# Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

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NNB Generation Company Limited

Hinkley Point C Power Station
Near Bridgwater
Somerset
TA5 1UD

Permit number

EPR/HP3228XT

# Hinkley Point C Power Station

# Permit Number EPR/HP3228XT

## Introductory note

### This introductory note does not form a part of the 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 4500$MW_{TH}$ and a net electrical output of 1630$MW_E$ for export to the national grid. NNB Generation Company Limited has applied for an environmental permit to carry on a 'water discharge activity' at HPC.

The water discharge activity relates to the discharge of trade effluent (comprising of cooling water and process effluent) and treated sewage effluent. The discharges will arise during the Hot Functional Testing (HFT) phase of commissioning and during the subsequent operation of the power station. The permitted activity is 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. Returned abstracted cooling water represents the main emission (or waste stream) associated with this permit.

Several much smaller waste streams are combined with the returned cooling water prior to discharge to the Bristol Channel. They arise primarily as a result of removing wastes from the plant systems, to maintain optimum operating conditions and maximise efficiency. Generally, they consist of demineralised water contaminated with conditioning chemicals, corrosion products (due to metal oxidation) and dissolved salts. In addition there will be discharges of effluent from the demineralisation plant, used to produce high quality feedwater; from the site oily water treatment system; and from the on-site sewage treatment plant.

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

| Status log of the permit | | |
|---|---|---|
| **Description** | **Date** | **Comments** |
| Application EPR/HP3228XT/A001 | Duly made 23/09/2011 | Application for discharge of trade effluent (comprising cooling water and process effluent) and treated sewage effluent |
| Schedule 5 Notice EPR/HP3228XT/A001 | Issued 13/12/2011 | Notice requesting additional information |
| Additional information received | 23/12/2011 | Part 1 of phased response |
| Additional information received | 14/02/2012 | Part 2a of phased response |
| Additional information received | 01/03/2012 | Part 2b of phased response |
| Additional information received | 29/03/2012 | Part 3 of phased response |
| Schedule 5 Notice EPR/HP3228XT/A001 | Issued 15/05/2012 | Further Notice requesting additional information |
| Additional information received | 25/05/2012 | Part 1 of phased response |
| Additional information received | 02/06/2012 | Part 2 of phased response |
| Permit determined EPR/HP3228XT | 13/03/2013 | |

| Other EPR permits relating to this regulated facility | | |
|---|---|---|
| **Operator** | **Permit number** | **Date of issue** |
| NNB Generation Company Limited | EPR/ZP3238FH (Combustion Activity – Schedule 1) | 13/03/2013 |
| NNB Generation Company Limited | EPR/ZP3690SY Radioactive Substances Activity – Schedule 23) | 13/03/2013 |

End of introductory note

# Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number
**EPR/HP3228XT**

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

**NNB Generation Company Limited** ("the operator"),
whose registered office is

**40 Grosvenor Place**
**London**
**SW1X 7EN**

company registration number **06937084**

to operate a water discharge activity 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 |
|---|---|
| **Mike West** | **13/03/2013** |

Authorised on behalf of the Environment Agency

# Conditions

# 1 Management

## 1.1 General management

1.1.1 The operator shall manage and operate the activities:

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

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

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

# 2 Operations

## 2.1 Permitted activities

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

## 2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on site plans 1 and 2 at schedule 7 to this permit and the discharge shall be made at the points marked on site plan 1 at schedule 7 to this permit and as listed in table S3.2 (discharge points).

## 2.3 Operating techniques

2.3.1 (a) 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.

(b) 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 specified in schedule 1, table S1.2 or otherwise required under this permit, 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 31 October 2017 and 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 There shall be no point source emissions to water except from the sources and emission points listed in schedule 3.

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

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

## 3.2 Emissions of substances not controlled by emission limits

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

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

## 3.3 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 S3.1a, S3.1b, S3.1c and S3.3;

(b) inlet quality specified in table S3.1a 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 including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.3.3 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 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1a, S3.1b, S3.1c, S3.2 and S3.3.

# 4 Information

## 4.1 Records

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

(a) be legible;

(b) be made as soon as reasonably practicable;

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

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made.

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

## 4.2 Reporting

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

4.2.2 A report on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum, a review of the results of the monitoring carried out in accordance with the permit including an interpretive review of that data.

4.2.3 A report on the performance of the activities during periods of planned maintenance when the power station is subject to operation in RF3 maintenance configuration, shall be submitted to the Environment Agency within 1 month of completion of the maintenance

period (or other timeframe agreed in writing by the Environment Agency). The report need only include reference to waste stream A (as specified in table S1.1 of this permit) and shall include a review of the results of the cooling water flow and temperature monitoring carried out in accordance with the permit including an interpretive review of that data.

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

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

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.2; 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 without delay following the detection 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;

(b) the breach of a limit specified in the permit; or

(c) any significant adverse environmental effects.

4.3.2 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.

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

4.3.4 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:

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

(b) 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 or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

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

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

## 4.4 Interpretation

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

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

# Schedule 1 - Operations

| Table S1.1 Activities | |
|---|---|
| **Description of activity** | **Limits of specified activity** |
| Discharge of trade effluent (comprising cooling water and process effluent) and treated sewage effluent via outlets 1 & 2 | The activity is limited to the following waste streams, as set out in Table 2.2.1 of the permit application:<br>• **Waste stream A** - Trade effluent consisting of returned abstracted cooling water.<br>• **Waste stream B -** Trade effluent from operations within the 'nuclear island', excluding effluent from the Steam Generator Blowdown System.<br>• **Waste stream C** - Trade effluent from the Steam Generator Blowdown System.<br>• **Waste stream D** - Trade effluent from the Turbine Hall and uncontrolled area floor drains, excluding effluent from the Steam Generator Blowdown System.<br>• **Waste stream E** - Trade effluent comprising of water potentially contaminated with hydrocarbons from areas where oils are used.<br>• **Waste stream F** - Trade effluent from the production of demineralised water.<br>• **Waste stream G** - Domestic sewage (sanitary effluent) from administration and mess facilities. |

| Table S1.2 Operating techniques | | |
|---|---|---|
| **Description of documentation** | **Parts** | **Date Received** |
| Environmental permit application for Hinkley Point C, application reference EPR/HP3228XT/A001 -<br>Main document | Sections 2.3.2 - 2.3.7 - description of the treatment systems used to remove contaminants prior to discharge<br>Section 2.6.2 - Prevention of Unplanned Emissions of Oils from Heat Exchangers<br>Section 2.7.2 - Hot Functional Testing<br>Section 3.1.3 - Minimisation of Impingement and Entrainment of Marine Organisms<br>Section 3.5 - Oily Water Treatment<br>Section 3.7.3 - Strategy for Minimising Chlorination<br>Section 3.8 - Sanitary Effluent<br>Section 3.11 - Outfall Design | 23/09/11 |
| Further information in response to Schedule 5 Notice | Question 25 - injection of biocide downstream of the drumscreens but before the condensers | 23/12/11 |
| Further information in response to Schedule 5 Notice | Question 46 - operation of the Acoustic Fish Deterrent (AFD) system 24 hours per day. | 29/03/12 |
| Further information in response to Schedule 5 Notice | Question 9 - maximum expected pre-dilution substance concentrations in waste streams B & C (combined), and waste stream D | 29/03/12 |
| Further information in response to Schedule 5 Notice | Question 13 - maximum expected pre-dilution substance concentrations in waste stream F | 14/02/12 |
| 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 |
| Commissioning Discharges Management Plan | As approved in accordance with Pre-operational measure PO6 in Table S1.4 | |
| Operational strategy for the control of biofouling | As approved in accordance with Pre-operational measure PO7 in Table S1.4 | |
| Commissioning Plan for AFD and FRR Systems | As approved in accordance with Pre-operational measure PO8 in Table S1.4 | |
| Forebay de-silting Plan | As approved in accordance with Pre-operational measure PO9 in Table S1.4 | |
| Hydrazine Removal Plan | As approved in accordance with Pre-operational measure PO10 in Table S1.4 | |
| Environmental Monitoring Plan | As approved in accordance with Pre-operational measure PO11 in Table S1.4 | |

| Table S1.2 Operating techniques | | |
|---|---|---|
| **Description of documentation** | **Parts** | **Date Received** |
| Priority Hazardous Substances Management Plan | As approved in accordance with Pre-operational measure PO12 in Table S1.4 | To be received in accordance with pre-operational measure submission timescales in Table S1.4 |
| Effluent Monitoring Plan | As approved in accordance with Pre-operational measure PO15 in Table S1.4 | |
| Hydrodynamic Modelling Review Plan | As approved in accordance with Pre-operational measure PO16 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 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. | Within 12 months of the date on which the Hot Functional Testing phase of commissioning commences |
| IC2 | The operator shall review their hydrodynamic modelling for the purpose of post-scheme appraisal within 5 years of the commencement of commercial operation of Unit 2, to validate their 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.<br><br>The Operator shall submit a written report to the Environment Agency on the review of their hydrodynamic modelling within 1 month of completion of the review. | As specified in Improvement Condition IC2 |
| IC3 | The operator shall review their hydrodynamic modelling and associated impact assessment in light of the following:<br>• best available climate change projections;<br>• operational performance of the power station;<br>• the output from post scheme appraisal studies;<br>within 5 years of the commencement of commercial operation of Unit 2 and every 10 years thereafter unless otherwise agreed in writing by the Environment Agency.<br><br>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 shall be reported to the Environment Agency in writing within 1 month of completion of each review. | As specified in Improvement Condition IC3 |

| Table S1.4 Pre-operational measures | | |
|---|---|---|
| **Reference** | **Pre-operational measures** | **Date** |
| PO1 | Prior to the commencement of the Hot Functional Testing 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 Part 1 of How to comply with your Environmental Permit (EPR 1.00) and Horizontal Guidance note H6 on Environmental Management Systems; and shall include an Accident Management Plan for the Water Discharge Activity.<br>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 phase of commissioning the operator shall submit to the Environment Agency a report which includes a completed, as-built description of the plant and infrastructure relevant to the Water Discharge Activity. Note that the report shall take into account the cooling water system in its entirety, including the design of the Acoustic Fish Deterrent (AFD) and Fish Recovery and Return (FRR) systems.<br>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 national grid references of the cooling water intakes.<br>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. |

| Table S1.4 Pre-operational measures | | |
|---|---|---|
| **Reference** | **Pre-operational measures** | **Date** |
| PO3 | Prior to the commencement of the Hot Functional Testing phase of commissioning the operator shall submit to the Environment Agency 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:<br>• 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;<br>• information from designers and suppliers which has influenced the final design with respect to the flow and composition of effluents;<br>• reference to outputs from the demineralisation plant (expected to be based on non-desalination technology in variance to the data provided in GDA and the permit application);<br>• reference to outputs from the ongoing Entrainment Mimic Unit (EMU) work regarding potential impacts on entrained marine organisms.<br>The report shall validate the proposed substance loadings and emissions from Hinkley Point C, fully describing and justifying:<br>• any expected variances from the substance loadings and emissions proposed in the permit application;<br>• 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. |
| PO4 | Prior to the commencement of the Hot Functional Testing 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 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. |

| Table S1.4 Pre-operational measures | | |
|---|---|---|
| **Reference** | **Pre-operational measures** | **Date** |
| PO6 | Prior to the commencement of the Hot Functional Testing phase of commissioning the operator shall submit to the Environment Agency 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:<br>• the timetable for HFT of both UK EPR units;<br>• a description of the HFT process;<br>• a description of associated effluent treatment measures;<br>• confirmation of the expected substance loadings and emissions to surface water;<br>• confirmation of the expected thermal loading, including the expected temperature of the discharge;<br>• proposals for effluent monitoring during the HFT process.<br>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:<br>• environmental impacts will be prevented or minimised; and<br>• compliance with this permit will be achieved. | At least three calendar months prior to the commencement of the Hot Functional Testing phase of commissioning. |
| PO7 | Prior to the commencement of the Hot Functional Testing phase of commissioning the operator shall submit to the Environment Agency for approval a report which confirms and justifies their operational strategy for the control of biofouling of the cooling water system. The report shall include, but not be restricted to the following:<br>• an appraisal of the operational conditions and chlorination strategy employed at Hinkley Point B power station, and a description of how this has been taken into account in defining the proposed strategy for HPC;<br>• the lessons learnt through design evolution and/or commissioning and operating the EPR at Flamanville 3 in France, or any other EPR site worldwide;<br>• details of how the operational strategy has been optimised to reduce the need for chemical dosing and the subsequent discharge of TRO and the formation of chlorinated by-products (CBP's);<br>• 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. |

| Table S1.4 Pre-operational measures | | |
|---|---|---|
| **Reference** | **Pre-operational measures** | **Date** |
| PO8 | Prior to the commencement of the Hot Functional Testing phase of commissioning the operator shall submit to the Environment Agency for approval a Commissioning Plan for the AFD and FRR Systems. The Plan shall include, but not be restricted to the following:<br>• a description of how the operator intends to optimise the AFD and FRR systems to minimise impacts upon fish;<br>• details of the monitoring proposed to facilitate optimisation and meet the above objective;<br>• confirmation of the timetable associated with the AFD and FRR system commissioning;<br>• proposals for demonstrating the effectiveness of the optimisation process to the Environment Agency prior to the start of Active Commissioning of Unit 1. | 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 phase of commissioning 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:<br>• verification of the initial impact assessment findings detailed in the permit application;<br>• a Method Statement for undertaking the de-silting activity. | At least one calendar month prior to the commencement of the Hot Functional Testing phase of commissioning. |
| PO10 | Prior to the commencement of the Hot Functional Testing phase of commissioning the operator shall submit to the Environment Agency for approval a Hydrazine Removal Plan which details how hydrazine shall be removed from the effluent prior to discharge. The Plan shall include, but not be restricted to the following:<br>• the methodology to be followed in removing hydrazine from the discharge;<br>• proposals for monitoring during the Hot Functional Testing phase of commissioning to demonstrate that the level of hydrazine in (i) waste streams B & C (combined), and (ii) waste stream D, is below the Limit of Detection of the analytical method, the use of which shall be approved by the Environment Agency;<br>• proposals for on-going process monitoring to ensure that the hydrazine removal process maintains its effectiveness;<br>• 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. | 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 phase of commissioning the operator shall submit to the Environment Agency for approval an Environmental Monitoring Plan for the Severn Estuary SAC, SPA and Ramsar, for the purpose of post-scheme appraisal.<br><br>The Plan shall propose monitoring methods to determine the physical, chemical and biological characteristics of the area potentially affected by the water discharge activity (including impacts related to the abstraction of cooling water), and 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:<br><br>• thermal plume monitoring;<br>• subtidal and intertidal benthic ecology monitoring;<br>• water quality monitoring;<br>• sediment quality monitoring; and<br>• the quality assurance procedures in place; or<br>• 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 phase of commissioning the operator shall submit to the Environment Agency for approval a Priority Hazardous Substances 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 Priority Hazardous Substances, in accordance with the objectives set out under the Water Framework Directive.<br><br>The Plan will make reference to amongst 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 phase of commissioning the operator shall submit to the Environment Agency confirmation of the final national grid references (NGR's) for the individual diffuser heads on the cooling water outfall tunnel, to refine the NGR's in the permit application which were submitted with a 50m limit of deviation to allow for tunnel drilling contingency.<br><br>Following written approval by the Environment Agency, the NGR's 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 phase of commissioning the operator shall submit to the Environment Agency:<br>• confirmation of the NGR's for the compliance monitoring points associated with each waste stream, as listed in table S3.3;<br>• confirmation of the monitoring point references, to be prefixed by 'M', for the waste stream compliance monitoring points; and<br>• detailed site plan(s) showing the exact location of the waste stream compliance monitoring points.<br>Following written approval by the Environment Agency, the NGR's 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 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 effluents under this permit. The Plan shall also include, but not be restricted to the following:<br>• the quality assurance procedures in place; or<br>• 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 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 requirement of Improvement Condition IC2 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

Wastes are not accepted as part of the permitted activities and there are no restrictions on raw materials or fuels under this schedule.

# 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 un-scheduled, reactive, or emergency maintenance work.

- The maximum rate of discharge for waste stream A (Unit 1 & Unit 2 combined) shall be calculated by summing the15-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 it's CRF pumps running, while the other EPR™ unit will have only one of it's 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, as 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.

| Table S3.1a Point Source emissions to water (other than sewer) – emission limits and monitoring requirements | | | | | | |
|---|---|---|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | | | | |
| **Discharge source** | **Parameter** | **Limit** | **Reference Period** | **Limit of effective range** | **Monitoring frequency** | **Compliance Statistic** |
| Waste stream A (Unit 1 & Unit 2 combined) | Maximum rate of discharge | 127.0 $m^3/s$ | Instantaneous | N/A | N/A | Tidal mean |
| | | 134.6 $m^3/s$ | Instantaneous | N/A | N/A | 98 percentile |
| | Temperature | 35.0 degrees C | Instantaneous (spot sample) | N/A | Continuous | 99.5 percentile |
| Waste stream A (Unit 1) | 15-minute instantaneous or integrated flow | No limit set. Record as l/s | 15 minute | N/A | Continuous | N/A |
| | Temperature | 11.8 degrees C | Instantaneous (spot sample) | N/A | Continuous | Maximum increase compared to inlet as a tidal mean. Condition 3.1.3 applies |
| | | 22.2 degrees C | Instantaneous (spot sample) | During planned RF3 maintenance, as referred to in Schedule 3 'interpretations' | Continuous | Maximum increase compared to inlet as a tidal mean. Condition 3.1.3 applies |
| | Total residual oxidant (TRO) | 200 µg/l | Instantaneous (spot sample) | During periods when the cooling water is dosed with sodium hypochlorite | Hourly | Maximum |
| | pH | 6 to 9 | Instantaneous (spot sample) | N/A | N/A | Minimum and maximum |
| | Visible oil or grease | No significant trace present | Instantaneous (spot sample) | N/A | N/A | No significant trace |

| Table S3.1a Point Source emissions to water (other than sewer) – emission limits and monitoring requirements | | | | | | |
|---|---|---|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | | | | |
| **Discharge source** | **Parameter** | **Limit** | **Reference Period** | **Limit of effective range** | **Monitoring frequency** | **Compliance Statistic** |
| Waste stream A (Unit 2) | 15-minute instantaneous or integrated flow | No limit set. Record as l/s | 15 minute | N/A | Continuous | N/A |
| | Temperature | 11.8 degrees C | Instantaneous (spot sample) | N/A | Continuous | Maximum increase compared to inlet as a tidal mean. Condition 3.1.3 applies |
| | | 22.2 degrees C | Instantaneous (spot sample) | During planned RF3 maintenance, as referred to in Schedule 3 'interpretations' | Continuous | Maximum increase compared to inlet as a tidal mean. Condition 3.1.3 applies |
| | Total residual oxidant (TRO) | 200 µg/l | Instantaneous (spot sample) | During periods when the cooling water is being dosed with sodium hypochlorite | Hourly | Maximum |
| | pH | 6 to 9 | Instantaneous (spot sample) | N/A | N/A | Minimum and maximum |
| | Visible oil or grease | No significant trace present | Instantaneous (spot sample) | N/A | N/A | No significant trace |
| Waste streams B & C (combined) | Maximum daily discharge volume | 1500 $m^3$/d | Total daily volume | N/A | N/A | Maximum |
| | Maximum rate of discharge | 35 l/s | Instantaneous | N/A | N/A | Mean |
| | pH | 6 to 9 | Instantaneous (spot sample) | N/A | N/A | Minimum and maximum |

| Table S3.1a Point Source emissions to water (other than sewer) – emission limits and monitoring requirements | | | | | | |
|---|---|---|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | | | | |
| **Discharge source** | **Parameter** | **Limit** | **Reference Period** | **Limit of effective range** | **Monitoring frequency** | **Compliance Statistic** |
| Waste streams B & C (combined)<br>cont/d… | Visible oil or grease | No significant trace present | Instantaneous (spot sample) | N/A | N/A | No significant trace |
| Waste stream D | Maximum daily discharge volume | 1500 $m^3$/d | Total daily volume | N/A | N/A | Maximum |
| | Maximum rate of discharge | 35 l/s | Instantaneous | N/A | N/A | Mean |
| | pH | 6 to 9 | Instantaneous (spot sample) | N/A | N/A | Minimum and maximum |
| | Visible oil or grease | No significant trace present | Instantaneous (spot sample) | N/A | N/A | No significant trace |
| Waste stream E | Maximum daily discharge volume | 240 $m^3$/d | Total daily volume | N/A | N/A | Maximum |
| | Visible oil or grease | No significant trace present | Instantaneous (spot sample) | N/A | Daily | No significant trace |
| Waste stream F | Maximum daily discharge volume | 4000 $m^3$/d | Total daily volume | N/A | Continuous | Maximum |
| | Maximum rate of discharge | 46 l/s | Instantaneous | N/A | N/A | Maximum |
| | pH | 6 to 9 | Instantaneous (spot sample) | N/A | N/A | Minimum and maximum |
| | Visible oil or grease | No significant trace present | Instantaneous (spot sample) | N/A | N/A | No significant trace |

| Table S3.1a Point Source emissions to water (other than sewer) – emission limits and monitoring requirements | | | | | | |
|---|---|---|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | | | | |
| **Discharge source** | **Parameter** | **Limit** | **Reference Period** | **Limit of effective range** | **Monitoring frequency** | **Compliance Statistic** |
| Waste stream G | Maximum daily discharge volume | 175 $m^3$/d | Total daily volume | N/A | Continuous | Maximum |
| | ATU-BOD as $O_2$ | 20 mg/l | Instantaneous (spot sample) | N/A | N/A | Maximum |
| | Suspended solids (measured after drying at 105$^o$ C) | 30 mg/l | Instantaneous (spot sample) | N/A | N/A | Maximum |
| | Ammoniacal nitrogen (as N) | 20 mg/l | Instantaneous (spot sample) | N/A | N/A | Maximum |
| | Visible oil or grease | No significant trace present | Instantaneous (spot sample) | N/A | N/A | No significant trace |

| Table S3.1b Point Source emissions to water (other than sewer) – emission limits and monitoring requirements (ANNUAL LOADS) | | | | | | |
|---|---|---|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | | | | |
| **Discharge source** | **Parameter** | **Limit (kilograms per year)** | **Reference Period** | **Limit of effective range** | **Monitoring frequency** | **Compliance Statistic** |
| Waste streams B & C (combined) | Boron (as B) | 2448 | N/A | N/A | Daily | Maximum |
| | Lithium hydroxide | 8.73 | | | | |
| | Morpholine | 210 | | | | |
| | Ethanolamine | 65 | | | | |
| | Nitrogen (as N) | 10 | | | | |
| | Ammoniacal nitrogen (as $NH_4^+$) | 15 | | | | |
| | Phosphate (as $PO_4^{3-}$) | 602.50 | | | | |
| | Detergents | 3200 | | | | |
| | COD | 600.95 | | | | |
| | Aluminium | 0.41 | | | | |
| | Copper | 0.03 | | | | |
| | Chromium | 0.65 | | | | |
| | Iron | 2.70 | | | | |
| | Manganese | 0.26 | | | | |
| | Nickel | 0.03 | | | | |
| | Lead | 0.02 | | | | |
| | Zinc | 0.46 | | | | |
| | Cadmium | N/A | | | | |
| | Mercury | N/A | | | | |
| Waste stream D | Morpholine | 1464 | N/A | N/A | Daily | Maximum |
| | Ethanolamine | 854 | | | | |
| | Nitrogen (as N) | 10120 | | | | |
| | Ammoniacal nitrogen (as $NH_4^+$) | 12994 | | | | |
| | Phosphate (as $PO_4^{3-}$) | 187.50 | | | | |
| | COD | 4449 | | | | |
| | Aluminium | 4.85 | | | | |

| Table S3.1b Point Source emissions to water (other than sewer) – emission limits and monitoring requirements (ANNUAL LOADS) | | | | | | |
|---|---|---|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | | | | |
| **Discharge source** | **Parameter** | **Limit (kilograms per year)** | **Reference Period** | **Limit of effective range** | **Monitoring frequency** | **Compliance Statistic** |
| Waste stream D cont/d… | Copper | 0.39 | N/A | N/A | Daily | Maximum |
| | Chromium | 7.72 | | | | |
| | Iron | 32.27 | | | | |
| | Manganese | 3.07 | | | | |
| | Nickel | 0.41 | | | | |
| | Lead | 0.28 | | | | |
| | Zinc | 5.54 | | | | |
| | Cadmium | N/A | | | | |
| | Mercury | N/A | | | | |
| Waste streams B & C (combined) and D | Cadmium | 0.37 | N/A | N/A | N/A | Maximum |
| | Mercury | 0.1 | | | | |
| Waste stream F | Detergents | 624 | N/A | N/A | Daily | Maximum |
| | Amino tri - phosphonic acid (ATMP) | 9100 | | | | |
| | Hydroxy Ethylidene - Diphosphonic acid (HEDP) | 890 | | | | |
| | Acetic acid | 14 | | | | |
| | Phosphoric acid | 12 | | | | |
| | Sodium polyacrylate | 8030 | | | | |
| | Acrylic acid | 165 | | | | |
| | Iron | 46000 | Instantaneous (spot sample) | N/A | Daily | Maximum |

| **Table S3.1c Point Source emissions to water (other than sewer) – emission limits and monitoring requirements (DAILY LOADS)** | | | | | | |
|---|---|---|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | | | | |
| **Discharge source** | **Parameter** | **Limit (kilograms per day)** | **Reference Period** | **Limit of effective range** | **Monitoring frequency** | **Compliance Statistic** |
| Waste streams B & C (combined) | Boron (as B) | 984 | N/A | N/A | Daily | Maximum |
| | Lithium hydroxide | 4.4 | | | | |
| | Morpholine | 75 | | | | |
| | Ethanolamine | 15 | | | | |
| | Nitrogen (as N) | 8 | | | | |
| | Ammoniacal nitrogen (as $NH_4^+$) | 1.83 | | | | |
| | Phosphate (as $PO_4^{3-}$) | 150 | | | | |
| | Detergents | 270 | | | | |
| | COD | 39.27 | | | | |
| | Aluminium | 0.09 | | | | |
| | Copper | 0.01 | | | | |
| | Chromium | 0.14 | | | | |
| | Iron | 0.60 | | | | |
| | Manganese | 0.06 | | | | |
| | Nickel | 0.01 | | | | |
| | Lead | 0.01 | | | | |
| | Zinc | 0.10 | | | | |
| | Cadmium | N/A | | | | |
| | Mercury | N/A | | | | |
| Waste stream D | Morpholine | 17.25 | N/A | N/A | Daily | Maximum |
| | Ethanolamine | 9.75 | | | | |
| | Nitrogen (as N) | 320 | | | | |
| | Ammoniacal nitrogen (as $NH_4^+$) | 71.3 | | | | |
| | Phosphate (as $PO_4^{3-}$) | 202.5 | | | | |
| | COD | 290.7 | | | | |

| Table S3.1c Point Source emissions to water (other than sewer) – emission limits and monitoring requirements (DAILY LOADS) | | | | | | |
|---|---|---|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | | | | |
| **Discharge source** | **Parameter** | **Limit (kilograms per day)** | **Reference Period** | **Limit of effective range** | **Monitoring frequency** | **Compliance Statistic** |
| Waste stream D cont/d… | Aluminium | 1.01 | N/A | N/A | Daily | Maximum |
| | Copper | 0.07 | | | | |
| | Chromium | 1.56 | | | | |
| | Iron | 6.55 | | | | |
| | Manganese | 0.61 | | | | |
| | Nickel | 0.08 | | | | |
| | Lead | 0.05 | | | | |
| | Zinc | 1.10 | | | | |
| | Cadmium | N/A | | | | |
| | Mercury | N/A | | | | |
| Waste streams B & C (combined) and D | Cadmium | 0.005 | N/A | N/A | N/A | Maximum |
| | Mercury | 0.001 | | | | |
| Waste stream F | Amino tri - phosphonic acid (ATMP) | 45 | N/A | N/A | Daily | Maximum |
| | Hydroxy Ethylidene - Diphosphonic acid (HEDP) | 4.50 | | | | |
| | Acetic acid | 0.10 | | | | |
| | Phosphoric acid | 0.10 | | | | |
| | Sodium polyacrylate | 40 | | | | |
| | Acrylic acid | 1 | | | | |
| | Iron | 250 | Instantaneous (spot sample) | N/A | Daily | Maximum |

| Table S3.2 Discharge points | | | |
|---|---|---|---|
| **Effluent Name** | **Discharge Point** | **Discharge point NGR** | **Receiving water/ Environment** |
| Trade effluent (comprising cooling water and process effluent) and treated sewage effluent | Outlet 1 | ST 19176 47521<br>Final NGR to be confirmed in accordance with pre-operational measure PO13. | Bristol Channel |
| | Outlet 2 | ST 19128 47578<br>Final NGR to be confirmed in accordance with pre-operational measure PO13. | |

| Table S3.3 Monitoring points | | | |
|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | |
| **Discharge Source** | **Monitoring type** | **Monitoring points NGR** | **Monitoring point reference** * |
| Waste stream A (Unit 1) | Influent sample point | NGR's 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 | | |
| | Flow monitoring point | | |
| Waste stream A (Unit 2) | Influent sample point | | |
| | Effluent sample point | | |
| | Flow monitoring point | | |
| Waste streams B & C (combined) | Effluent sample point | | |
| | Flow monitoring point | | |
| Waste stream D | Effluent sample point | | |
| | Flow monitoring point | | |
| Waste stream E | Effluent sample point | | |
| | Flow monitoring point | | |
| Waste stream F | Effluent sample point | | |
| | Flow monitoring point | | |
| Waste stream G | Effluent sample point | | |
| | 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 waste streams B & C (combined), D and 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 substance used, in which case that data shall be reported.

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

**Table S4.1 Reporting of monitoring data**

**Trade effluent (comprising cooling water and process effluent) and treated sewage effluent**

| Discharge source | Determinand | Monitoring point reference | Reporting period | Period begins |
|---|---|---|---|---|
| Waste stream A | 15-minute instantaneous or integrated flow | Monitoring point references to be specified in accordance with pre-operational measure PO14. | Quarterly, plus annual summary | 1st of month |
| | Temperature | | | |
| | Total Residual Oxidant (TRO) | | | |
| Waste streams B & C (combined) | Boron (as B) | | Quarterly, plus annual summary | 1st of month |
| | Lithium hydroxide | | | |
| | Morpholine | | | |
| | Ethanolamine | | | |
| | Nitrogen (as N) | | | |
| | Ammoniacal nitrogen (as $NH_4^+$) | | | |
| | Phosphate (as $PO_4^{3-}$) | | | |
| | Detergents | | | |
| | COD | | | |
| | Aluminium | | | |
| | Copper | | | |
| | Chromium | | | |
| | Iron | | | |
| | Manganese | | | |
| | Nickel | | | |

| Table S4.1 Reporting of monitoring data | | | | |
|---|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | | |
| **Discharge source** | **Determinand** | **Monitoring point reference** | **Reporting period** | **Period begins** |
| Waste streams B & C (combined)<br>cont/d… | Lead | Monitoring point references to be specified in accordance with pre-operational measure PO14. | Quarterly, plus annual summary | 1st of month |
| | Zinc | | | |
| | Cadmium | | | |
| | Mercury | | | |
| Waste stream D | Morpholine | | Quarterly, plus annual summary | 1st of month |
| | Ethanolamine | | | |
| | Nitrogen (as N) | | | |
| | Ammoniacal nitrogen (as $NH_4^+$) | | | |
| | Phosphate (as $PO_4^{3-}$) | | | |
| | COD | | | |
| | Aluminium | | | |
| | Copper | | | |
| | Chromium | | | |
| | Iron | | | |
| | Manganese | | | |
| | Nickel | | | |
| | Lead | | | |
| | Zinc | | | |
| | Cadmium | | | |
| | Mercury | | | |
| Waste stream F | Maximum daily discharge volume | | Quarterly, plus annual summary | 1st of month |
| | Amino tri -phosphonic acid (ATMP) | | | |
| | Hydroxy Ethylidene - Diphosphonic acid (HEDP) | | | |
| | Acetic acid | | | |
| | Phosphoric acid | | | |
| | Sodium polyacrylate | | | |
| | Acrylic acid | | | |
| | Iron | | | |

| Table S4.1 Reporting of monitoring data | | | | |
|---|---|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | | | |
| **Discharge source** | **Determinand** | **Monitoring point reference** | **Reporting period** | **Period begins** |
| Waste stream G | Maximum daily discharge volume | | Quarterly, plus annual summary | 1st of month |

| Table S4.2 Reporting forms | | |
|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | |
| **Discharge source** | **Determinand** | **Reporting format** |
| Waste stream A | 15-minute instantaneous or integrated flow | WISKI electronic format specified by the Environment Agency |
| | Temperature | Electronic format specified by the Environment Agency |
| | Total Residual Oxidant (TRO | |
| Waste streams B & C (combined) | Boron (as B) | Electronic format specified by the Environment Agency |
| | Lithium hydroxide | |
| | Morpholine | |
| | Ethanolamine | |
| | Nitrogen (as N) | |
| | Ammoniacal nitrogen (as $NH_4^+$) | |
| | Phosphate (as $PO_4^{3-}$) | |
| | Detergents | |
| | COD | |
| | Aluminium | |
| | Copper | |
| | Chromium | |
| | Iron | |
| | Manganese | |
| | Nickel | |
| | Lead | |
| | Zinc | |
| | Cadmium | |
| | Mercury | |
| Waste stream D | Morpholine | Electronic format specified by the Environment Agency |
| | Ethanolamine | |
| | Nitrogen (as N) | |
| | Ammoniacal nitrogen (as $NH_4^+$) | |
| | Phosphate (as $PO_4^{3-}$) | |
| | COD | |
| | Aluminium | |
| | Copper | |
| | Chromium | |
| | Iron | |

| Table S4.2 Reporting forms | | |
|---|---|---|
| **Trade effluent (comprising cooling water and process effluent) and treated sewage effluent** | | |
| **Discharge source** | **Determinand** | **Reporting format** |
| Waste stream D<br><br>cont/d… | Manganese | Electronic format specified by the Environment Agency |
| | Nickel | |
| | Lead | |
| | Zinc | |
| | Cadmium | |
| | Mercury | |
| Waste stream F | Maximum daily discharge volume | WISKI electronic format specified by the Environment Agency |
| | Amino tri -phosphonic acid (ATMP) | Electronic format specified by the Environment Agency |
| | Hydroxy Ethylidene - Diphosphonic acid (HEDP) | |
| | Acetic acid | |
| | Phosphoric acid | |
| | Sodium polyacrylate | |
| | Acrylic acid | |
| | Iron | |
| Waste stream G | Maximum daily discharge volume | WISKI electronic format specified 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** | |
| Date and time of the event | |
| Reference or description of the location of the event | |
| Description of where any release into the environment took place | |
| Substances(s) potentially released | |
| Best estimate of the quantity or rate of release of substances | |
| Measures taken, or intended to be taken, to stop any emission | |
| Description of the failure or accident. | |

| **(b) Notification requirements for the breach of a limit** | |
|---|---|
| **To be notified within 24 hours of detection unless otherwise specified below** | |
| Emission point reference/ source | |
| Parameter(s) | |
| Limit | |
| Measured value and uncertainty | |
| Date and time of monitoring | |
| Measures taken, or intended to be taken, to stop the emission | |

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

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

## Part B - to be submitted as soon as practicable

| | |
|---|---|
| Any more accurate information on the matters for notification under Part A. | |
| Measures taken, or intended to be taken, to prevent a recurrence of the incident | |
| Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission | |
| The dates of any unauthorised emissions from the facility in the preceding 24 months. | |

| | |
|---|---|
| **Name*** | |
| **Post** | |
| **Signature** | |
| **Date** | |

* authorised to sign on behalf of the operator

# Schedule 6 - Interpretation

"accident" means an accident that may result in pollution.

"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.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

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

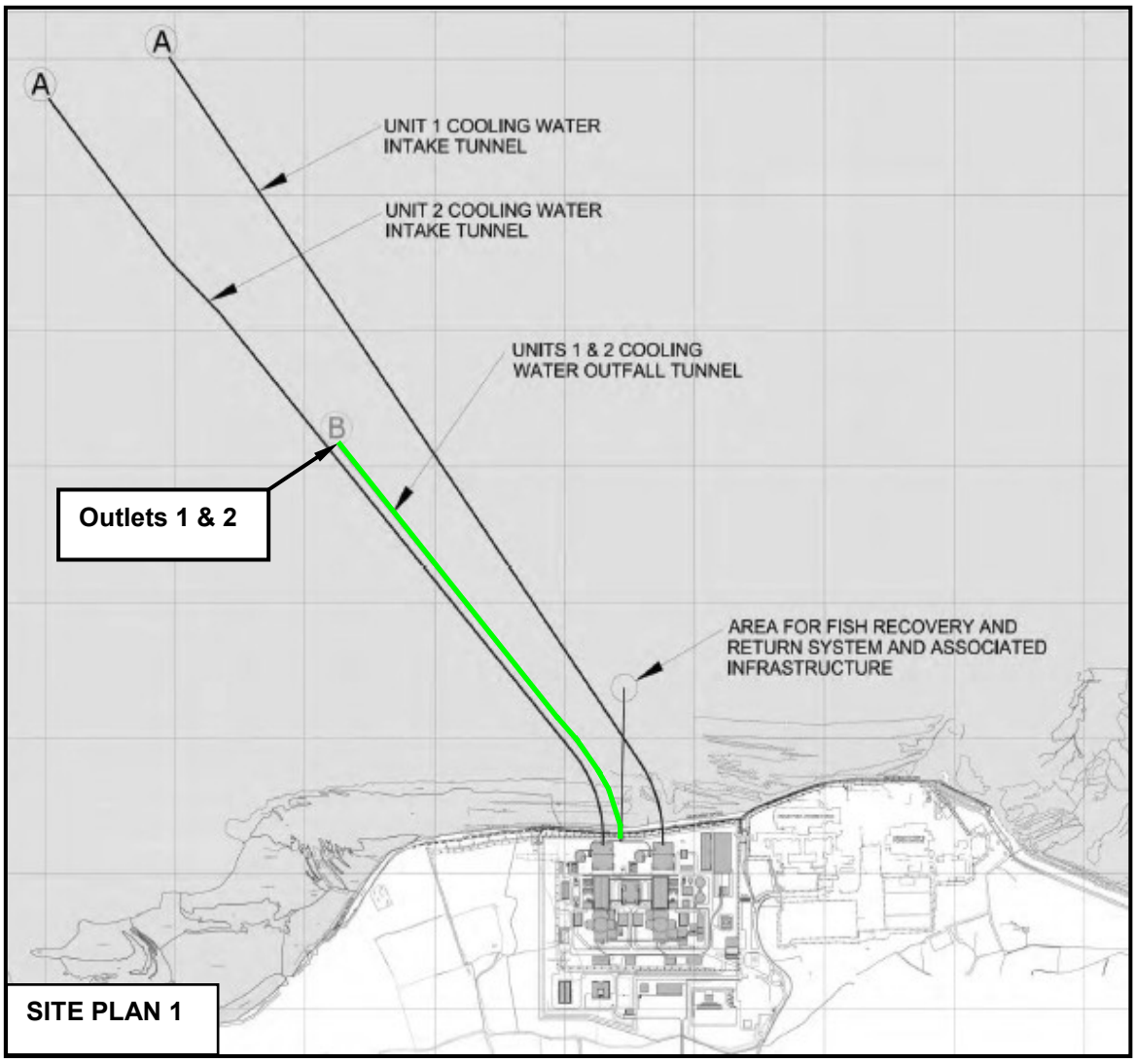
“groundwater” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“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.

“year” means calendar year ending 31 December.

# 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)

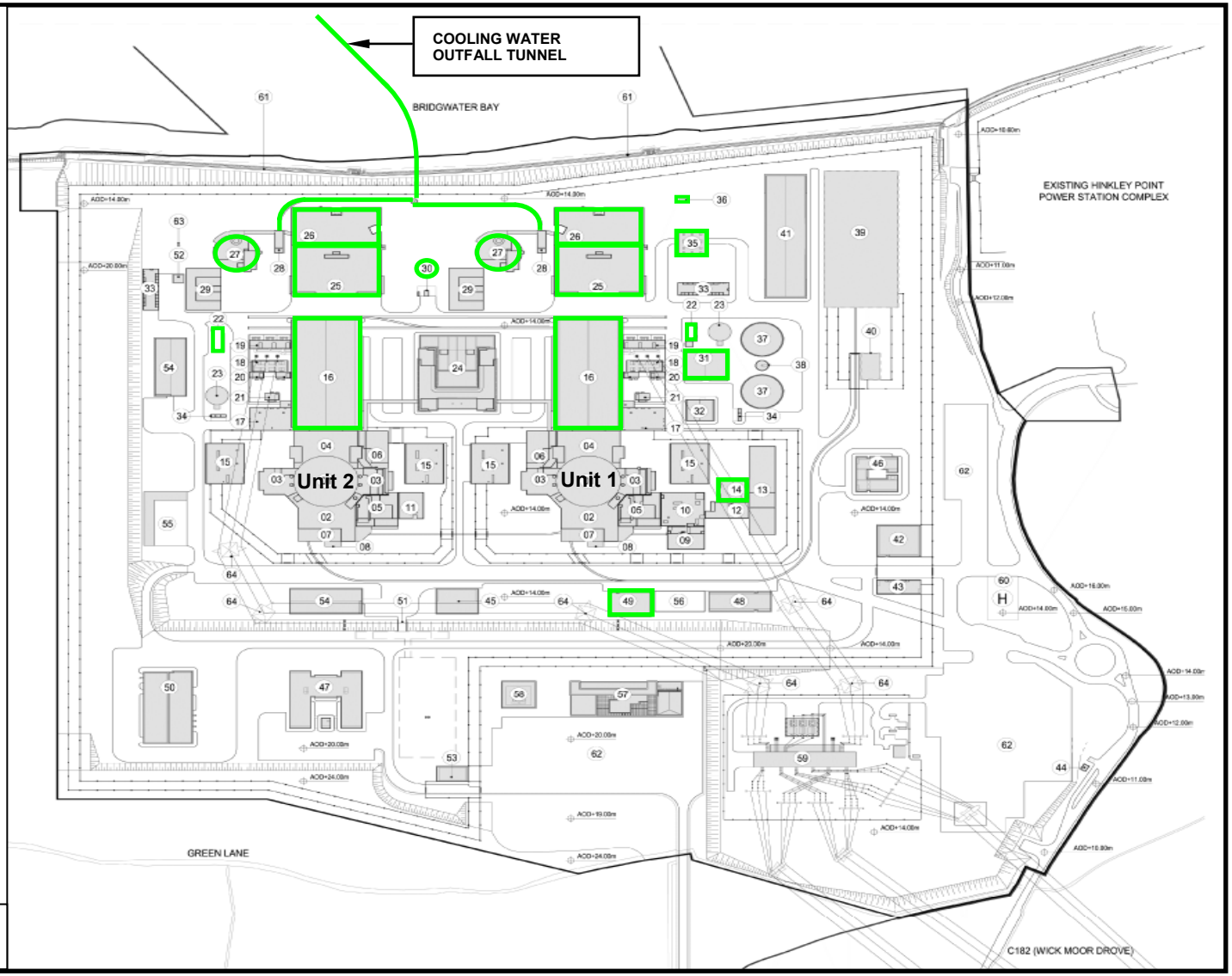
30 - Attenuation pond (waste stream E)

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**

END OF PERMIT.