E)

31 - Demineralisation station (waste stream F)

35 - Chemicals storage

36 - Sewage treatment plant (waste stream G)

49 - Oil & grease storage and oil ancillary building



SITE PLAN 2

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END OF PERMIT