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Wales

# Notice of variation with introductory note

Environmental Permitting (England & Wales) Regulations 2010

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E.ON UK plc

Connah's Quay Power Station  
Kelsterton Road  
Connah's Quay  
Deeside  
Flintshire  
CH5 4BP

Variation application number  
EPR/MP3337SH/V008

Permit number  
EPR/MP3337SH

# Connah's Quay Power Station

## Permit number EPR/MP3337SH

### Introductory note

#### **This introductory note does not form a part of the notice**

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

This variation is to replace the current single natural gas-fired auxiliary boiler, which has a thermal rating of 24 MW, with five new natural gas-fired auxiliary boilers, which each have a thermal rating of 7.545 MW. The new auxiliary boilers will support the operation of the main power-generators at the station – four combined cycle gas turbines (CCGT) – by providing a supply of steam to operate the CCGTs lubrication systems during start-up and shut-down.

This variation also grants permission for a double two-shifting mode of operation to be implemented at the station. This means that the station is permitted to make a maximum of 8 start-ups in a 24-hour period (i.e. 2 start-ups per CCGT) if required to meet electricity supply demand. A slight increase in emissions is associated with operating a double two-shifting pattern compared to the previous single two-shifting operating mode; however overall emissions will drop significantly once the completion of the upgrade to dry low NO<sub>x</sub> 2.6 burners is completed in 2015.

This variation is also add an existing surface water discharge drain at the site - known as the Old Rockcliffe Drain - to the permit as emission point W3.

The schedules specify the changes made to the original permit.

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

<b>Status log of the permit</b>		
<b>Description</b>	<b>Date</b>	<b>Comments</b>
Application MP3337SH received	Duly made 17/03/06	-
Schedule 4 response (additional information)	Received 26/10/06	-
Supplementary information requested	20/11/06	-
Supplementary information received	20/11/06	-
Supplementary information requested (email)	12/01/07	-
Supplementary information received (email)	12/01/07	-
Permit MP3337SH determined	09/02/07	-
Variation Application EPR/MP3337SH/V002	Duly Made 05/06/08	-
Schedule 5 Request for further information	Sent 14/09/08	-
Further information received	01/09/08	-
Variation EPR/MP3337SH/V002 issued	29/09/08	-
Variation application EPR/MP3337SH/V003	Duly Made 05/12/08	-
Supplementary information requested	10/10/08	-
Supplementary information received	23/10/08	-
Supplementary information requested	23/02/09	-
Supplementary information received	27/02/09	-
Variation EPR/MP3337SH/V003 issued	18/03/09	-
Variation application EPR/MP3337SH/V004	Duly Made 09/11/10	-
Variation EPR/MP3337SH/V004 issued	07/12/10	-
Variation application EPR/MP3337SH/V005	Duly Made 27/01/12	-
Schedule 5 Request for further information	Sent 29/02/12	-

**Status log of the permit**

<b>Description</b>	<b>Date</b>	<b>Comments</b>
Further information received	23/03/12	-
Additional information received	22/05/12	Assessment of further Chlorite Decay Tests
Schedule 5 Request for further information	Sent 04/07/12	-
Further information received	24/07/12	-
Additional information received	09/08/12	Dosing systems
Additional information received	17/10/12	Commissioning Information and Emission Limit Values / Monitoring
Additional information received	26/10/12	Various responses
Additional information received	19/11/12	Timescales for staged commissioning programme
Variation EPR/MP3337SH/V005 issued	06/12/12	-
Variation determined EPR/MP3337SH/V006	11/03/12	Environment Agency initiated variation to incorporate Eel Regulations improvement condition
Variation application EPR/MP3337SH/V007	Duly Made 14/01/12	Application for upgraded combustion system and additional emission point for auxiliary boiler
Variation application EPR/MP3337SH/V007 determined	04/04/13	Varied permit issued
Variation application EPR/MP3337SH/V008	Duly Made 19/08/14	Application for replacement of single auxiliary boiler with five new auxiliary boilers, permission to operate in double two shifting mode and additional emission point for Old Rockcliffe surface water drain
Schedule 5 Request for further information	Sent 09/10/14	Request for revision of elements of the air quality modelling assessment work and provision of risk assessment for new auxiliary boilers and double two shifting mode of operation.
Further information received	17/10/14	Response to queries relating to air quality modelling methodology and provision of risk assessment.
Variation determined EPR/MP3337SH/V008	17/03/15	Varied permit issued

**Other existing Licences/Authorisations/Registrations relating to this site**

<b>Holder</b>	<b>Reference number</b>	<b>Date of issue</b>
E.ON UK plc, Westwood Way, Westwood Business Park, Coventry, CV4 8LG	24/67/10/124/E ver 1 (Licence to abstract water)	25/10/1996
E.ON UK plc, Westwood Way, Westwood Business Park, Coventry, CV4 8LG	24/67/10/124/E ver 2 (Licence to abstract water)	03/01/2007
E.ON UK plc, Connah's Quay Power Station, Kelsterton Road, Connah's Quay, Deeside, Flintshire, CH5 4BP	EU-ETS:GB-EA- ETCO2-0179 (Emissions trading scheme)	

End of introductory note

## Notice of variation

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

Permit number  
**EPR/MP3337SH**

issued to:  
**E.ON UK plc** ("the operator")

whose registered office is

**Westwood Way  
Westwood Business Park  
Coventry  
CV4 8LG**

company registration number **02366970**

to operate a regulated facility at

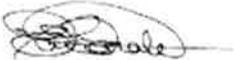
**Kelsterston Road  
Connah's Quay  
Deeside  
Flintshire  
CH5 4BP**

to the extent set out in the schedules.

The notice shall take effect from 17 March 2015

Name

Date

	<b>17 March 2015</b>
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Eirian Macdonald  
Authorised on behalf of Natural Resources Wales

## Schedule 1 – conditions to be deleted

None

## Schedule 2 – conditions to be amended

The following conditions are amended as a result of the application made by the operator.

Table S1.1 shall be amended to:

<b>Table S1.1 activities</b>		
<b>Activity listed in Schedule 1 of the PPC Regulations</b>	<b>Description of specified activity</b>	<b>Limits of specified activity</b>
Section 1.1 A(1) (a) : Burning any fuel in an appliance with a rated thermal input of 50 megawatts or more	Combined Cycle gas turbine power plant production of steam and electricity	Combustion of natural gas in a combined cycle gas turbine (CCGT). From receipt of raw materials to supply of electricity and from water intake to water discharge. Permitted to operate in single or double two-shifting mode.
	Five auxiliary boilers fired on natural gas with a thermal rating of 7.545 MW each.	Combustion of natural gas in a boiler
Section 1.2 A(1) (a) – Refining gas where this is likely to involve the use of 1,000 tonnes or more of gas in any period of 12 months	Gas Treatment Plant	From receipt of natural gas to the point after the heaters which reheat and change the gas pressure where the gas enters the gas turbines
<b>Directly Associated Activity</b>		
Directly associated activity	Surface water drainage	Handling and storage of site drainage until discharge to the site surface water system.
Directly associated activity	Water treatment de-ionising plant	From receipt of raw materials, handling, to dispatch to cooling water purge system.
Directly associated activity	Waste management	Waste generation and handling – from generation of waste to despatch from the installation
Directly associated activity	Electricity transformers and the banking compound	From generator to the connection to the National Grid
Directly associated activity	Standby emergency diesel generators	From generator to gas turbines

Table S1.2 shall be amended to:

<b>Table S1.2 Operating techniques</b>		
<b>Description</b>	<b>Parts</b>	<b>Date Received</b>
Application	Sections 2.1 & 2.2 of the application as well as other sections of the application	06/03/2006 (Received) 17/03/2006 (Duly Made)
Response to Schedule 4 Notice Request issued on 29/09/2006	Response to question 5, 6, 7, 8, 9, 10, 14, 15, 16, 29, detailing process control, 30 detailing emissions limits	26/10/2006
Supplementary Information	Email from Bill Smith at E.ON – Connah's Quay Power Station dated 12/01/2007	12/01/2007
Supplementary Information	Letter dated 20/11/2006 regarding two-shifting	22/11/2006
Standard Variation Application (EA/EPR/MP3337SH/V003)	Variation application Duly Made 05/06/2008	20/05/2008
Standard Variation further information request	EPR Schedule 5 Variation Further Information request dated 14/09/2008	01/09/2008
Variation Application EPR/MP3337SH/V004	Response to questions in Application Form EPC – Part C	09/11/2010
Standard Variation Application EPR/MP3337SH/V005	Sections 2.1 to 2.6 of the application "Connah's Quay Power Station Application to Vary Permit MP3337SH – Chlorine Dioxide Dosing System Modification – October 2011.	09/12/2011
Response to Schedule 5 Notice requiring further information	The answer to question 10 of the Schedule 5 Notice (issued 29/02/2012) regarding monitoring methods and standards	23/03/2012
Additional information received	Assessment of further Chlorite Decay Tests	22/05/2012
Response to Schedule 5 Notice requiring further information	Response to Schedule 5 Notice	24/07/2012
Additional information	Response to Schedule 5 Notice	24/07/2012
Additional information	Appendix 1 – Additional Commissioning Information:- 1. Cooling tower dosing system description 2. Water commissioning 3. Chemical commissioning 4. Stage 1 of Proposed Chlorine Dioxide Introductory Dosing Plan 5. Stage 2 of Proposed Chlorine Dioxide Introductory Dosing Plan 6. Stage 3 of Proposed Chlorine Dioxide Introductory Dosing Plan Additional information supplied for clarification B5, Monitoring Methods Confirmation	17/10/2012
Additional information	Responses (Points 1 and 2)	26/10/2012
Additional information	Appendix 1 – Timescales (including durations)	19/11/2012
Variation Application EPR/MP3337SH/V007	Section 3.1 of the DLN 2.6+ Upgrade Supporting Document entitled "Connah's Quay Safety and Environmental Management System"	20/12/2012
Variation Application EPR/MP3337SH/V008	Section 3.2 of the variation application document entitled 'Connah's Quay Power Station EPR/MP3337SH Environmental permit variation application for the operation of five new auxiliary boilers at Connah's Quay Power Station' which describes the	27/06/2014

	operation of the four main CCGT units and five new auxiliary boilers in double two shifting mode.	
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Table S4.1(a) shall be amended to:

**Note**

For the purposes of this Schedule, the following interpretations shall apply:

- For the continuous measurement systems fitted to the LCP release points defined in Table S4.1 the validated hourly and daily averages shall be determined from the measured valid hourly average values after having subtracted the value of the 95% confidence interval.
- The 95% confidence interval for nitrogen oxides and sulphur dioxide of a single measured result shall be taken to be 20%.
- The 95% confidence interval for dust releases of a single measured result shall be taken to be 30%
- The 95% confidence interval for carbon monoxide of a single measured result shall be taken to be 10%.
- 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.
- Any day, in which more than three hourly average values are invalid shall be invalidated.

<b>Table S4.1(a) Point source emissions to air from Gas Turbines and Auxiliary Boilers</b>						
<b>Emission point ref. &amp; location</b>	<b>Parameter</b>	<b>Source</b>	<b>Limit including unit)<sup>a</sup></b>	<b>Reference period</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>
Points A1, A2, A3, A4 on site plan in Schedule 2	Oxides of Nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )	Gas turbine fired on natural gas	75mg/m <sup>3</sup>	Daily mean of validated hourly averages	Continuous	BS EN 14181 and as agreed in writing with Natural Resources Wales
Points A1, A2, A3, A4 on site plan in Schedule 2	Oxides of Nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )	Gas turbine fired on natural gas	110mg/m <sup>3</sup>	95% of Validated hourly Averages within a calendar year	Continuous	BS EN 14181 and as agreed in writing with Natural Resources Wales
Points A1, A2, A3, A4 on site plan	Carbon Monoxide	Gas turbine fired on natural	30mg/m <sup>3</sup>	Daily mean of validated hourly averages	Continuous	BS EN 14181 and as agreed

in Schedule 2		gas				in writing with Natural Resources Wales
Points A10A, A10B, A10C, A10D, A10E on site plan in Schedule 2	Oxides of Nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )	Five Auxiliary Boilers fired on natural gas	No Limit Set	Hourly Average	Annual	BS EN 14792
Points A10A, A10B, A10C, A10D, A10E on site plan in Schedule 2	Carbon Monoxide	Five Auxiliary Boilers fired on natural gas	No Limit Set	Hourly Average	Annual	BS EN 15058

<sup>a</sup> – these limits do not apply during start up or shut down.

Table S4.2 shall be amended to:

Table S4.2 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 on site plan in schedule 2	Flow	Main cooling water purge to the River Dee	2.5m <sup>3</sup> /s	Instantaneous	Continuous	Note 4	
	Temperature		25°C				
	Temperature difference April-October		13°C				
	Temperature difference November-March 95 percentile Maximum (°C)		13°C				
	Salinity		20°C				
	pH Maximum		60g/l				
	pH Minimum		9				
	Residual Chlorine Dioxide Note 7		6				
	Residual chlorite ion Note 7		Note 1 Note 7				
	Residual chlorite ion Note 7		10mg/l (absolute limit) Note 1 Note 7				
W2 on site plan in schedule 2	Residual chlorite ion Note 7	Surface water drain	5mg/l Note 1 Note 2 Note 7	Average value Note 3 Note 7		Note 5	
	Total Residual Oxidant (TRO) Note 6		0.2mg/l				Instantaneous
	Oil and grease		20mg/l				
	pH Maximum		9				
W3 on site plan in schedule 2 of EPR/MP3337SH/V008	pH Minimum	Surface water drain	6			Note 4	
	Oil and grease		20mg/l Note 1				
	Residual chlorine dioxide		Note 1				

Note 1 Limit subject to change by the Environment Agency following completion of improvement condition IC21.

Note 2 This limit shall be based upon a rate of 95% compliance of all average values in a 3

monthly period.

- Note 3 Average value of all instantaneous readings over a maximum 3 hour discharge period.
- Note 4 As described in the answer to Q10 of the Schedule 5 Notice dated 23/03/2012.
- Note 5 As detailed within Additional information supplied on 17th October 2012 "B5, Monitoring Methods Confirmation". Methods and standards are subject to change upon completion of pre-operational measure for future development PO2, Table S1.4B.
- Note 6 Compliance with Emission Limit Value and Monitoring requirements for Total Residual Oxygen (TRO) effective only during dosing of cooling waters with Sodium Hypochlorite.
- Note 7 Compliance with Emission Limit Values and Monitoring requirements for Residual Chlorine Dioxide and Residual chlorite ion effective only during dosing of cooling waters with Chlorine Dioxide.

Table S5.1 shall be amended to:

<b>Table S5.1 Reporting of monitoring data</b>			
<b>Parameter</b>	<b>Emission or monitoring point/reference</b>	<b>Reporting period</b>	<b>Period begins</b>
Oxides of nitrogen Parameters as required by condition 3.6.1	A1, A2, A3, A4, A11	Every 3 months	01/10/08
Carbon Monoxide Parameters as required by condition 3.6.1	A1, A2, A3, A4, A11	Every 3 months	01/10/08
Oxides of nitrogen Parameters as required by condition 3.6.1	A12	Every 12 months	01/01/13
Carbon monoxide Parameters as required by condition 3.6.1	A12	Every 12 months	01/01/08
Oxides of nitrogen Parameters as required by condition 3.6.1	A10 A, A10 B, A10 C, A10 D, A10 E	Every 12 months	01/03/15
Carbon Monoxide Parameters as required by condition 3.5.1	A10 A, A10 B, A10 C, A10 D, A10 E	Every 12 months	01/03/15
Sulphur dioxide Parameters as required by condition 3.6.1	A11	Every 3 months	01/10/08
Invalidation of Continuous monitoring	A1, A2, A3, A4	Every 3 months	01/10/08
Total Mass Emissions NO <sub>x</sub> , SO <sub>2</sub> , particulates (LCPD)	A1, A2, A3, A4	Every 12 months	01/01/08
Flow Parameters as required by condition 3.6.1	W1	Every 3 months	01/10/08
pH maximum Parameters as required by condition 3.6.1	W1, W2, W3	Every 3 months	01/10/08
pH minimum Parameters as required by condition 3.6.1	W1, W2, W3	Every 3 months	01/10/08
Oil (or grease) Parameters as required by condition 3.6.1	W1, W2	Every 3 months	01/10/08
Temperature difference between discharge and receiving waters Parameters as required by condition 3.6.1	W1	Every 3 months	01/10/08
Temperature maximum Parameters as required by condition 3.6.1	W1	Every 3 months	01/10/08
Salinity Parameters as required by condition 3.6.1	W1	Every 3 months	01/10/08

Total Residual Oxidant (TRO) Parameters as required by condition 3.5.1	W1	Every 3 months	01/10/08
Residual Chlorine Dioxide Parameters as required by condition 3.5.1	W1, W2	Every 3 months Note 1	01/10/12
Residual Chlorite Ion Parameters as required by condition 3.5.1	W1	Every 3 months Note 1	01/10/12

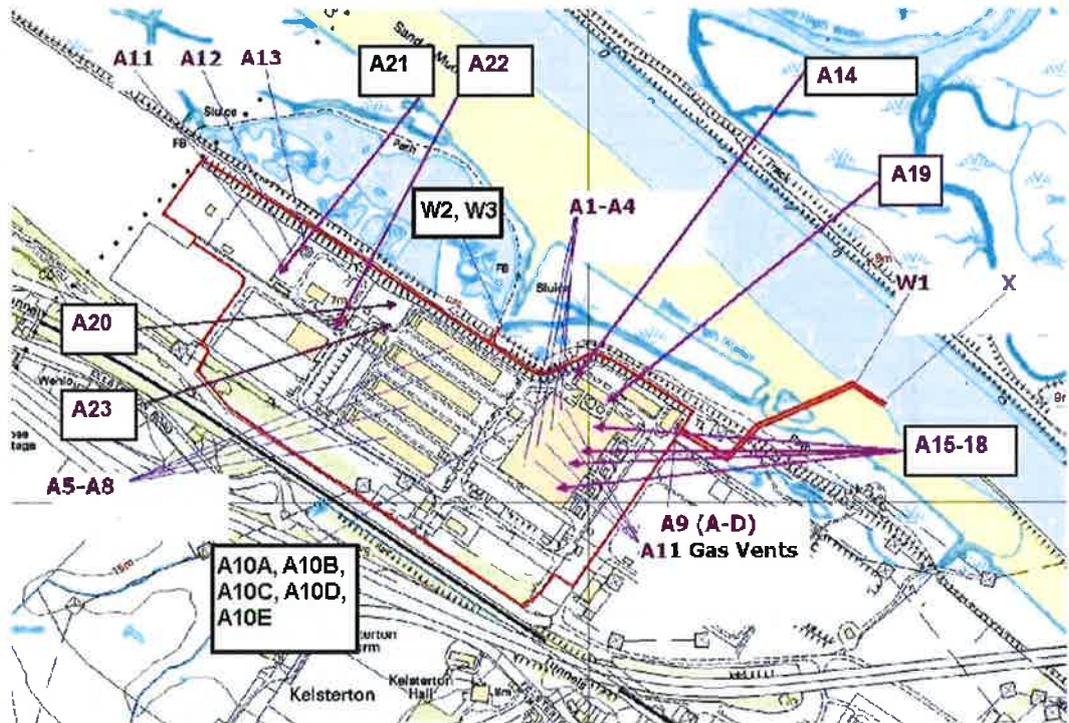
Note 1 Monthly for the first 3 months of operation

**Schedule 3 – conditions to be added**

None

#### Schedule 4 – amended plan

The site plan in Schedule 2 of variation notice EPR/MP3337SH/V003 shall be amended to:



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The Table in Schedule 2 of variation notice EPR/MP3337SH/V003 shall be amended to:

Release Point Reference	Activity	Location of emission points Grid Ref.
A1	Unit 1 GT Exhaust	SJ 327971 371150
A2	Unit 2 GT Exhaust	SJ 327954 371125
A3	Unit 3 GT Exhaust	SJ 327938 371100
A4	Unit 4 GT Exhaust	SJ 327921 371075
A5	Unit 1 Cooling Tower Exhaust	SJ 327800 371230
A6	Unit 2 Cooling Tower Exhaust	SJ 327770 371180
A7	Unit 3 Cooling Tower Exhaust	SJ 327745 371135
A8	Unit 4 Cooling Tower Exhaust	SJ 327715 371085
A9 A	Emergency diesel 1	SJ 328142 371124
A9 B	Emergency diesel 2	SJ 328134 371118
A9 C	Emergency diesel 3	SJ 328126 371113
A9 D	Emergency diesel 4	SJ 328118 371107
A10 A	Auxiliary Boiler 1	SJ 327919 371145
A10 B	Auxiliary Boiler 2	SJ 327922 371143
A10 C	Auxiliary Boiler 3	SJ 327925 371141
A10 D	Auxiliary Boiler 4	SJ 327915 371139
A10 E	Auxiliary Boiler 5	SJ 327918 371137
A14	Hydrochloric acid storage tank fume scrubber vent (water treatment plant)	SJ 327988 371185
A15	Generator purging vents ammonia Storage tanks vent Stator water vent Seal oil vent Gland steam vent (Unit 1 turbine hall roof)	SJ 328010 371117
A16	Generator purging vents ammonia storage tanks vent Stator water vent Seal oil vent Gland steam vent (Unit 2 turbine hall roof)	SJ 327988371081
A17	Generator purging vents ammonia storage tanks vent Stator water vent Seal oil vent Gland steam vent (Unit 3 turbine hall roof)	SJ 327968371056
A18	Generator purging vents ammonia storage tanks vent Stator water vent Seal oil vent Gland steam vent (Unit 4 turbine hall roof)	SJ 327948371024
A19	Emergency fire fighting diesel exhaust (Gas treatment plant/fire fighting pump house building)	SJ 3280283 71149
A20	Water Bath Heaters (AGI)	SJ 327718 371287
A21	Emergency fire fighting diesel exhaust (Gas treatment plant/fire fighting pump)	SJ 327552 371344
A22	Emergency diesel generator exhaust (Gas treatment plant)	SJ 327626 371261
A23	Potterton Boilers Exhaust (AGI)	SJ 327705 371282
A11	Thermal oxidiser	SJ327555 371348
A12	Gas Regen Heater	SJ 327566 371358
A13	Ground flare	SJ 327589 371371