West Offaly Power IE Licence Review

Electricity Supply Board

Attachment 4-8-4 Site Condition Report

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1 Introduction

West Offaly Power (WOP) Station was commissioned in 2005 subsequent to planning permission being granted (Offaly County Council Reg. Ref. 01/187; An Bord Pleanála Reg. Ref. PL19.125575), on lands adjacent to the former Shannonbridge Generating Station. That application was accompanied by an Environmental Impact Statement (EIS) which assessed the development of a new generation station and an associated dedicated Ash Disposal Facility (ADF) on lands at Derrylahan, Co. Offaly where ash – a by-product of the combustion process, is disposed of. The planning permission which was granted in 2002 ceases to have effect on 31st December 2020.

The established character and use of the WOP Station site is industrial - reflecting its long established use for electricity generation activity. There has been continuous generation of electricity at the site since 1965 when a 40 MW unit was first commissioned. That station was extended in 1977 and again in 1982 at which point it had an installed electrical capacity of 125 MW. That station was decommissioned in 2003 and the site was remediated.

The WOP Station (including the ADF) operates in accordance with its Industrial Emissions (IE) Licence No. P0611-02 as amended.

The requirement for this licence review is based primarily on the continued use of the WOP Station and ADF and to transition that station from peat to exclusive firing with biomass. An application for planning permission was made in November 2018 under the provisions of the Strategic Infrastructure legislation (An Bord Pleanála Reg. Ref. PL19.303108).

An Environmental Impact Assessment Report (EIAR) has been prepared as required under Directive 2014/EU/52 of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment and Assessment under the EU Habitats Directive.

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In addition to the above change an alteration to Condition 5.5 of the current licence P-0611-02 is also requested. The current Condition 5.5 is as follows;

> *Discharges from the installation shall not artificially increase the ambient temperature of the receiving water by more than 1.5C outside the mixing zone. In relation to temperature, the mixing zone shall not exceed 25% of the cross sectional areas of the river at any point.*

The proposed Condition 5.5 is as follows;

> *Discharges from the installation shall not artificially increase the ambient temperature of the receiving water by more than 1.50C outside the mixing zone. In relation to temperature, the mixing zone shall not exceed 25% of the cross sectional area of the river at any point* ***where such exceedances would result in the contravention of the EPA Act and in particular, cause significant environmental pollution to the receiving waters.***

Full details in relation are contained in the below attachments:

- Attachment-1-1-Reason for Licence Review

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This report is the Site Condition Report to support the WOP IE Licence Review application process and should also be read in conjunction with the above and with the following attachments:

- Attachment-4-8-3-Complete Baseline Report
- Attachment-6-3-6-EIS-EIAR-Planning-Nov-2018
- Attachment-6-3-6-NIS-Planning-Nov-2018
- Attachment-7-1-3-1-Emissions Compliance Report_AER 2014-2018
- Attachment-7-1-3-3-Rec Env Report_ Hydrogeo Report
- Attachment-7-1-3-3-Rec Env Report_Hydrogeo Report_2
- Attachment-7-1-3-2-Emissions Impact Assessment
- Attachment-7-1-3-3-Rec Env Report_Noise Monitoring
- Attachment-7-1-3-3-Rec Env Report_Fug Emissions

2 Soil and Groundwater

Details of the site conditions in relation to soil and groundwater for both the site of the WOP Station and the ADF are contained within the Baseline Report that accompanies this licence review application, refer to Attachment-4-8-3-Complete Baseline Report.

In addition details in relation to soil and groundwater for both WOP Station and ADF are contained within the EIAR undertaken as part of the planning application (as detailed in Section 1 of this Site Condition Report), see Attachment-6-3-6-EIS-EIAR-Planning-Nov-2018, Volume 2: Main Report as follows:

- Chapter 7, Land, Soil, Geology and Hydrogeology.

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Under Condition 6.13.3 of the IE Licence the site is required to complete risk screening and a technical assessment of groundwater quality beneath the site. This assessment was carried out in 2015 and details are contained within the following attachments[1] :

1 Attachment-7-1-3-3-Rec Env Report_ Hydrogeo Report and Attachment-7-1-3-3-Rec Env Report_Hydrogeo Report_2 to this IE licence review

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- Attachment-7-1-3-3-Receiving Environment Report – ESB West Offaly Power Hydrogeological Assessment IEL P0611-02 (ESB, 2015) (referred to as Attachment-7-1-3-3-Rec Env Report_ Hydrogeo Report); and
- Attachment-7-1-3-3-Receiving Environment Report ESB West Offaly Power Further Environmental Assessment IEL P0611-02 (ESB, 2015) (referred to as Attachment-7-1-3-3-Rec Env Report_ Hydrogeo Report_2);.

For further details of site conditions in relation to soil and groundwater, see Attachment-4-8-3-Complete Baseline Report. A brief summary is provided below.

WOP Station has been in operation since 2005 with the combustion by-products (bottom ash and fly ash) being landfilled at the ADF. The WOP Station site is located adjacent to the former Shannonbridge Power Station and prior to that the area was agricultural land. An electricity generating station has been located at Shannonbridge since 1965.

Chemical storage, which is primarily limited to hydrocarbons, acids and bases, is within bunded tanks and drum stores around the station area. Drainage from the station areas is through a series of drainage lines which pass through interceptor and for some discharges a settlement pond before discharging to the River Shannon at a monitored surface water discharge points.

The 2002 EIA concluded that the generating station and the ADF would present no significant risk or impact to the quality of the groundwater beneath the site, see Attachment-4-8-3-Complete Baseline Report for further details.

There are two groundwater monitoring points at the station site (GW1 and GW2) and four at the ADF(GW3, GW4, GW5 and GW6). Samples are taken and analysed for a suite of parameters as required in Schedule C.4 of the IE licence. Full details are provided in Attachment-4-8-3-Complete Baseline Report.

However, the ground investigation undertaken in 2017 did show some exceedance with Environmental Quality Standard (EQS) values[2] in samples taken from the station and the ADF, see Attachment-4-8-3-Complete Baseline Report for further details.

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[2] As set out in S.I. No. 9/2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010 as amended.

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3 Air

Both the WOP Station and the ADF site are located in Air Quality Zone D - Rural Ireland. The latest national EPA report on air quality (Air Quality in Ireland 2016, published in 2017) provides an assessment of air quality in Ireland and in particular, Nitrogen dioxide (NO2), sulphur dioxide, particulate matter (both PM_{10} and $PM_{2.5}$), volatile organic compounds (VOCs), polyaromatic hydrocarbons (PAHs), heavy metals, carbon monoxide and ozone.

More details are contained within Attachment-6-3-6-EIS-EIAR-Planning-Nov-2018, Volume 2: Main Report as follows:

- Chapter 10, Climate and Air Quality.

An air dispersion model was prepared for the WOP Station in 2018 and is detailed in the EIAR above and is provided within Attachment-6-3-6-EIS-EIAR-Planning-Nov-2018, Volume 3: EIAR Appendices as follows:

- Appendix 10.1, WOP Air Dispersion Model

This modelling was carried out to predict the potential impact of emissions from the station on air quality. The air dispersion model considered the worst case maximum allowable limit values for relevant parameters as set out in the EU Commission's implementing decision establishing best available techniques and emission limit values of July 2017.

The modelling results for the plant operation demonstrate that ambient pollutant concentrations (including background) are well below the applicable air quality limit values at all off-site receptors.

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The annual emissions of the licenced pollutants are reported in the WOP Stations Annual Environmental Report (AER), see Table 1 for a summary of the boiler stack emission (i.e. the main air emission point from the plant) in tonnes per annum. The station has adhered to the emission limits to air over the past three years with some minor exceptions. A small number of minor incidents relating to air have been reported during this period. These include breaches of Emission Limit Values (ELVs) and monitoring equipment functioning. These incidents have all been resolved and the likelihood of reoccurrence is considered to be low. Continuous monitoring of the stack emission is in place and allows early detection of any equipment failure which can give rise to fugitive emissions. Although minor breaches in the ELVs have occurred these have not significantly impacted air quality in the vicinity of the plant.

Table 1 Annual Emissions to Air for 2015, 2016 and 2017 as detailed in the AER for the station

Emission Point Ref No.	Location	Parameter	Annual emission kg (2017)	Annual emission kg (2016)	Annual emission kg (2015)
PS-A1	Boiler Stack	Oxides of sulphur	222,460	191,839	216,597
		Nitrogen oxides (as NO2)	653,590	712,825	700,557

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Emission Point Ref No.	Location	Parameter	Annual emission kg (2017)	Annual emission kg (2016)	Annual emission kg (2015)
		PM	4,130	3,788	5,005
		Carbon Dioxide	1,130,974, 590	1,279,368,000	1,105,804,212

The WOP Station also operates in accordance with its Greenhouse Gas Emission (GHG) permit No. IE-GHG-077-10385-4. The total amount of reportable emissions of CO_2 in 2017 was 1,130,975 tonnes.

Dust deposition rates are monitored at the station site in line with the IE licence requirements. Breaches of dust deposition limits have been recorded over the period 2015 to 2017 and this was attributed to a poorly located monitoring point. This monitoring point has subsequent been relocated with agreement from the EPA.

4 Noise

Details of the site conditions in relation to Noise are contained within the ESB West Offaly Power Station Environmental Noise Monitoring for Industrial Emissions License Compliance (2017), see Attachment-7-1-3-3-Receiving Environment Report – Noise Monitoring[3]. No noise limits are specified within the IE Licence P0611-02 for WOP however, the noise limits as set out in the Environmental Noise Survey Guidance Document (2003) Assessments in Relation to Scheduled Activities (NG4, January 2016) are adhered to and have not been breached at the nearest noise sensitive locations by the noise emanating from the facility. It is therefore concluded that WOP is demonstrating compliance with noise requirements. Noise levels are not monitored at the ADF given the nature of the activities and remote nature of the site.

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5 Surface Water

The water regions that are in the vicinity of the WOP Station site and ADF site are detailed in Table 2.

Table 2 Water regions that are in the vicinity of the WOP Station site and ADF

[3] Attachment-7-1-3-3-Rec Env Report_Noise Monitoring

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Water Region	WOP Station	ADF
Hydrometric Area	25	
Catchment	Lower Shannon 25B	
Sub Catchment	Shannon(Lower)_SC_030 (25B_2)	
River Sub Basin	Shannon (Lower)_010	Blackwater (Shannonbridge)_020
WFD Waterbody	Shannon (Lower)_010 Suck_160 Shannon (Upper)_130	Blackwater (Shannonbridge)_020 (known also as the Gowlan River)

Both the Suck and the Shannon Upper waterbodies are located upstream of WOP Station site and its surface water discharges. Water from the station site is discharged directly to the River Shannon and discharges form the ADF are to the Blackwater (Shannonbridge)_020. The WFD status of the Shannon (Shannon (Lower)_010) is unassigned and the Blackwater (Shannonbridge)_020 (known also as the Gowlan River) is good.

The WOP Station operates in accordance with the IE Licence P0611-02 issued by the EPA. Condition 4.3, Condition 5 and Schedule B5 of the licence sets and controls emission limits for emissions to waters. Condition 5.5 states that:

> *"Discharges from the installation shall not artificially increase the ambient temperature of the receiving water by more than 1,5^{0}C outside the mixing zone. In relation to temperature, the mixing zone shall not exceed 25% of the cross sectional area of the river at any point".*

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In addition schedule B.2 set out the thermal load emission limit value as 186 MWth.

Under the IE licence cooling water is abstracted from the River Shannon and is used to condense the steam generated to spin the turbines and generate electricity. Water is returned to the river via discharge culverts. The intake and outfall locations outfall is located approximately 200 m downstream of the intake and approximately 2 km downstream of Shannonbridge.

There have been a number of non-compliances related to Condition 5.5 over the period 2013-2018. As part of this licence review an amendment to Condition 5.5 of the current IE licence (P0611-02) in relation to the existing cooling water discharges is being sought . Full details are contained in the following attachments :

- Attachment-1-1-Reason for Licence Review
- Attachment -6-3-6 EIS-EIAR-Planning-Nov-2018
- Attachment-6-3-6-NIS-Planning-Nov-2018
- Attachment-7-1-3-3-Thermal Plume Abatement Alternatives
- Attachment-7-1-3-3 Supplementary Note _ IE Review

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Other non-compliances in relation to the surface water ELVs have been recorded for example in 2015 in relation to suspended solid levels. These incidents have been investigated and rectified as required, see Attachment-7-1-3-1-Emissions Compliance Report_AER 2014-2018.

The ADF is located within an area of cutaway Bord na Móna commercial peatland located at Derrylahan. There is one surface water discharge point under the IE licence from the ADF. This discharge point is located on the Gowlan River and is the main discharge point for surface water and leachate from the ADF. The recirculation of leachate for dust suppression ensures that not all of the leachate generated is discharged from site. However, leachate is discharged from the ADF under the existing IE licence issued by the EPA and is monitored in accordance with IE Licence No. P0611-02.

Sampling of both the River Shannon and the Gowlan River is carried out up and downstream of the discharged in accordance with existing IE Licence.

6 Environmental Designations Adjacent to the Site

The station site is adjacent to the following designated sites; the River Shannon Callows Special Area of Conservation (SAC -Site Code 002160) and the Middle Shannon Callows Special Protection Area (SPA – Site Code 004096), see Location Plan.

The ADF site is over 3.5 km from the River Shannon Callows SAC/SPA, is over 2.5 km from the Mongan Bog SPA/SAC and 1 km from the Fin Lough SAC.

More details of the Biodiversity in relation to the station and ADF sites is contained within the following attachments:

- Attachment -6-3-6 EIS-EIAR-Planning-Nov-2018
    - Chapter 6 Biodiversity
- Attachment-6-3-6-NIS-Planning-Nov-2018

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