Notice of variation and consolidation with introductory note

Environmental Permitting (England & Wales) Regulations 2010

RWE Generation UK plc

Aberthaw Power Station
The Leys
Aberthaw
Near Barry
Vale of Glamorgan
CF62 4ZW

Variation application number

EPR/RP3133LD/V012

Permit number

EPR/RP3133LD

Aberthaw Power Station
Permit number EPR/RP3133LD

Introductory note

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

Under the Environmental Permitting (England & Wales) Regulations 2010 (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.

Schedule 1 of the notice specifies that all the conditions of the permit have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made and contains all conditions relevant to this permit.

The requirements of the Industrial Emissions Directive (IED) 2010/75/EU are given force in Wales through the Environmental Permitting (England and Wales) Regulations 2010 (the EPR) (as amended).

This Permit, for the operation of large combustion plant (LCP), as defined by articles 28 and 29 of the Industrial Emissions Directive (IED), is varied by Natural Resources Wales to implement the special provisions for LCP given in the IED, by the 1 January 2016 (Article 82(3)). The IED makes special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V.

As well as implementing Chapter III of IED, the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issued. It also modernises all conditions to reflect the conditions contained in our current generic permit template.

The Operator has chosen to operate this LCP under the Transitional National Plan (TNP) compliance route.

The variation notice uses an updated LCP number in accordance with the most recent DEFRA LCP references. The LCP references have changed as follows:

- LCP234 is changed to LCP283
- The black start open cycle gas turbines are allocated reference LCP423

The rest of the installation is unchanged and continues to be operated as follows:

The Aberthaw Power Station installation is a coal-fired power station with a total thermal input of 4,090MW. The plant consists of three coal-fired boiler units each supplying high-pressure steam to turbine/alternator sets each generating 535 MW of electrical power. Associated with the boiler units are the coal receipt, storage and handling systems. The down-shot coal burners are supported by heavy fuel oil burners to ensure coal flame stability during start-up and at reduced loads. Solid and liquid biomass fuels that meet the exemption requirements of the Waste Incineration Directive are also fired in the boilers.

The schedules specify the changes made to the permit.

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

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/RP3133LD received	Duly made 31/03/06	Application for permit
Additional information requested	26/07/06	

Status log of the permit		
Description	**Date**	**Comments**
Additional information received	04/10/06, 01/11/06, 10/11/06, 05/12/06, 01/03/07, 16/03/07, 08/08/07, 10/08/07, 22/08/07, 05/09/07, 11/09/07	
Permit determined EPR/RP3133LD	21/12/07	Permit issued
Variation determined GP3635XF	09/01/08	Variation issued
Variation application EPR/RP3133LD/V003	Duly Made 05/03/10	
Variation determined EPR/RP3133LD	13/05/10	Variation issued
Variation application EPR/RP3133LD/V004	Duly made 31/01/11	
Further information received	23/03/11	Addendum to application
Variation determined EPR/RP3133LD	20/06/11	Variation issued
Variation application EPR/RP3133LD/V005	Duly made 08/12/11	
Variation determined EPR/RP3133LD	06/02/12	Variation issued
Variation application EPR/RP3133LD/V006	Duly made 10/09/12	
Additional information requested	02/11/12	
Further information received	13/11/12	Schedule 5 response
Further information received	16/11/12	Addendum to application
Variation determined EPR/RP3133LD/V007	12/11/12	EA Led Variation issued
Variation determined EPR/RP3133LD/V006	17/12/12	Variation issued
Agency Variation determined EPR/RP3133LD/V008	11/03/13	Variation issued
Agency variation determined EPR/RP3133LD/V009	26/03/13	Agency variation to implement the changes introduced by IED
Variation determined EPR/RP3133LD/V010	22/12/14	Natural Resources Wales initiated variation, to add an improvement condition requiring a cost benefit appraisal to ensure compliance with the Eels Regulations.
Application EPR/RP3133LD/V011 (variation)	Duly made 31/03/15	Application to vary the permit to add Low NOx Boilers.
Further information received	15/06/15	Schedule 5 response

Status log of the permit		
Description	**Date**	**Comments**
Regulation 60 Notice sent to the Operator	14/11/14	Issue of a Notice under Regulation 60(1) of the EPR. Natural Resources Wales initiated review and variation to vary the permit under IED to implement the special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V. The permit is also updated to modern conditions.
Regulation 60 Notice response	30/03/15	Response received from the Operator.
Additional information received	09/07/15	Response to request for further information (RFI) dated 20/05/15.
Additional information received	02/12/15	Information provided by the Operator relating to black start GT RTI, coal diet and reduced discharge pH ELV trials.
Variation determined EPR/RP3133LD/V012	23/12/15	Varied and consolidated permit issued in modern condition format. Variation effective from 01/01/2016.

Other Part A installation permits relating to this installation		
Operator	**Permit number**	**Date of issue**
RWE Generation UK plc	EPR/DP3432SW	30/03/07
RWE Generation UK plc	EPR/BP3339BH	04/05/07

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2010

The Natural Resources Body for Wales ("Natural Resources Wales") in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 varies and consolidates

Permit number

EPR/RP3133LD/V012

Issued to

RWE Generation UK plc ("the operator")

whose registered office is

Windmill Hill Business Park
Whitehall Way
Swindon
Wiltshire
SN5 6PB

company registration number 03892782

to operate a regulated facility at

Aberthaw Power Station
The Leys
Aberthaw
Near Barry
Vale of Glamorgan
CF62 4ZW

to the extent set out in the schedules.

The notice shall take effect from 01/01/2016

Name	Date
	**23/12/2015**

Victoria Seller

Authorised on behalf of Natural Resources Wales

Schedule 1

All conditions have been varied by the consolidated permit as a result of a Natural Resources Wales initiated variation.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

RWE Generation UK plc

Aberthaw Power Station
The Leys
Aberthaw
Near Barry
Vale of Glamorgan
CF62 4ZW

Permit number

EPR/RP3133LD

Aberthaw Power Station
Permit number EPR/RP3133LD

Introductory note

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

This permit controls the operation of a large combustion plant. The relevant listed activity is Section 1.1 A(1)(a): Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more. The permit implements the Chapter III requirements for large combustion plant (LCP) of the EU Directive on Industrial Emissions.

The main features of the installation are as follows:

Aberthaw Power Station is located on the Bristol Channel coast in the Vale of Glamorgan approximately 16 km South West of Cardiff. The station is operated by RWE Generation UK plc (formerly RWE npower) and produces electricity for the National Grid.

There are three coal-fired boiler units each supplying high-pressure steam to turbine/alternator sets each generating 535 MW of electrical power. Associated with the boiler units are the coal receipt, storage and handling systems, including storage of up to 2,000,000 tonnes of coal. Coal is delivered by rail and either put into stock or conveyed directly into the mill feed hoppers. Up to six ball mills feed pulverised coal to each arch-fired boiler unit. The down-shot coal burners are supported by heavy fuel oil burners to ensure coal flame stability during start-up and at reduced loads. Solid and liquid biomass fuels that meet the exemption requirements of the Waste Incineration Directive are also fired in the boilers. In particular wood is processed by a dedicated milling plant and pneumatically conveyed directly into the boiler burnout zone.

The boilers are designed to operate using local sources of semi-anthracite coals with low volatile matter content. The high furnace temperatures necessary to achieve reasonable levels of carbon in ash also result in relatively high levels of nitrogen oxides in the flue gases compared to similar pulverised fuel boilers operating with bituminous coals. Nitrogen oxide emissions are currently controlled by optimising combustion conditions and furnace temperature distribution. The Large Combustion Plant Directive allowed a time-limited derogation of a higher nitrogen oxide emission limit value (ELV) for low volatility coal-fired units. During the TNP period (2016-2020) the station will continue to comply with BAT NOx ELVs based upon the LCPD derogated ELV, but additional abatement will be provided by upgrading to low NOx boiler technology. It is expected that the reduction in nitrogen oxide emissions will at least achieve the ELVs required by the Limited Hours Derogation allowed under the IED (1500 operating hours per year as a rolling 5 yearly average).

Boiler bottom ash is quenched with water before screening for sale as aggregate. Pulverised fuel ash is removed from the flue gases by electrostatic precipitators and up to 200,000 tonnes per annum or more is either sold directly or processed in the ash reprocessing plant onsite into a carbon-rich char which is reburnt in the power station and a low-carbon ash suitable for use in the cement industry. The balance of the pulverised fuel ash will be sent to one of the adjacent dedicated landfills.

Sulphur dioxide is removed from the flue gases by seawater flue gas desulpurisation processes. This operation uses the natural alkalinity in a proportion of the seawater that cools the steam-cycle condensers as a scrubbing medium in a once-through absorber in each flue gas path. Seawater pH and dissolved oxygen levels are stabilised prior to discharge with the rest of the seawater cooling stream by a forced aeration plant.

The main environmental impacts associated with the power station are long-range acidification of sensitive habitats due to sulphur dioxide deposition and localised air quality deterioration under adverse weather conditions during plume grounding episodes. Implementation of the seawater FGD process eliminates or reduces these effects. Other localised impacts are potentially caused by nitrogen oxide and noise emissions, a contribution to fugitive dust deposition and releases of trace element pollutants such as lead, cadmium and mercury from the flue gases with the seawater discharge.

Table S1.3 contains an improvement condition (reference IC6) requiring the operators to produce a plan showing how the installation will contribute to total emissions of sulphur dioxide from existing major coal and oil-fired power stations in England and Wales being minimised and not exceeding 70kt/year from 2020. The final update to the plan is due by 1st April 2016.

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

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/RP3133LD received	Duly made 31/03/06	Application for permit
Additional information requested	26/07/06	
Additional information received	04/10/06, 01/11/06, 10/11/06, 05/12/06, 01/03/07, 16/03/07, 08/08/07, 10/08/07, 22/08/07, 05/09/07, 11/09/07	
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Variation determined GP3635XF	09/01/08	Variation issued
Variation application EPR/RP3133LD/V003	Duly Made 05/03/10	
Variation determined EPR/RP3133LD	13/05/10	Variation issued
Variation application EPR/RP3133LD/V004	Duly made 31/01/11	
Further information received	23/03/11	Addendum to application
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Variation application EPR/RP3133LD/V005	Duly made 08/12/11	
Variation determined EPR/RP3133LD	06/02/12	Variation issued
Variation application EPR/RP3133LD/V006	Duly made 10/09/12	
Additional information requested	02/11/12	
Further information received	13/11/12	Schedule 5 response
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Variation determined EPR/RP3133LD/V007	12/11/12	EA Led Variation issued
Variation determined EPR/RP3133LD/V006	17/12/12	Variation issued
Agency Variation determined EPR/RP3133LD/V008	11/03/13	Variation issued
Agency variation determined EPR/RP3133LD/V009	26/03/13	Agency variation to implement the changes introduced by IED

Status log of the permit		
Description	**Date**	**Comments**
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Further information received	15/06/15	Schedule 5 response
Regulation 60 Notice sent to the Operator	14/11/14	Issue of a Notice under Regulation 60(1) of the EPR. Natural Resources Wales initiated review and variation to vary the permit under IED to implement the special provisions for LCP under Chapter III, introducing new Emission Limit Values (ELVs) applicable to LCP, referred to in Article 30(2) and set out in Annex V. The permit is also updated to modern conditions.
Regulation 60 Notice response	30/03/15	Response received from the Operator.
Additional information received	09/07/15	Response to request for further information (RFI) dated 20/05/15.
Additional information received	02/12/15	Information provided by the Operator relating to black start GT RTI, coal diet and reduced discharge pH ELV trials.
Variation determined EPR/RP3133LD/V012	23/12/15	Varied and consolidated permit issued in modern condition format. Variation effective from 01/01/2016.

Other Part A installation permits relating to this installation		
Operator	**Permit number**	**Date of issue**
RWE Generation UK plc	EPR/DP3432SW	30/03/07
RWE Generation UK plc	EPR/BP3339BH	04/05/07

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number

EPR/RP3133LD

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/RP3133LD/V012 authorising,

RWE Generation UK plc ("the operator"),

whose registered office is

Windmill Hill Business Park
Whitehall Way
Swindon
Wiltshire
SN5 6PB

company registration number 03892782

to operate an installation at

Aberthaw Power Station
The Leys
Aberthaw
Near Barry
Vale of Glamorgan
CF62 4ZW

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

Name	Date
	**23/12/2015**

Victoria Seller

Authorised on behalf of Natural Resources Wales

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

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

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

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

1.2 Energy efficiency

1.2.1 The operator shall:

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

(b) take appropriate measures to ensure the efficiency of energy generation at the permitted installation is maximised;

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

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

1.3 Efficient use of raw materials

1.3.1 The operator shall:

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

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

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

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

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

1.4.1 The operator shall take appropriate measures to ensure that:

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

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

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

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

1.5 Site security

1.5.1 Site security measures shall prevent unauthorised access to the site, as far as practicable.

2 Operations

2.1 Permitted activities

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

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in red on the site plan at schedule 7 to this permit.

2.3 Operating techniques

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

2.3.2 For the following activities referenced in schedule 1, table S1.1: LCP283 and LCP423. Without prejudice to condition 2.3.1, the activities shall be operated in accordance with the "Electricity Supply Industry IED Compliance Protocol for Utility Boilers and Gas Turbines" revision 1 dated February 2015 or any later version unless otherwise agreed in writing by Natural Resources Wales.

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

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

2.3.5 For the following activities referenced in schedule 1, table S1.1: LCP423. The activities shall not operate for more than 500 hours per year.

2.3.6 For the following activities referenced in schedule 1, table S1.1: LCP283 and LCP423. The end of the start-up period and the start of the shutdown period shall conform to the specifications set out in Schedule 1, tables S1.2 and S1.5

2.3.7 For the following activities referenced in schedule 1, table S1.1: LCP283. The following conditions apply where there is a malfunction or breakdown of any abatement equipment:

Unless otherwise agreed in writing by Natural Resources Wales:

(i) if a return to normal operations is not achieved within 24 hours, the operator shall reduce or close down operations, or shall operate the activities using low polluting fuels;

(ii) the cumulative duration of breakdown in any 12-month period shall not exceed 120 hours; and

(iii) the cumulative duration of malfunction in any 12-month period shall not exceed 120 hours.

2.3.8 Waste shall only be accepted if:

(a) it is of a type and quantity listed in schedule 2 tables S2.2 and S2.3; and

(b) it conforms to the description in the documentation supplied by the producer and holder.

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

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

(b) the composition of the waste;

(c) the handling requirements of the waste;

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

(e) the waste code of the waste.

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

2.4 Improvement programme

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

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

2.5 Pre-operational conditions

2.5.1 The operations specified in schedule 1 table S1.4 shall not commence until the measures specified in that table have been completed.

3 Emissions and monitoring

3.1 Emissions to water, air or land

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

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

3.1.3 The emission values from emission point A1 measured during periods of abatement equipment malfunction and breakdown shall be disregarded for the purposes of compliance with Table S3.1 emission limit values.

3.1.4 Total annual emissions from the LCP emission points set out in schedule 3 tables S3.1, S3.2 and S3.3 of a substance listed in schedule 3 table S3.4 shall not exceed the relevant limit in table S3.4.

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

3.2 Emissions of substances not controlled by emission limits

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

3.2.2 The operator shall:

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

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

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

3.3 Odour

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

3.3.2 The operator shall:

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

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

3.4 Noise and vibration

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

3.4.2 The operator shall:

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

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

3.5 Monitoring

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

(a) point source emissions specified in tables S3.1,S3.2, S3.3 and S3.4;

(b) surface water or groundwater specified in table S3.5;

(c) ambient air monitoring specified in table S3.6; and

(d) process monitoring specified in table S3.7

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

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

3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.2, S3.3 and S3.4 unless otherwise agreed in writing by Natural Resources Wales.

3.6 Monitoring for the purposes of the Industrial Emissions Directive Chapter III

3.6.1 All monitoring required by this permit shall be carried out in accordance with the provisions of Annex V of the Industrial Emissions Directive.

3.6.2 If the monitoring results for more than 10 days a year are invalidated within the meaning set out in condition 3.6.7, the operator shall:

(a) within 28 days of becoming aware of this fact, review the causes of the invalidations and submit to Natural Resources Wales for approval, proposals for measures to improve the reliability of the continuous measurement systems, including a timetable for the implementation of those measures; and

(b) implement the approved proposals.

3.6.3 Continuous measurement systems on emission points from the LCP shall be subject to quality control by means of parallel measurements with reference methods at least once every calendar year.

3.6.4 Unless otherwise agreed in writing by Natural Resources Wales in accordance with condition 3.6.5 below, the operator shall carry out the methods, including the reference measurement methods, to use and calibrate continuous measurement systems in accordance with the appropriate CEN standards.

3.6.5 If CEN standards are not available, ISO standards, national or international standards which will ensure the provision of data of an equivalent scientific quality shall be used, as agreed in writing with Natural Resources Wales.

3.6.6 Where required by a condition of this permit to check the measurement equipment, the operator shall submit a report to Natural Resources Wales in writing, within 28 days of the completion of the check.

3.6.7 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3, table S3.1; the Continuous Emission Monitors shall be used such that:

(a) for the continuous measurement systems fitted to the LCP release points defined in Table S3.1 the validated hourly, monthly and daily averages shall be determined from the measured valid hourly average values after having subtracted the value of the 95% confidence interval;
(b) the 95% confidence interval for nitrogen oxides and sulphur dioxide of a single measured result shall be taken to be 20%;
(c) the 95% confidence interval for dust releases of a single measured result shall be taken to be 30%;
(d) the 95% confidence interval for carbon monoxide releases of a single measured result shall be taken to be 10%;
(e) an invalid hourly average means an hourly average period invalidated due to malfunction of, or maintenance work being carried out on, the continuous measurement system. However, to allow some discretion for zero and span gas checking, or cleaning (by flushing), an hourly average

period will count as valid as long as data has been accumulated for at least two thirds of the period (40 minutes). Such discretionary periods are not to exceed more than 5 in any one 24-hour period unless agreed in writing. Where plant may be operating for less than the 24-hour period, such discretionary periods are not to exceed more than one quarter of the overall valid hourly average periods unless agreed in writing; and

(f) any day, in which more than three hourly average values are invalid shall be invalidated.

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 Natural Resources Wales, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

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

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

4.2 Reporting

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

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

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

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

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

(d) where condition 2.3.7 applies, the cumulative duration of breakdown and cumulative duration of malfunction in any 12 month period.

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

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

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

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

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

4.2.5 Within 1 month of the end of each quarter, the operator shall submit to Natural Resources Wales using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter, if during that quarter the total amount accepted exceeds 100 tonnes of non-hazardous waste or 10 tonnes of hazardous waste.

4.2.6 Within 10 days of the notification of malfunction or breakdown the operator shall submit an Air Quality Risk Assessment as outlined in the IED Compliance Protocol (condition 2.3.2).

4.2.7 For the following activities referenced in schedule 1, table S1.1: LCP283. Unless otherwise agreed in writing with Natural Resources Wales, within 1 month of the end of each quarter, the operator shall submit to Natural Resources Wales using the form IED RTA1, listed in table S4.4, the information specified on the form relating to the site's mass emissions.

4.3 Notifications

4.3.1 In the event:

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

(i) inform Natural Resources Wales,

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

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

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

(i) inform Natural Resources Wales, and

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

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

(d) of any malfunction or breakdown of abatement equipment relating to condition 2.3.7, the operator shall notify Natural Resources Wales within 48 hours unless notification has already been made under (a) to (c) above.

4.3.2 Any information provided under condition 4.3.1 (a)(i), 4.3.1 (b)(i) where the information relates to the breach of a condition specified in the permit, or 4.3.1 (d) where the information relates to malfunction or breakdown of abatement equipment shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

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

4.3.4 Natural Resources Wales 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.

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

(a) Natural Resources Wales shall be notified at least 14 days before making the change; and

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

4.3.6 Natural Resources Wales shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.3.7 The operator shall inform Natural Resources Wales in writing of the closure of any LCP within 28 days of the date of closure.

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 "immediately" in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 activities			
Activity reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
AR1	Section 1.1 A(1) (a): Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more.	LCP283: Units 7, 8 and 9 coal-fired boilers	Receipt of coal at the coal mills subject to the limitations imposed in Schedule 2 Table S2.1 and S2.2, the supply of recovered char, biomass, heavy fuel oil (HFO), processed fuel oil (PFO), coal and propane to the furnace, subject to the limitations imposed in Schedule 2 Table S2.2. The discharge of exhaust gases from the boilers to the stack, including flue gas conditioning with sulphur trioxide and ammonia, and oxides of nitrogen, ash, and sulphur dioxide abatement. The export of steam to the steam turbines in 3 generating units.
		LCP423: GT7, GT8 and GT9 gas oil-fired black start gas turbines	The supply of gas oil to 3 open cycle gas turbines. This includes any associated activities necessary to maintain the operation of the plant and fuel supplies.
		Gas oil-fired package boiler for supply of steam to the carbon capture (<10MW) pilot plant	Includes storage of gas oil.
AR2	Section 3.5 Part B (f)	Pulverised fuel ash (PFA) handling and storage.	Removal of ash from the electrostatic precipitators to despatch from the installation or to treatment in the ash reprocessing plant.
AR3	Section 4.8 Part B (a)	The storage of anhydrous ammonia.	Receipt of anhydrous ammonia through to injection into the boiler flue gas ducts.
AR4	Section 5.4 Part A(1)(ii)	Treatment of wastewater from the flue gas desulphurisation plant.	Discharge of seawater from the Flue Gas Desulphurisation process to the discharge from the installation.

Table S1.1 activities			
Activity reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
AR5	Section 5.4 Part A(1) (b) (iii) Recovery or a mix of recovery and disposal of non-hazardous waste in an installation with a capacity of over 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities, and excluding activities covered by Council Directive 91/271/EEC - treatment of slags and ashes.	Ash reprocessing – separation of PFA into a low carbon fraction and high carbon char. R 3 Recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes) R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	From receipt of ash at the reprocessing plant to dispatch to customers and transfer of char to the boilers subject to the limitation imposed in Schedule 2 Table S2.3.
	Directly Associated Activity		
AR6	Directly associated activity	Fuel storage	Receipt of coal, oil, propane and biomass through to discharge from the mill hoppers or feed to the furnace respectively.
AR7	Directly associated activity	Surface water drainage	Handling and storage of site drainage until discharge from the site surface water system.
AR8	Directly associated activity	Water treatment	From receipt of raw materials to dispatch to chemical effluent and dirty water system.
AR9	Directly associated activity	The generation and export of electricity	The receipt of steam at the steam turbines to the export of electricity to the national grid station and the direct generation of electricity from the gas turbines.
AR10	Directly associated activity	The use of water from the Bristol Channel for cooling and the seawater FGD process.	The pumping and filtering of the water, its use in the condensers and for auxiliary cooling, the seawater FGD process and discharge of the water back to the Bristol Channel via the seawater treatment plant for FGD process water.
AR11	Carbon capture (<10MW) pilot plant	Removal and recovery of SO_2 and CO_2 from power station flue gas	From flue gas tap-off point to return of treated and recovered gases to power station flue gas system, including the storage, use and regeneration of amine absorbents

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	The response to sections 2.1 and 2.2 in the Application.	30/03/06
Schedule 4 Notice Request dated 26/07/06	Response to sections 2.1 f) and h) detailing combustion and seawater FGD process controls.	06/10/06, 01/11/06, 10/11/06, 1/03/07 and 16/03/07, respectively
Receipt of additional information to the application	Further responses to sections 2.1 f), h) and 2.9 c) of the Schedule 4 Notice detailing abatement measures associated with nitrogen oxides emissions control (current status of TIB implementation) and main stack noise emissions respectively.	05/12/06
Receipt of additional information to the application	Further information provided relating to the baseline marine monitoring survey methodology and survey results, the design and operation of the ash reprocessing facility.	8/08/07, 10/08/07 and 22/8/07
Variation application EPR/RP3133LD/V004	Section 2.1, 2.5.2, 2.16, Appendix A and Appendix B of the supporting information	31/01/2011 (duly made)
Variation application EA/EPR/RP3133LD/V005	Table 1 (PFO specification) and section 2.2 of document entitled Application for a variation to Environmental Permit RP3133LD, reference number EA EP RP3133LD Supp Doc V005, dated December 2011.	08/12/2011 (date on which application was duly made)
Variation application EA/EPR/RP3133LD/V011	All Operating techniques as described in sections 2 and 5 – 7 of the document entitled Aberthaw Power Station: Application for a variation to permit EPR/RP3133LD, document reference ENV/RP3133LD	30/03/2015 (duly made)
Receipt of additional information to the application	Schedule 5 Response – responses to questions 1 – 4. Document reference EPR/RP3133LD/SCh5response/2015	15/06/15
Response to regulation 60(1) Notice – request for information dated 14/11/14	Compliance route and operating techniques identified in response to questions 2 (LCP compliance route), 3 (TNP and LLD evidence of notification), 4 (LCP configuration), 5 (LCP net rated thermal input), 6 (MSUL/MSDL) and 7 (Sector compliance for coal fired power stations entering into the TNP or LLD).	Received 30/03/15
Receipt of additional information to the regulation 60(1) Notice. Requested by letter dated 20/05/15	Further information received in response to questions 2 (LCP compliance route), 5 (LCP net rated thermal input) and 6 (MSUL/MSDL).	Received 09/07/15
Receipt of additional information to the regulation 60(1) Notice.	Further information received in response to questions 2 (LCP compliance route), 5 (LCP net rated thermal input) and details of coal diet and discharge pH ELV trials.	Received 02/12/15

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	IC1 full permit review deferred until LCP BREF review.	-
IC2	A written report shall be submitted to the Environment Agency for approval. The report shall contain a protocol detailing the methodology for measuring the fraction of PM_{10} and $PM_{2.5}$ within the release of total particulate matter from the combustion process. The protocol shall include but not be restricted to a variety of operating scenarios including start up and shut down, changes in operating loads and patterns and types of abatement. The report shall also contain a proposed time-scale within which the proposed sampling programme contained within the protocol will be completed. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. The individual measures detailed in the report shall be implemented by the operator from the date of approval in writing by the Environment Agency.	1st April 2009 Completed
IC3	A written report shall be submitted to the Environment Agency for approval. The report shall include a detailed assessment, including economic factors, of the options to increase firing of biomass fuels. Where appropriate, the report shall contain dates for the implementation of individual measures. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. The individual measures detailed in the report shall be implemented by the operator from the date of approval in writing by the Environment Agency.	31st May 2008 Completed
IC4	A written report shall be submitted to the Environment Agency for approval. The report shall include the results of a water efficiency audit in accordance with section 2.4.3 of IPPC Sector Guidance Note for the Combustion Sector. This shall include, but not be limited to blow down and water treatment plant effluent reuse. The report shall also contain a time scale for the implementation of any individual measures identified to address any deficiencies. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. The individual measures detailed in the report shall be implemented by the operator from the date of approval in writing by the Environment Agency.	1st October 2009 Completed
IC5	A written report shall be submitted to the Environment Agency for approval. The report shall include the results of a waste minimisation audit in accordance with section 2.4.2 of IPPC Sector Guidance Note for the Combustion Sector. The report shall also contain a time scale for the implementation of any individual measures identified to address any deficiencies. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. The individual measures detailed in the report shall be implemented by the operator from the date of approval in writing by the Environment Agency.	1st October 2009 Completed

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC6	Provide a written plan of how this installation will contribute to total emissions of SO_2 from existing major coal-fired power stations in England and Wales being minimised and in any case not exceeding 70 kt/y by 2020. The report should consider scenarios for electricity demand in 2020 and give the planned arrangements for SO_2 emissions control at this installation. (Existing coal-fired stations comprise LCP that might still be operating in 2020. These are at Aberthaw, Cottam, Drax, Eggborough, Ferrybridge, Fiddlers Ferry, Ratcliffe, Rugeley, Uskmouth and West Burton). The plan should be implemented after approval by Natural Resources Wales.	1st April 2008. With updated versions by 1st April 2012 & 1st April 2016
IC7	A written report shall be submitted to Natural Resources Wales for approval. The report shall contain a protocol for a monitoring programme to assess changes in acidification and eutrophication deposition and ecological effects at appropriate Natura 2000 sites. The protocol will include the selection of the Natura 2000 sites and a time scale for implementation of the programme. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. The protocol detailed in the report shall be implemented by the Operator from the date of approval by Natural Resources Wales.	31st December 2016
IC8	A written procedure shall be submitted to the Environment Agency detailing the measures to be used so that monitoring equipment, personnel and organisations employed for the emissions monitoring programme shall have either MCERTS certification or accreditation in accordance with condition 3.6.3. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the procedure. The procedure shall be implemented by the operator from the date of approval in writing by the Environment Agency.	31st March 2009 Completed
IC9	The operator shall confirm commissioning and proving proposals and schedules for the seawater FGD processes and update this information regularly to the Environment Agency in writing or through scheduled meetings until completion of FGD commissioning.	31st December 2007 Completed
IC10	Written proposals shall be submitted to the Environment Agency for the retrofitting of high efficiency steam turbines to each unit and include dates for implementation. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the proposals. The proposals shall be implemented from the date of approval in writing by the Environment Agency.	31st December 2007 Completed
IC11	A written report shall be submitted to the Environment Agency for approval. The report shall assess the resource efficiency, carbon-in-ash and nitrogen oxide emissions benefits of improved/dynamic classifier retrofitting to the station coal mills. The report shall also include dates for implementation where it justifies retrofitting. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. Any proposed retrofitting to the station coal mills identified in the report shall be implemented from the date of approval in writing by the Environment Agency.	31st December 2007 Completed

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC12	A written report shall be submitted to the Environment Agency for approval. The report shall confirm and quantify the resource efficiency and fly ash saleability benefits of the proposed PFA char separation and re-firing retrofit at the station. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report.	31st December 2007 Completed
IC13	A written report shall be submitted to the Environment Agency for approval. The report shall contain details of a review of BAT for secondary containment of bulk vessels, including the molten sulphur storage vessels and bunds constructed from brick or block and bund walls having penetrations at the installation. The report shall include proposals for improvements to achieve BAT and dates for implementation where appropriate. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. Improvements identified in the report shall be implemented from the date of approval in writing by the Environment Agency.	1st June 2008 Completed
IC14	A written report shall be submitted to the Environment Agency for approval. The report shall contain details of a review of BAT for overfill protection of bulk storage vessels at the installation. The report shall include proposals for improvements to achieve BAT and dates for implementation where appropriate. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. Improvements identified in the report shall be implemented from the date of approval in writing by the Environment Agency.	1st June 2008 Completed
IC15	A written report shall be submitted to the Environment Agency for approval. The report shall contain details of a review of BAT for secondary containment and the inspection regime of the HFO and anhydrous ammonia pipelines at the installation. The report shall include proposals for improvements to achieve BAT and dates for implementation where appropriate. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. Improvements identified in the report shall be implemented from the date of approval in writing by the Environment Agency.	1st June 2008 Completed
IC16	A written report shall be submitted to the Environment Agency for approval. The report shall contain details of a review of the maintenance and inspection regime of the surface water drainage lines, interceptor and settlement ponds at the installation. The report shall include proposals for improvements and dates for implementation where appropriate. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. Improvements identified in the report shall be implemented from the date of approval in writing by the Environment Agency.	1st June 2008 Completed
IC17	A written report shall be submitted to the Environment Agency for approval. The report shall contain details of a review to minimise emissions to the ground from the coal and ash handling areas through the construction of a fully lined coal storage facility, ash handling system and associated drainage. The report shall include proposals for improvements and dates for implementation where appropriate. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. Improvements identified in the report shall be implemented from the date of approval in writing by the Environment Agency.	1st June 2008 Completed

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC18	A written report shall be submitted to the Environment Agency for approval. The report shall contain details of an environmental impact assessment of the proposed relocation of release point W1 (36" drain) upon the River Thaw. The assessment shall include, but not be limited to the requirements of the Freshwater Fish Directive. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the plan. The relocation of the release point shall be implemented from the date of approval in writing by the Environment Agency.	31st October 2008 Completed
IC19	A written report shall be submitted to the Environment Agency for approval. The report shall contain details of a BAT review for the reduction of nitrogen oxide emissions from the installation into the air, including proposals for improvements to achieve BAT and dates for implementation where appropriate. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. Improvements identified in the report shall be implemented from the date of approval in writing by the Environment Agency.	31st October 2008 Completed
IC20	A written report shall be submitted to the Environment Agency for approval. The report shall assess the suitability of monitoring locations in the FGD absorber inlet ducting to enable continuous measurement of absorber inlet dust concentrations in accordance with BS EN13284 and include dates for implementation of such monitoring where appropriate. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. Any monitoring proposed in the report shall be implemented from the date of approval in writing by the Environment Agency.	31st October 2008 Completed
IC21	A written report shall be submitted to the Environment Agency for approval. The report shall describe the post-FGD operation local environmental quality with respect to List I and List II substance and selenium burdens in sediment and marine species as determined according to the plan submitted as further information to the application. Further reports shall be submitted annually, subject to review following completion of improvement condition reference IC22, and until notified in writing by the Environment Agency. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the reports.	1st August 2008 (first report)
IC22	A written report shall be submitted to the Environment Agency for approval. The report shall contain details of a BAT review for reduction of trace element emissions into controlled waters from the installation, taking into account information from the local environmental quality reports and including proposals for improvements to achieve BAT and dates for implementation where appropriate. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. Any improvements identified in the report shall be implemented from the date of approval in writing by the Environment Agency.	1st October 2009 Complete

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC23	A written report shall be submitted to the Environment Agency for approval. The report shall contain details of a monitoring review for trace element emissions into controlled waters from the installation, taking into account information from an FGD process mass balance using existing monitoring data and including proposals for improvements and dates for implementation where appropriate. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report. Any improvements identified in the report shall be implemented from the date of approval in writing by the Environment Agency.	31st December 2017
IC24	A written report shall be submitted to the Environment Agency for approval. The report shall contain the results of direct sea water pH and temperature measurements made on two-monthly basis for a period of 12 months. Measurements shall be made at the twelve locations detailed in the application for variation of 18th February 2010 and shall be made under a variety of tidal conditions and Station loadings with a sampling methodology agreed by the Environment Agency. An assessment shall be made of any environmental impact on key aqueous receptors. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report.	1st May 2011 Complete
IC25	A written report shall be submitted to the Environment Agency for approval. The report shall contain an assessment of the impact on energy consumption due to the modification of limits during the first twelve months of operation. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the report.	1st May 2011 Complete
IC26	The Operator shall submit a written report to the Environment Agency on the commissioning of the Carbon Capture Plant. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the plant against the conditions of this permit as varied and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions.	Within 3 months of the completion of commissioning Completed
IC27	The Operator shall submit a written report to the Environment Agency on the operation and performance of the Carbon Capture Plant during its first year of operation. This report shall include monitoring information on releases to the environment and their environmental impact. Specifically, the report shall include but not be limited to the evaluation of emissions of residual amines and their reaction products, including nitramines and nitrosamines, from the installation.	15 months from completion of commissioning Completed
IC28	The Operator shall submit a written report to the Environment Agency at the conclusion of the trials on the operation and performance of the Carbon Capture Plant. This report shall include monitoring information on releases to the environment and their environmental impact. The report shall also include an assessment of the potential future application of the carbon capture technology tested on full scale combustion plant for power generation, including the environmental impact of emissions and the impact of the technology on energy recovery.	30 months from completion of commissioning or 6 months from closure whichever comes first. Completed
IC29-IC32	Improvement conditions relating to SCR implementation removed following confirmation that SCR abatement will not be installed.	-

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC33	A written report shall be submitted to Natural Resources Wales for approval. This report will update the 2009 Best Available Technique (BAT) review for reduction of trace elements into controlled waters from the installation (IC22), it will specifically address whether an ACI is BAT for abating mercury emissions from Aberthaw Power Station in the absence of SCR. The report shall be submitted to Natural Resources Wales for approval, and the measures and controls identified in the approved report shall be implemented within 12 months of the written approval of the report by Natural Resources Wales.	Deferred until LCP Bref review.
IC34	The Operator shall undertake a review of the existing screening measures at the intakes and outfalls which provide and discharge water to and from the Installation. The review shall be undertaken with reference to the Eels (England and Wales) Regulations 2009 (SI 2009/3344) and the Environment Agency ''Safe Passage of Eel'' Regulatory Position Statement version 1 dated July 2012. The Operator shall submit details of the arrangement suitable to meet the requirements for the safe passage of eels [of the Eels (England and Wales) Regulations 2009 (SI 2009/3344)] by either:- • Providing a written proposal for the installation of an eel screen. • Providing a written proposal to the modification of existing screening arrangements. • Providing a written response with an explanation and description of how the existing screening arrangements can be regarded to meet the requirements for the safe passage of eels [of SI 2009/3344] either without change or with mitigation measures. • Providing a written response setting out a case for an exemption In all cases, the proposal shall be submitted in writing for the approval of the Environment Agency. Where appropriate, each proposal shall contain an assessment of alternative options considered including impacts on other fish species and an explanation of why the proposed option has been chosen. Where installation of eel screen; modification of existing arrangements; or mitigation measures are proposed, the submission shall contain relevant timescales for installation in accordance with the Safe Passage of Eel Regulatory Position Statement version 1 dated July 2012. The proposals shall be implemented in accordance with the Environment Agency's written approval.	30th September 2013 Completed

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC35	The Operator has undertaken a review of the existing screening arrangements with reference to the Eels (England and Wales) Regulations 2009 (SI 2009/3344) and the Environment Agency ''Safe Passage for Eel'' Regulatory Position Statement version 1 dated July 2012 (and as amended February 2013) in response to Improvement Programme reference 34. Natural Resources Wales has determined that the site does not comply with the requirements for safe passage of eel and the Operator is now required to complete a cost benefits appraisal of best available technique with reference to the Environment Agency ''Safe Passage for Eel: Guidance on Exemptions'' as a screening tool. a) If the Cost Benefit Assessment shows that the benefits are greater than the costs by a factor of 1.5 or more, then the Operator shall submit to Natural Resources Wales for review a report setting out the costs and the technical and economic feasibility to introduce the improvements to achieve best available technique. b) If the Cost Benefit Assessment shows that the benefits are not greater than the costs by a factor of 1.5 or more, then the Operator shall, with reference to the Environment Agency ''Safe Passage for Eel: Guidance on exemptions, assess which alternative measure, or combination of alternative measures, could be implemented under a case of a conditioned Exemption. The Operator shall submit a report to Natural Resources Wales setting out the costs and the technical and economic feasibility of implementing their proposed alternative measure or measures. In all cases, the submission shall contain relevant timescales in accordance with the Safe Passage for Eel Regulatory Position Statement version 1 dated July 2012 (as amended 2013). The proposals shall be implemented following written approval from Natural Resources Wales. Whilst undertaking this Improvement Condition, the Operator shall be operating under exemption from the requirements to place eel screen diversion structures pursuant to Regulation 17(5)(a) of the Eels (England and Wales) Regulations 2009. The exemption will remain in place until Natural Resources Wales has provided written approval that the Improvement Condition has been deemed complete.	Submission received 29/6/15, under assessment by Natural Resources Wales
IC36	The operator shall carry out a review of the Accident Management Plan to take account of the installation of the Low NOx boilers and associated equipment. If the review extends to the entire installation then it will be deemed to have met the requirement of Condition 1.2.1 (b) The reviewed plan shall be submitted to Natural Resources Wales for approval, and the measures and controls identified in the approved plan shall be implemented within 12 months of the written approval of the report by Natural Resources Wales.	Within 3 months of unit 9 low NOx boiler unit being brought into operation.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC37	Confirm the commissioning date of each Low NOx boiler unit and submit a written post-commissioning report regarding the emission reductions achieved and relevant performance parameters including but not limited to • noise • ash quality (and identification of need for PFA landfill HRA review) • carbon in ash levels • tube failure rates • start up, shut down thresholds and boiler stability • slagging • thermal performance • electrostatic precipitator performance • NOx emissions The report should include a justification of the Best Available Techniques Associated Emission Limits (BAT ELV's) to be adopted upon full implementation of all low NOx boilers. The report shall be submitted to Natural Resources Wales for approval, and the measures and controls identified in the approved report shall be implemented within 12 months of the written approval of the report by Natural Resources Wales.	Within 6 months of each Low NOx boiler unit being brought into operation.
IC38	A written report shall be submitted to Natural Resources Wales for approval. The report shall describe the local environmental quality with respect to the Sabellaria alveolata reefs and other biota as determined according to the plan submitted as further information to the Regulation 60 Notice response dated 02/12/15 and incorporating comments by NRW dated 08/12/15. Further reports shall be submitted annually, subject to review following completion of improvement condition reference IC39, and until notified in writing by Natural Resources Wales. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the reports.	30th September 2016
IC39	A written report shall be submitted to Natural Resources Wales for approval. The report shall describe the outcome of the reduced pH discharge trials submitted as further information to the Regulation 60 Notice response dated 02/12/15. The report shall include quantification of the sulphur dioxide emission reductions achieved and relevant performance parameters including but not limited to • Energy consumption for SWTP operation • Upper limit of coal sulphur content • Changes in seawater discharge amenity, including foaming and odour • Changes in concrete infrastructure condition • Changes in seawater discharge TOC, dissolved oxygen, sulphide, sulphite and dissolved trace elements levels. • TROLL instrument performance The report shall include a justification of the Best Available Techniques Associated Emission Limits (BAT ELV's) for seawater process FGD discharge pH to be adopted upon completion of the trial programme and approval by Natural Resources Wales. The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the reports.	30th September 2016

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC40	A written report shall be submitted to Natural Resources Wales for approval. The report shall describe the outcome of the alternative coal diet trials submitted as further information to the Regulation 60 Notice response dated 02/12/15. The report shall include quantification of the potential nitrogen oxides and sulphur dioxide emission reductions achieved and relevant performance parameters including but not limited to • ash quality (and identification of need for PFA landfill HRA review) • carbon in ash levels • tube failure rates • start up, shut down thresholds and boiler stability • slagging • thermal performance • electrostatic precipitator performance • mercury and other trace element emissions The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the reports.	30th April 2016

Table S1.4 Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational measures**
PM1	Seawater FGD process	A written report shall be submitted to Natural Resources Wales for approval. The report shall describe the risk assessment of worst-case storm surge tide effects upon the operation of the seawater treatment plant and include measures proposed to mitigate any effects upon seawater treatment effectiveness and abatement availability.
PM2	Seawater FGD process	A written report shall be submitted to Natural Resources Wales for approval. The report shall describe the proposed methodology for determination of mass releases of List I and List II substances and other pollutants from the installation as required by Natural Resources Wales. The methodology shall include consideration of MCERTS compliant flow monitoring strategies for absorber feeds/discharges and seawater treatment plant/total seawater cooling flows.
PM3	Seawater FGD process, ash re-processing plant and biomass handling plant	A written report shall be submitted to Natural Resources Wales for approval. The report shall rigorously assess the variability in background noise levels at the local sensitive receptors, in particular at night. Any change in the conclusions relating to potential for noise nuisance as a result of the power station activities shall be included along with proposals for implementation of further noise abatement measures representing BAT.
PM4		Prior to the commencement of commissioning of the Carbon Capture Plant, the Operator shall send a written report to Natural Resources Wales setting out the details of, including any minor amendments to, the proposed design and operation of the Carbon Capture Plant as set out in the application. The report shall include confirmation that such details and amendments are in conformity with the information given in the application.
PM5		Prior to the commencement of commissioning of the Carbon Capture Plant, the Operator shall send a summary of the amendments to the site Environment Management System (EMS) to Natural Resources Wales and make available for inspection all new documents and procedures which form part of the revised EMS. This shall include but not be limited to updates to the Accident Management Plan, the Site Protection and Monitoring Plan, and the Site Closure and Decommissioning Plan.

Table S1.4 Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational measures**
PM6		Prior to the commencement of commissioning of the Carbon Capture Plant; the Operator shall provide a written commissioning plan, including timelines for completion, for approval by Natural Resources Wales. The commissioning plan shall include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the actions to be taken to protect the environment and report to Natural Resources Wales in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved.
PM7		Prior to the commencement of commissioning, the Operator shall submit to Natural Resources Wales for approval, a written protocol setting out detailed proposals for the monitoring of emissions to air and to water of the solvents used in the carbon capture plant and their decomposition / reaction products. The proposals shall include, equipment used, sample point locations and methods of analysis to fully characterise emissions. Sampling and testing shall be carried out in accordance with the protocol as approved.
POC8-POC13		Improvement conditions relating to SCR implementation removed following confirmation that SCR abatement will not be installed.
POC14	A written report shall be submitted to Natural Resources Wales for approval. The report shall specify the proposed commissioning programme and proposed operational techniques relating to the operation of the first Low NOx boiler. If there are any changes from the commissioning of this LNBo for any subsequent installations these shall also be reported.	Report to be submitted within 1 month of commissioning of the first Low NOx boiler. If the commissioning programme changes for subsequent installations, these reports shall be submitted at least three months before commissioning of each subsequent LNBo unit.

Table S1.5 Start-up and Shut-down thresholds		
Emission Point and Unit Reference	**"Minimum start up load"** **Load in MW and as percent of rated electrical output (%)** **and discrete processes**	**"Minimum shut-down load"** **Load in MW and as percent of rated electrical output (%)** **and discrete processes**
A1, LCP283, Units 7, 8 and 9	395 MW; 74%	395 MW; 74%
A2, LCP423, GT7, GT8 and GT9	As soon as gas turbine start up is initiated.	As soon as the gas turbine is off load.

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Low volatile content coal	As described in the application
Heavy Fuel Oil	Less than 1.0% w/w sulphur content
Gas Oil	Less than 0.1% w/w sulphur content
Biomass fuels	as defined in Article 2(11) of the EU Directive 2001/80/EC) and included in the application or otherwise agreed in writing with Natural Resources Wales.
Processed Fuel Oil (PFO)	As defined in Table 1 of document entitled 'Application for a variation to Environmental Permit RP3133LD', reference number EA EP RP3133LD Supp Doc V006, dated December 2011. Processed Fuel Oil may only be accepted if it has been produced under and in accordance with WRAP Quality Protocol for Processed Fuel Oil.
Caustic soda	≤ 0.15 ppm mercury w/w

Table S2.2 Permitted waste types and quantities for use as fuels	
Maximum quantity	**No limitation**
Waste code	**Description**
Relevant exempt biomass.	Biomass fuels exempt from the requirements of the WID and LCPD (as defined in Article 2(11) of EU Directive 2001/80/EC) and Article 2 of EU Directive 2000/76/EC) and included in the application or otherwise agreed in writing with the Agency
Relevant exempt waste.	Other fuels exempt from the requirements of the WID 2000/76/EC and included in the application or otherwise agreed in writing with Natural Resources Wales.

Table S2.3 Permitted waste types and quantities for ash reprocessing	
Maximum quantity	**10 01 17 only. No limitation on maximum quantity**
Waste code	**Description**
10 01 17	Pulverised fuel ash arising from the Aberthaw power station boilers only.

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)- these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
Windshield A1 [153 metre high 3 flue stack located at NGR ST023663, point A1 on site plan in Schedule 7]	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	LCP283 >100MWth Coal fired boiler plant (designed to operate on low volatile content coal)	1,050 mg/m^3	Calendar monthly mean	Continuous	BS EN 14181
A1 [Point A1 on site plan in schedule 7]	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	LCP283 Coal fired boiler plant	1,080 mg/m^3	95% of validated daily means within a calendar year	Continuous	BS EN 14181
A1 [Point A1 on site plan in Schedule 7]	Sulphur dioxide	LCP283 Coal fired boiler plant	350 mg/m^3	Calendar monthly mean	Continuous	BS EN 14181
A1 [Point A1 on site plan in schedule 7]	Sulphur dioxide	LCP283 Coal fired boiler plant	440 mg/m^3	95% of validated daily means within a calendar year	Continuous	BS EN 14181
A1 [Point A1 on site plan in schedule 7]	Dust	LCP283 Coal fired boiler plant	20 mg/m^3	Calendar monthly mean	Continuous	BS EN 14181
A1 [Point A1 on site plan in schedule 7]	Dust	LCP283 Coal fired boiler plant	35 mg/m^3	95% of validated daily means within a calendar year	Continuous	BS EN 14181
A1 [Point A1 on site plan in schedule 7]	Oxygen	LCP283 Coal fired boiler plant	-	-	Continuous As appropriate to reference	BS EN 14181
A1 [Point A1 on site plan in schedule 7]	Water Vapour	LCP283 Coal fired boiler plant	-	-	Continuous As appropriate to reference	BS EN 14181
A1 [Point A1 on site plan in schedule 7]	Stack gas temperature	LCP283 Coal fired boiler plant	-	-	Continuous As appropriate to reference	Traceable to national standards

Table S3.1 Point source emissions to air						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)- these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1 [Point A1 on site plan in schedule 7]	Stack gas pressure	LCP283 Coal fired boiler plant	-	-	Continuous As appropriate to reference	Traceable to national standards
A1 [Point A1 on site plan in schedule 7]	Stack gas volume flow	LCP283 Coal fired boiler plant	-	-	Continuous	BS EN 16911 & TGN M2
A1 [Point A1 on site plan in schedule 7]	Total mercury	LCP283 Coal fired boiler plant	-	-	Annual	BS EN13211
A1 [Point A1 on site plan in schedule 7]	As required by the Method Implementation Document for BS EN 15259	LCP283 Coal fired boiler plant	-	-	Pre-operation and when there is a significant operational change	BS EN 15259
A5 [25 metre high single flue stack located at NGR ST03058 65958]	Particulate matter and entrained droplets	PFA recycling plant seawater scrubber	No visible release	-	-	-
A5 [25 metre high single flue stack located at NGR ST03058 65958]	Ammonia	PFA recycling plant seawater scrubber	2 mg/m^3	As per extractive method	Annual extractive test	BS EN 14791
A7, A8, A9 [Biomass handling]	Particulate matter	Biomass milling plant cyclone exhausts	No visible release	-	-	-
A10 [Ash handling across the installation]	Particulate matter	Ash silo and recovery process vents	No visible release	-	-	-

Table S3.1 Point source emissions to air						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)- these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A11 [Utilities]	Particulate matter	Domestic boiler and waste wood burner flues	No visible release	-	-	-
A12 [Storage tank vents across the installation]	-	Displacement and pressure relief vents associated with liquid fuel and raw material storage	-	-	-	-
A16 – Carbon Capture Plant	-	Package boiler	-	-	-	-
A2[96 metre high flues located at NGR ST024 662] on site plan in schedule 7	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	LCP423 Black start open cycle oil fired gas turbines	-	-	Concentration by calculation, every 4380 operational hours or 2 years, whichever is sooner	Agreed in writing with Natural Resources Wales
A2 on site plan in schedule 7	Sulphur dioxide	LCP423 Black start open cycle oil fired gas turbines	-	-	Concentration by calculation, every 4380 operational hours or 2 years, whichever is sooner	Agreed in writing with Natural Resources Wales
A2 on site plan in schedule 7	Dust	LCP423 Black start open cycle oil fired gas turbines	-	-	Concentration by calculation, every 4380 operational hours or 2 years, whichever is sooner	Agreed in writing with Natural Resources Wales

Table S3.1 Point source emissions to air						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)- these limits do not apply during start up or shut down.**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A2 on site plan in schedule 7	CO	LCP423 Black start open cycle oil fired gas turbines	-	-	Concentration by calculation, every 4380 operational hours or 2 years, whichever is sooner	Agreed in writing with Natural Resources Wales

Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
W1 [pumped discharge into River Thaw]	Total suspended solids	Surface water drainage from roads, coal plant stockyard, & silo areas	100mg/l	Spot sample before discharge for 4 hours on ebb tide starting 1 hour after high tide	As required	BS EN 872
W1 [pumped discharge into River Thaw]	Ammoniacal nitrogen	Surface water drainage from roads, coal plant stockyard, & silo areas	2mg/l	Spot sample before discharge for 4 hours on ebb tide starting 1 hour after high tide	As required	BS 6068-2.11
W1 [pumped discharge into River Thaw]	Cadmium and its compounds, expressed as cadmium (Total Cd)	Surface water drainage from roads, coal plant stockyard, & silo areas	0.01mg/l	Spot sample before discharge for 4 hours on ebb tide starting 1 hour after high tide	As required	BS 6068-2.89
W1 [pumped discharge into River Thaw]	Total hydrocarbon oil	Surface water drainage from roads, coal plant stockyard, & silo areas	3mg/l	Spot sample before discharge for 4 hours on ebb tide starting 1 hour after high tide	As required	EN ISO 9377-2
W1 [pumped discharge into River Thaw]	pH	Surface water drainage from roads, coal plant stockyard, & silo areas	6-9	Spot sample before discharge for 4 hours on ebb tide starting 1 hour after high tide	As required	BS EN ISO 10523

Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
W2 [twin discharge structures located at NGR ST01656588 and ST01636595]	Differential total suspended solids	Condenser cooling water, FGD process water, boiler water treatment plant effluent, boiler blow down, dirty water drainage, surface water drainage	50 mg/l	24-hour composite sample	Weekly average of daily samples	BS EN 872
W2 [twin discharge structures located at NGR ST01656588 and ST01636595]	Ammoniacal nitrogen	Condenser cooling water, FGD process water, boiler water treatment plant effluent, boiler blow down, dirty water drainage, surface water drainage	0.1 mg/l (above back ground)	24-hour composite sample	Monthly average of daily samples	BS 6068-2.11
W2 [twin discharge structures located at NGR ST01656588 and ST01636595]	Differential temperature	Condenser cooling water, FGD process water, boiler water treatment plant effluent, boiler blow down, dirty water drainage, surface water drainage	13.5^{o}C	For 98% of all continuous daily average values	Continuous	Calibrated and traceable to national standards
W2 [twin discharge structures located at NGR ST01656588 and ST01636595]	Sulphide	Condenser cooling water, FGD process water, boiler water treatment plant effluent, boiler blow down, dirty water drainage, surface water drainage	-	24-hour composite sample	Agreed in writing with Natural Resources Wales	Agreed in writing with Natural Resources Wales

Table S3.2 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
W2 [twin discharge structures located at NGR ST01656588 and ST01636595]	Sulphite	Condenser cooling water, FGD process water, boiler water treatment plant effluent, boiler blow down, dirty water drainage, surface water drainage	-	24-hour composite sample	Agreed in writing with Natural Resources Wales	BS EN ISO 10304-3
W2 [twin discharge structures located at NGR ST01656588 and ST01636595]	Total hydrocarbon oil	Condenser cooling water, FGD process water, boiler water treatment plant effluent, boiler blow down, dirty water drainage, surface water drainage	3 mg/l	24-hour composite sample	Monthly average of daily samples	EN ISO 9377-2
W2 [twin discharge structures located at NGR ST01656588 and ST01636595]	pH	Condenser cooling water, FGD process water, boiler water treatment plant effluent, boiler blow down, dirty water drainage, surface water drainage	5.8 (min)[1]	Instantaneous	Continuous	BS6068-2.50
W2 [twin discharge structures located at NGR ST01656588 and ST01636595]	pH	Condenser cooling water, FGD process water, boiler water treatment plant effluent, boiler blow down, dirty water drainage, surface water drainage	6.0 - 8.5[1]	95%ile of the Instantaneous measurements	Continuous	BS6068-2.50

Note 1. Revised pH ELVs to be implemented during trial programme in accordance with improvement condition IC39 and upon approval of response.

Table S3.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. Unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
SWTP1 [Unit 7 FGD absorber outlet to seawater treatment plant]	Mercury and its compounds, expressed as mercury (Total Hg)	Unit 7 FGD absorber	0.0005 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS EN 13506
SWTP1 [Unit 7 FGD absorber outlet to seawater treatment plant]	Cadmium and its compounds, expressed as cadmium (Total Cd)	Unit 7 FGD absorber	0.0002 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS 6068-2.89
SWTP1 [Unit 7 FGD absorber outlet to seawater treatment plant]	Lead and its compounds, expressed as lead (Total Pb)	Unit 7 FGD absorber	0.004 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS 6068
SWTP1 [Unit 7 FGD absorber outlet to seawater treatment plant]	Zinc and its compounds, expressed as zinc (Total Zn)	Unit 7 FGD absorber	0.01 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS 6068
SWTP2 [Unit 8 FGD absorber outlet to seawater treatment plant]	Mercury and its compounds, expressed as mercury (Total Hg)	Unit 8 FGD absorber	0.0005 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS EN 13506
SWTP2 [Unit 8 FGD absorber outlet to seawater treatment plant]	Cadmium and its compounds, expressed as cadmium (Total Cd)	Unit 8 FGD absorber	0.0002 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS 6068-2.89
SWTP2 [Unit 8 FGD absorber outlet to seawater treatment plant]	Lead and its compounds, expressed as lead (Total Pb)	Unit 7 FGD absorber	0.004 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS 6068
SWTP2 [Unit 8 FGD absorber outlet to seawater treatment plant]	Zinc and its compounds, expressed as zinc (Total Zn)	Unit 7 FGD absorber	0.01 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS 6068

Table S3.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. Unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
SWTP3 [Unit 9 FGD absorber outlet to seawater treatment plant]	Mercury and its compounds, expressed as mercury (Total Hg)	Unit 9 FGD absorber	0.0005 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS EN 13506
SWTP3 [Unit 9 FGD absorber outlet to seawater treatment plant]	Cadmium and its compounds, expressed as cadmium (Total Cd)	Unit 9 FGD absorber	0.0002 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS 6068-2.89
SWTP3 [Unit 9 FGD absorber outlet to seawater treatment plant]	Lead and its compounds, expressed as lead (Total Pb)	Unit 7 FGD absorber	0.004 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS 6068
SWTP3 [Unit 9 FGD absorber outlet to seawater treatment plant]	Zinc and its compounds, expressed as zinc (Total Zn)	Unit 7 FGD absorber	0.01 mg/l (above background)	24-hour composite sample	Monthly average of daily samples	BS 6068

Table S3.4 Annual limits (excluding start up and shut down except where otherwise stated)				
Substance	**Medium**	**Limit (including unit)**		**Emission Points**
Oxides of nitrogen	Air	33,000 tonnes		A1, LCP283
Mercury and its compounds, expressed as mercury (Total Hg)	Water	60 kg		W1 and W2
Dust, sulphur dioxide and oxides of nitrogen	Air	Assessment year	LCP TNP Limit	A1, LCP283
		01/01/16 and subsequent years until 31/12/19	Emission allowance figure shown in the TNP Register as at 30 April the following year	
		01/01/20-30/06/20	Emission allowance figure shown in the TNP Register as at 31 October 2020	

Table S3.5 Surface water monitoring requirements				
Location or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Seawater intake from Bristol Channel	Total suspended solids	24-hour composite sample	BS EN 872	analysed monthly and reported monthly
Seawater intake from Bristol Channel	pH	Continuous	BS EN ISO 10523	reported monthly as min max and average pH
Seawater intake from Bristol Channel	Mercury and its compounds, expressed as mercury (Total Hg)	24-hour composite sample	BS EN 13506	reported monthly as monthly average
Seawater intake from Bristol Channel	Mercury (on filtered sample)	24-hour composite sample	BS EN 13506	reported monthly as monthly average

Table S3.6 Ambient air monitoring requirements				
Location or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Dust deposition measurements at locations specified in the Application or as agreed with Natural Resources Wales in writing	Deposited particulate matter	Continuous	BS 1747 or equivalent	Directional dust deposit gauge. Contents of deposit gauge to be measured monthly

Table S3.7 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
W2 [twin discharge structures located at NGR ST01656588 and ST01636595]	Dissolved Oxygen (DO)	Continuous	EN 25814	reported monthly as min, max and average DO
SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	pH	Continuous	BS EN ISO 10523	reported monthly as average pH

SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Flow	Continuous	BS 3680	reported monthly as average daily flow rate and total monthly volume
SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Arsenic and its compounds, expressed as arsenic (Total As)	24-hour composite sample	BS 6068	reported monthly as monthly average
SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Chromium VI and its compounds, expressed as chromium (Total Cr VI)	24-hour composite sample	BS 6068	reported monthly as monthly average
SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Selenium and its compounds, expressed as selenium (Total Se)	24-hour composite sample	BS 6068	reported monthly as monthly average
Trace elements in coal delivered to the station	All List I & II elements liable to be present plus selenium	Each parent delivery [a]	UKAS accredited ICPMS [a]	reported annually as annual average
A13, A14, A15 [Seawater absorber inlet flues from Unit 7, 8 and 9 boiler electrostatic precipitators respectively]	Particulate Matter	Continuous	To be confirmed upon completion of Improvement Condition reference IC20	reported monthly as maximum hourly and monthly averages

Schedule 4 – Reporting

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

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Oxides of nitrogen	A1 A2	Every 3 months Every 2 years	1 January, 1 April, 1 July, 1 October 1 January
Dust	A1 A2	Every 3 months Every 2 years	1 January, 1 April, 1 July, 1 October 1 January
Sulphur dioxide	A1 A2	Every 3 months Every 2 years	1 January, 1 April, 1 July, 1 October 1 January
Carbon monoxide	A2	Every 2 years	1 January
Mercury	A1	Annually	1 January
Ammonia release to air	A5	Annually	Permit issue
Dissolved Oxygen (DO)	W2 [twin discharge structures located at NGR ST01656588 and ST01636595]	Monthly	Permit issue
pH	SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Monthly	Permit issue
Flow	SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Monthly	Permit issue
Mercury and its compounds, expressed as mercury (Total Hg)	SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Monthly	Permit issue
Cadmium and its compounds, expressed as cadmium (Total Cd)	SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Monthly	Permit issue
Lead and its compounds, expressed as lead (Total Pb)	SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Monthly	Permit issue
Zinc and its compounds, expressed as zinc (Total Zn)	SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Monthly	Permit issue
Arsenic and its compounds, expressed as arsenic (Total As)	SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Monthly	Permit issue

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Chromium VI and its compounds, expressed as chromium (Total Cr VI)	SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Monthly	Permit issue
Selenium and its compounds, expressed as selenium (Total Se)	SWTP1, 2 & 3 [Unit 7, 8 & 9 FGD absorber outlets to seawater treatment plant]	Monthly	Permit issue
Continuous particulate matter monitoring at FGD absorber inlets	A13, A14, A15 [Seawater absorber inlet flues from Unit 7, 8 and 9 boiler electrostatic precipitators respectively]	Monthly	Permit issue
Emission to water sample and analysis results	W1 & W2; SWTP1, 2 & 3	Monthly/4 weekly	Permit issue
Bristol Channel water sample and analysis results	Seawater intake	Monthly/4 weekly	Permit issue
Mass release data to Bristol Channel	W1 & W2	Monthly/4 weekly	Permit issue
Trace elements in coal delivered to the station	Stock yard	Annually	Permit issue
Deposited particulate matter	Dust deposition measurements at locations specified in the Application or as agreed with Natural Resources Wales in writing	Monthly	Permit issue

Table S4.2: Annual production/treatment	
Parameter	**Units**
Power generated	GWh

Table S4.3 Chapter III Performance parameters for reporting to DEFRA		
Parameter	**Frequency of assessment**	**Units**
Thermal Input Capacity for each LCP	Annually	MW
Annual Fuel Usage for each LCP	Annually	TJ
Total Emissions to Air of NO_x for each LCP	Annually	t
Total Emissions to Air of SO_2 for each LCP	Annually	t
Total Emissions to Air of dust for each LCP	Annually	t
Operating Hours for each LCP	Annually	h

Table S4.4 Reporting forms				
Media/ parameter	**Reporting format**	**Starting Point**	**NRW recipient**	**Date of form**
Air & Energy	Form IED AR1 – SO_2, NO_x and dust mass emission and energy	01/01/16	SI	31/12/15
Air	Form IED RTA1 – TNP quarterly emissions summary log	01/01/16	TNP Register and SI	31/12/15
LCP	Form IED HR1 – operating hours	01/01/16	SI	31/12/15
Air	Form IED CON 1 – continuous monitoring	01/01/16	SI	31/12/15
CEMs	Form IED CEM – Invalidation Log	01/01/16	SI	31/12/15
LCP	Form IED BD1 – Cumulative annual rolling malfunction and breakdown hours	01/01/16	SI	31/12/15
Air	Form IED MF1 – Pollutant concentrations during any day with malfunction or breakdown of abatement plant	01/01/16	SI	31/12/15
Air	Form IED PM1 – discontinuous monitoring and load.	01/01/16	SI	31/12/15
Air/Ammonia releases	Air1	Permit issue	SI	30/11/07
Water/ Emission to water sample and analysis results	Water1	Permit issue	SI	30/11/07
Water/ Bristol Channel water sample analysis results and mass emission data	Water2	Permit issue	SI	31/12/15
Trace elements in coal delivered to the station	Coal1	Permit issue	SI	30/11/07
Deposited particulate matter	Deposition1	Permit issue	SI	30/11/07
Process/Absorber inlet dust monitoring	Process1	Permit issue	SI	30/11/07

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 immediately	
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 immediately unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	

(b) Notification requirements for the breach of a limit	
To be notified immediately unless otherwise specified below	
Measures taken, or intended to be taken, to stop the emission	
Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified immediately	
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

Part C Malfunction or Breakdown of LCP abatement equipment

Permit Number	
Name of operator	
Location of Facility	
LCP Number	
Malfunction or breakdown	
Date of malfunction or breakdown	

(a) Notification requirements for any malfunction and breakdown of abatement equipment as defined by the Industrial Emission Directive*.	
To be notified within 48 hours of abatement equipment malfunction and breakdown	
Time at which malfunction or breakdown commenced	
Time at which malfunction or breakdown ceased	
Duration of the breakdown event in hours and minutes	
Reasons for malfunction or breakdown	
Where the abatement plant has failed, give the hourly average concentration of all measured pollutants.	
Cumulative breakdown operation in current year (at end of present event)	
Cumulative malfunction operation in current year (at end of present event)	
Name**	
Post	
Signature **	
Date	

* See section 3.6 and Appendix E of ESI Compliance Protocol for guidance

** authorised to sign on behalf of the operator

Schedule 6 – Interpretation

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

"Air Quality Risk Assessment" has the meaning given in Annex D of IED Compliance Protocol for Utility Boilers and Gas Turbines.

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

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

"background concentration" means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site and the concentration in seawater entering the installation.

"base load" means: (i) as a mode of operation, operating for >4000hrs pa; and (ii) as a load, the maximum load under ISO conditions that can be sustained continuously, i.e. maximum continuous rating.

"Black Start" means the procedure to recover from a total or partial shutdown of the UK Transmission System which has caused an extensive loss of supplies. This entails isolated power stations being started individually and gradually being reconnected to other power stations and substations in order to form an interconnected system again.

"breakdown" has the meaning given in the ESI IED Compliance Protocol for Utility Boilers and Gas Turbines.

"calendar monthly mean" means the value across a calendar month of all validated hourly means.

"CEN" means Commité Européen de Normalisation.

"closure" means closure of all or individual units comprising a large combustion plant in accordance with the guidance provided on closure criteria for large combustion plant subject to the TNP.

"Combustion Technical Guidance Note" means IPPC Sector Guidance Note Combustion Activities, version 2.03 dated 27th July 2005 published by Environment Agency.

"disposal". Means any of the operations provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"DLN" means dry, low NO_x burners.

"emissions to land" includes emissions to groundwater.

"Energy efficiency" the ISO base load net plant efficiency means the performance value established by acceptance testing following commissioning or performance testing following improvements made to the plant that could affect the efficiency.

"Energy efficiency" the annual net plant energy efficiency means the value calculated from the operational data collected over the year.

"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.

"FGD" means flue gas desulphurisation

“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.

“Industrial Emissions Directive” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions.

“large combustion plant” or “LCP” is a combustion plant or group of combustion plants discharging waste gases through a common windshield or stack, where the total thermal input is 50 MW or more, based on net calorific value. The calculation of thermal input, excludes individual combustion plants with a rated thermal input below 15MW.

“low polluting fuels” means biomass or coal with an average as-received sulphur content of less than 0.4% by mass as described in the ESI IED Compliance Protocol for Utility Boilers and Gas Turbines.

“malfunction” has the meaning given in the ESI IED Compliance Protocol for Utility Boilers and Gas Turbines.

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

“mcr” means maximum continuous rating.

“MSDL” means minimum shut-down load as defined in Implementing Decision 2012/249/EU.

“MSUL” means minimum start-up load as defined in Implementing Decision 2012/249/EU.

“Natural gas” means naturally occurring methane with no more than 20% by volume of inert or other constituents.

“ncv” means net calorific value.

“operational hours” are whole hours commencing from the first unit ending start up and ending when the last unit commences shut down.

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

“SI” means site inspector.

“TNP Register” means the register maintained by the Environment Agency in accordance with regulation 4 of the Large Combustion Plants (Transitional National Plan) Regulations 2015 SI2015 No.1973.

“Waste code” means the six digit code referable to a type of waste in accordance with the List of Wastes (England)Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.

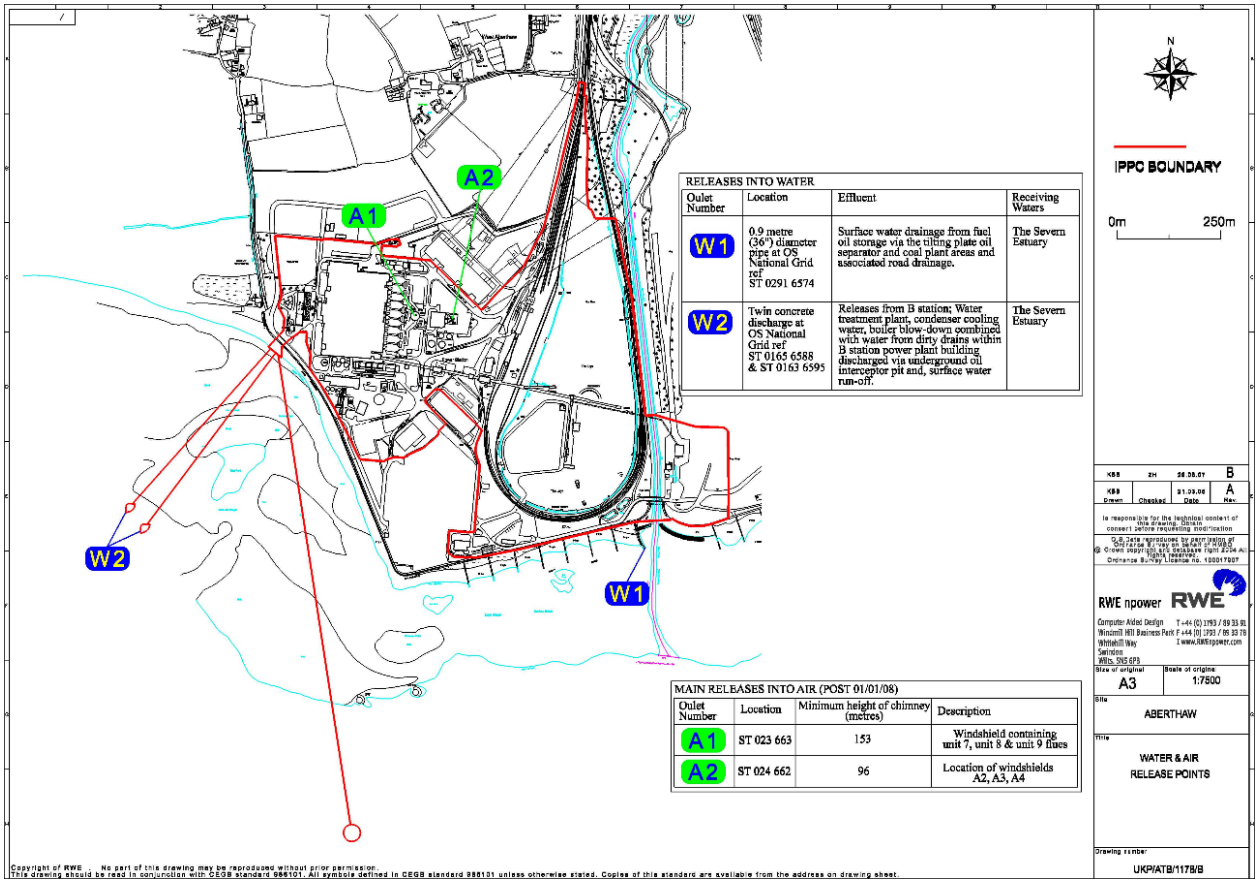
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

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

- in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or
- in relation to emissions from gas turbine or compression ignition engine combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry for liquid and gaseous fuels; and/or
- in relation to emissions from combustion processes comprising a gas turbine with a waste heat boiler, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry, unless the waste heat boiler is operating alone, in which case, with an oxygen content of 3% dry for liquid and gaseous fuels; and/or
- in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

“year” means calendar year ending 31 December.

Schedule 7 – Site plan



END OF PERMIT