This Report has been cleared for submission to the Board by Senior Inspector, Mr Sean O'Donoghue

Signed: Dorota Richards *Date: 9th August 2017*

OFFICE OF ENVIRONMENTAL SUSTAINABILITY

INSPECTOR'S REPORT ON AN INDUSTRIAL EMISSIONS LICENCE REVIEW APPLICATION, LICENCE REGISTER NUMBER P0605-04

TO: DIRECTORS

FROM: Ann Marie Donlon and Caitríona Collins **DATE: 9TH AUGUST 2017**

Applicant:	Electricity Supply Board
CRO number:	Not applicable
Location/address:	Rural site located at Moneypoint Generating Station, Killimer, Kilrush, County Clare
Application date:	18 October 2016
Classes of activity (under EPA Act 1992 as amended):	2.1 Combustion of fuels in installations with a total rated thermal input of 50 MW or more 11.5 Landfills, within the meaning of section 5 (amended by Regulation 11(1) of the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations 2008 (SJ. No. 524 of 2008)) of the Act of 1996, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste
Categories of activity under IED (2010/75/EU):	1.1 Combustion of fuels in installations with a total rated thermal input of 50 MW or more 5.4 Landfills receiving more than 10 tonnes per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste
European Directives/Regulations (and international legal instruments) relevant to this assessment are listed in the appendix 2 of this report.	
Main BREF document:	Reference Document on Best Available Techniques for Large Combustion Plants July 2006 (currently under review) (main BREF)
Other relevant BREF documents/national BAT notes are listed in this report.	
Activity description: ESB Moneypoint is a coal fired power plant with associated landfills, coal yard and proposed wind turbines.	
Types of waste accepted: No waste from external sources accepted.	
Additional information received:	10 Jan 17, 02 Mar 17, 18 Apr 17, 20 Jun 17, 10 Jul 17
No of submissions received:	One (Health Service Executive)
EIS submitted: Yes (18 October 2016)	NIS submitted: Yes (18 October 2016)
Site visit: 3 February 2017	Site notice check: 30 October 2016

1. Activity description / background

Moneypoint power generating station has three generating units of 305MW_{el} each (or 770 MW rated thermal input each) and is the largest power plant in the country. All units are capable of full load on coal and/or heavy fuel oil (HFO) firing. Coal is the primary fuel with 2 million tonnes consumed per annum. The resulting ash and flue gas desulphurisation (FGD) by-product is disposed of at the on-site landfill and ash disposal facility.

The first of the combustion units came into operation in 1985. This is a strategic electricity generating plant of national importance due to its size. Demand for electricity has grown over the last two decades and the provision of five wind turbines on the site will contribute to meeting future demand.

This plant is located in a rural area, adjacent to the Shannon estuary in south west County Clare. The site area is approximately 180 ha comprising the main station, ash disposal facility (approximately 25 ha), a coal yard with storage capacity for 600,000 tonnes, FGD landfill areas (41 ha), a jetty and yard areas. Approximately 24 ha were created by reclamation from the estuary when the site was first developed.

Significant reductions in emissions to air have been achieved with the completion of the Environmental Retrofit Project (circa 2009). This project involved the installation of the FGD equipment including fabric filters, selective catalytic reduction (SCR) equipment and the construction of the engineered FGD landfill areas.

This installation is an upper tier establishment under the Chemical Act (Control of major accident hazards involving dangerous substances) Regulations 2015 due to the storage of 50,000 tonnes of HFO.

1.1 Reason for Licence Review

This application principally relates to a proposed increase in the capacity of the ash disposal facility (increase in capacity at ash disposal facility from 3,000,000 m^3 to 4,837,250 m^3) and proposal to operate five wind turbines and associated ancillary facilities on-site.

It was noted during the site visit that the five turbines were in place but not operational, one of which is located on the ash disposal facility. The turbines have a maximum base to blade tip of 152m. The wind farm will be operated by ESB Wind O&M and the licensee states: '*in terms of integration with the generating station, it will come under the IE licence to ensure that the wind farm on its own and in-combination with the generating station will be in compliance with its environmental conditions'*.

1.2 Landfills

Ash is produced at Moneypoint as a result of coal combustion for power generation. Approximately 15% of the ash produced is furnace bottom ash, with the other 85% accounted for by pulverised fuel ash (fly ash). In addition, flue gas desulphurisation (FGD) residues are produced as a result of treatment of flue gas from coal combustion. There are two operating landfills at the installation; the ash disposal facility and the FGD landfill. A vertical extension of the ash disposal facility is proposed, which is one element of the licence review application; a second FGD landfill is also planned, which is already authorised under the current licence.

Furnace bottom ash is sent to the ash disposal facility, which is located to the north of the power plant, is unlined, and has been in operation since 1985. The facility is referred to in the licensee's Landfill Operational Plan as the Ash Storage Area and is

known in the existing licence as the Ash Disposal Facility. The facility is now nearing capacity with approximately 212,000m^3 remaining of a total 3 million m^3 capacity and it is in this context that the vertical extension is proposed.

Pulverised fuel ash is produced from the combustion of pulverised fuel, such as coal. At Moneypoint, pulverised fuel ash is either sold for construction or used in stabilisation/conditioning of flue gas desulphurisation residues. A proportion of pulverised fuel ash may also be landfilled in the ash disposal facility, where it is kept separate from flue gas desulphurisation residues for the purpose of possible future sale. Stabilised flue gas desulphurisation residues are landfilled in landfill area A, which is lined, to the east of the power plant. Landfill area A is near design capacity and landfill area B is planned at the west side of the installation and is already authorised under the existing licence. Flue gas desulphurisation residues are also proposed by the licensee as a capping layer for the Ash Disposal Facility and this is further discussed below. Figure 1 below illustrates the management of ash and flue gas desulphurisation residues at the installation and Figure 2 shows the respective locations of the landfills.

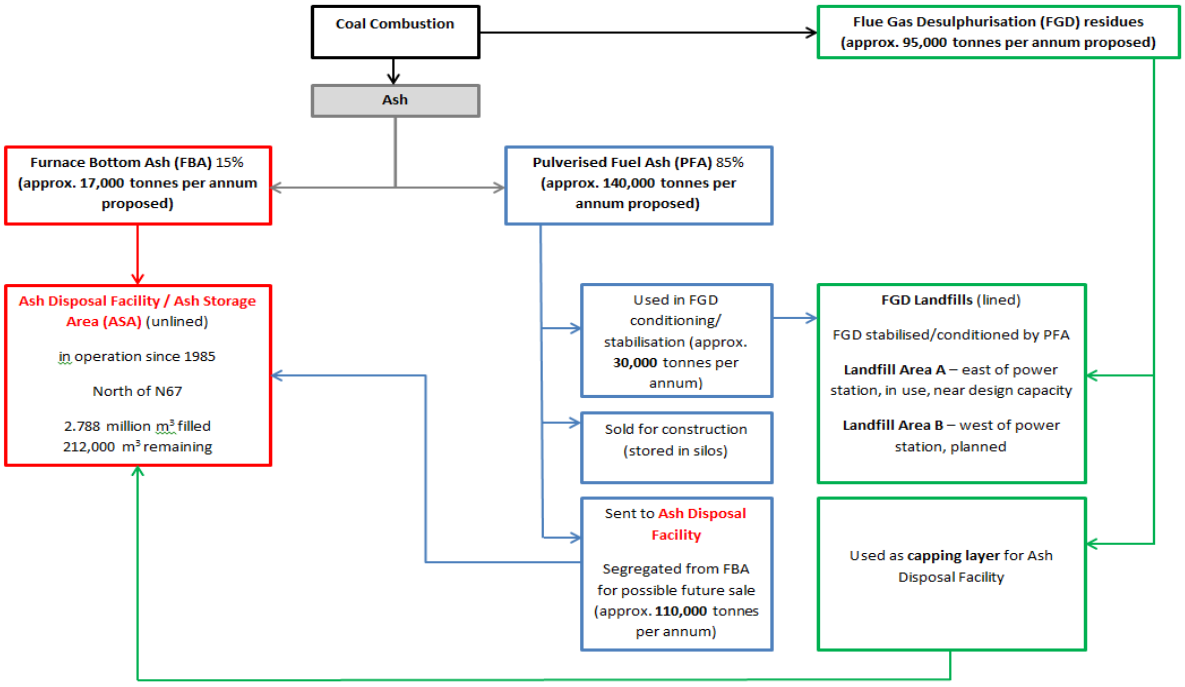


Figure 1 Landfilling activity at ESB Moneypoint

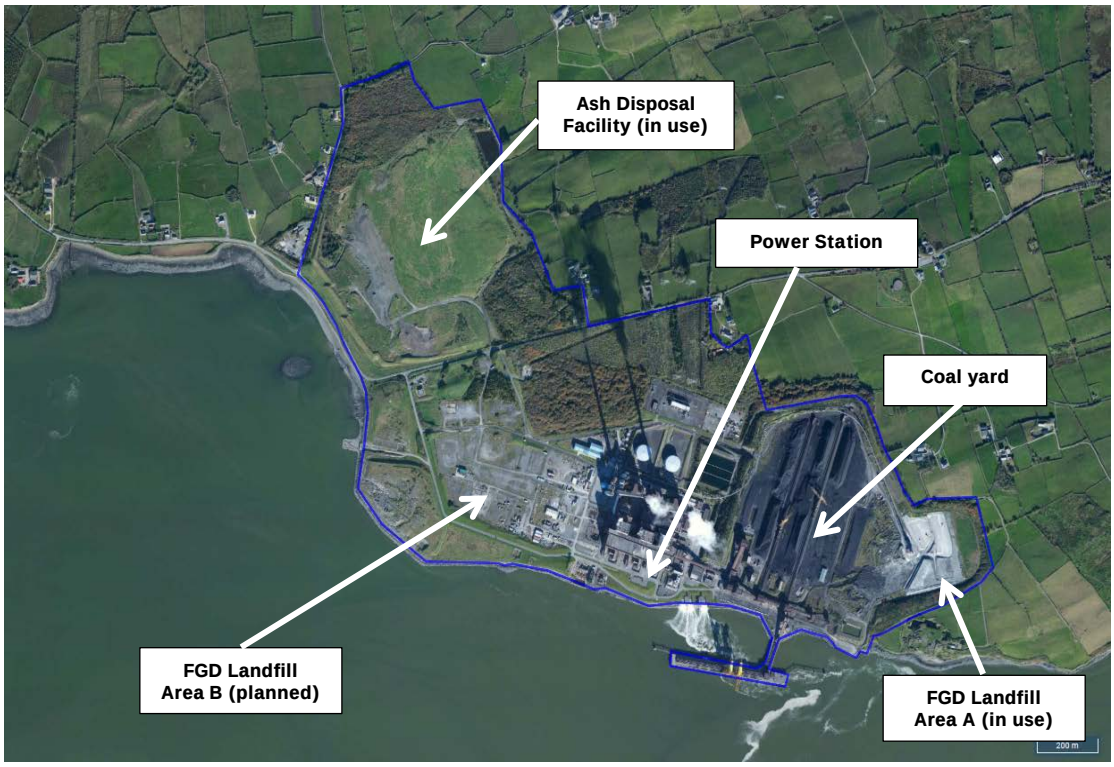


Figure 2 Location of landfills and coal yard with respect to power station

2. Licence History

Licence	Details	Date
P0605-03 TA(A)	EPA initiated Technical Amendment for the purposes of compliance with Chapter III of the IED	31 December 2015
P0605-03	IED Amendment to bring it into conformity with the Industrial Emissions Directive (IED) (2010/75/EC).	18 December 2013
P0605-03	EPA initiated review for the purposes of the Environmental Objectives Regulations and the Landfill Directive	8 March 2013
P0605-02	To allow for installation of abatement systems for NO_x, SO_2 and dust and disposal of by-product to on-site landfill (Class 11.1).	2 April 2004
P0605-01	Original licence issued - Class 2.1 - Energy	30 October 2002

3. Compliance and Complaints Record

The licensee reported in their 2015 Annual Environmental Report to the EPA's Office of Environmental Enforcement (OEE) that they received one odour complaint arising from smouldering coal and three dust complaints from ash and coal blown dust.

Between 2013 and 2017 the Agency received 2 dust complaints regarding coal dust and a noise complaint regarding steam venting at night. These complaints have been closed.

Since 2015, 69 incidents have been reported to OEE by the licensee and all are closed. A compliance investigation is currently open in relation to bunding issues.

On 5th July 2017 the licensee was prosecuted and convicted for five offences including an exceedance of ammonia ELV and failure to maintain testing and inspections records. The licensee pleaded guilty and remedial actions were taken. In considering details of the offence and mitigation the judge said that these were serious matters that the site is adjacent to an important waterway that needs to be protected.

In preparing this report the licensee compliance and complaints record together with the OEE expert input have been considered.

4. Best Available Techniques

Section 86A(3) of the EPA Act 1992 as amended, requires that the Agency shall apply Best Available Techniques (BAT) conclusions as a reference for attaching one or more conditions to a licence or a revised licence.

At the time of writing the Commission Implementing Decision (CID) establishing BAT Conclusions for Large Combustion Plant has yet to be published. On the 28th April 2017, the IED Article 75 Committee meeting took place to give an opinion on the BAT Conclusions for Large Combustion Plants. The process for publication of the CID is near conclusion but not complete.

Therefore, BAT for the installation was assessed against the conclusions on BAT contained in the BREF for Large Combustion Plant (2006) document. Other reference documents on BAT which are relevant to the activities carried out are as follows:

- BREF for Emissions from storage;
- BREF for Energy efficiency;
- BREF for Industrial Cooling systems;
- EPA BAT guidance note for the Energy (LCP) Sector 2008; and,
- EPA BAT Guidance Note for the Waste Sector: Landfill Activities.

Table 1 below sets out a summary of the techniques employed and how they are referenced in the Recommended Determination (RD).

Table 1 Relevant BAT and provisions in Recommended Determination

BAT and BAT Reference Document (BREFs)	BAT Objective	Key BAT employed at this installation	Condition / Schedule
Large Combustion Plants 07.2006	To prevent releases from loading/ unloading and storage of coal	Use of hoppers and covered conveyors, dust suppression using a water system, settlement pond, water recycling	Dust suppression required (Condition 6) Dust deposition limits (Schedule B)

BAT and BAT Reference Document (BREFs)	BAT Objective	Key BAT employed at this installation	Condition / Schedule
	Fire prevention in coal yard	automatic fire detection system on key sections of the coal handling system	**New fire safety condition (condition 9)**
	To prevent releases from lime handling	Enclosed system with silos	Condition 8 materials handling
	Reduction of Dust, Hg, SOx, Nox, CO, HF, HCl from flue gases	Low Nox burner, SCR, FGD (dry) & Fabric Filter Low sulphur fuels monitoring of Hg, SOx, NOx, CO CEMS system	Abatement techniques listed, Emission Limit Values specified, control parameters and monitoring (see Schedule B and C)
	Avoid water contamination	Neutralisation, dry cleaning, sedimentation and water re-use and a new settling pond	Techniques listed, Emission limit Values, control parameters and monitoring (Schedule B and C)
	To prevent releases from loading/unloading and storage of HFO	Bunds, high level fill alarms, above ground pipelines and inspection	See Prevention of Accidents section below for details which includes **new leak detection system condition**
Industrial Cooling systems 12.2001	Heat management, energy efficiency	Once through cooling system & appropriate siting of intake and discharge	Condition 3.1
	Reduce entrainment	Band screen filter and cleaning	Condition 3.1 and ELVs
	Reduce emissions to water	Monitoring of residual chlorine, band screen washer, FO or FRO ≤ 0.5 mg/l at the outlet for intermittent and shock chlorination of sea water.	ELV for residual chlorine , ΔT and thermal load (Schedule B) Condition on extent of mixing zone Resource use assessment **to include biocide dosing** (condition 7) Fugitive emission reduction (condition 3)
Energy Efficiency 02.2009	Energy efficiency management Energy efficiency in energy-using systems, processes,	EMS, continuous improvement programme, energy audit	EMS **with new energy efficiency management** (Condition 2), energy efficiency audit

BAT and BAT Reference Document (BREFs)	BAT Objective	Key BAT employed at this installation	Condition / Schedule
	activities		(Condition 7), **equipment selection considerations** (Condition 3)
Emissions from Storage 07.2006	To prevent and reduce emissions	EMS (maintenance programme), above ground tanks, regular inspections and monitoring, dust suppression, enclosed silos for flyash, unloading coal when wind speed <24m/s, road cleaning, truck wash, covered conveyors	EMS (condition 2), nuisance prohibited (condition 5) dust deposition limits (Schedule B) Dust suppression required (Condition 6)
	Prevent incidents and major accidents	MAPP and safety management system, EMS (training programme), preventative maintenance programme including an inspection programme, cathodic protection, high level alarms, operational procedures, audible alarms, bunding, ELRA, designated areas, ATEX standard, asset management strategy	See Prevention of Accidents section below for details which includes **new leak detection system condition**
Landfill Activities 12.2011	Proper design of the facility	Landfill Operational Plan Quality Assurance Plan for all Specified Engineering Works Stability assessment	Condition 3.15 Condition 3.15 Condition 6.21
	Effective management of the facility	Environmental Management System Landfill Operational Plan Operational controls at landfills	Condition 2.2 (EMS) Condition 3.15 Condition 6.20
	The selection of appropriate processes, technologies and facility operations	Landfill Operational Plan Specified operational controls	Condition 3.15.1 Condition 6.20

All BATs set out in the existing licence are carried forward into the RD. The following is a summary of the additional techniques that have been incorporated into the RD as a result of this assessment:

1. Dust suppression requirements extended to include the coal yard.
2. Fire safety system required.
3. Resource Use efficiency assessment to consider in particular biocide dosing.
4. EMS to include an energy efficiency management system and energy efficiency considerations to be part of infrastructure selection.
5. Controls for leachate emissions to surface water from the ash disposal facility.

6. Leak detection system required.

Pending the implementation before 2021 of the Large Combustion Plant BAT Conclusion CID, the BAT associated emission levels set out in the EPA BAT guidance note for the Energy (LCP) Sector 2008 is the reference for setting emission limit values (ELVs).

We consider that the applicable BAT Conclusion requirements are addressed through: (i) the technologies and techniques as described in the application; (ii) the standard conditions specified in the RD; and (iii) the inclusion of additional specific conditions (see above).

5. Planning Permission, EIS and EIA Requirements

5.1 EIA Screening

In accordance with Section 83(2A) of the EPA Act 1992 as amended, the Agency must ensure that before a licence or revised licence is granted, that the application is made subject to an environmental impact assessment (EIA), where the activity meets the criteria outlined in Section 83(2A)(b) and 83(2A)(c). In accordance with the EIA Screening Determination, the Agency has determined that the activities are likely to have a significant effect on the environment, and accordingly is carrying out an assessment for the purposes of EIA.

5.2 Planning Status

A number of planning applications have been made by the licensee for the area within the installation boundary since 1979. Details of these planning applications and permissions have been provided in the application form.

Environmental Impact Statements (EISs) were submitted to Clare County Council and An Bord Pleanála in support of two recent planning applications. The EISs associated with the planning permissions P14/373 (ash storage area extension) and P12/74 (5 wind turbines) have accompanied this review application.

It is considered that the EISs submitted together with the licence application, are sufficient to carry out EIA for the activity as respects the matters that come within the functions of the Agency and that the EISs relating to previous planning permissions are not required for the Agency's assessment.

5.3 Other relevant consents

An application for foreshore consent for the construction of two wind turbines and associated works on the foreshore was made to the Department of Environment, Community and Local Government in May 2015 and determined in November 2015 (reference number FS006318). The Department screened out the need to carry out EIA.

The licensee currently holds a greenhouse gas permit.

5.4 Content of EIS and licence application

We have considered and examined the content of the licence application, the EISs and other relevant material submitted with it.

Further information was sought from the applicant on the following issues:

1. waste activities carried out at the installation,
2. impact of emissions including noise,
3. baseline report assessment,
4. use of Best Available Techniques,
5. measures to prevent accidents.

On receipt of further information from the applicant, all of the documentation received was examined and we consider that the EISs comply with the requirements of the *EPA (Industrial Emissions)(Licensing) Regulations 2013*, when considered in conjunction with the additional material submitted with the application when supplemented by our assessment as contained in this report.

5.5 Environmental Impact Assessment Directive (2011/92/EC)

Having specific regard to EIA, this Inspector's report as a whole is intended to identify, describe and assess for the Agency the likely significant direct and indirect effects of the activities on the environment, as respects the matters that come within the functions of the Agency, for each of the following environmental factors: **human beings, flora, fauna, soil, water, air, climate, the landscape, material assets and cultural heritage**.

In preparing this Inspector's report we have considered and examined:

- the existing licence, Register Number: P0605-03, and the supporting inspector reports for previous licence versions;
- compliance record;
- the review application, Register Number: P0605-04 and the supporting documentation received from the applicant;
- the EISs;
- the submission received;
- the documents associated with the following assessments:
    - Clare County Council planner's report and the decision dated 14 August 2014 pertaining to planning file reference number 14/373;
    - An Bord Pleanála inspectors report, the direction and the decision dated 12 December 2013 pertaining to planning appeal ref ABP PL03.241624;
    - An Bord Pleanála inspectors report and the decision relating to the Environmental Retrofit Project dated 17 February 2004 pertaining to planning appeal ref PL03.204329;
    - Minister for the Environment, Community and Local Government determination documents relating to the foreshore consent for the installation of two wind turbines and associated works reference number FS006318;

in relation to the issues that interact with the matters that were considered by those authorities and which relate to the activity.

This Inspector's report addresses the interaction between the factors and the cumulative effects, with other developments in the vicinity of the activity have also been considered, as regards the combined effects of emissions, where relevant. The main mitigation measures proposed to address the range of predicted significant effects arising from the activity have been outlined. This Inspector's report proposes conclusions to the Agency in relation to such effects.

While the environmental factors have been considered throughout the entire assessment, the following table identifies, for ease of reference, the sections of this report where each environmental factor has been specifically discussed.

Table 2 Table of Environmental Factors and Effects

Environmental Factor	**Likely significant effects from the following activities: combustion plant, storage of coal, landfilling and associated wind turbine operation**	**Addressed in the following Sections:**
Human Beings	Noise, dust, flue gas emissions, fires, stability	Emissions and accident prevention measures
Flora and Fauna	Emissions, disturbance by noise, spills,	Emissions and accident prevention measures
Soil	Acidification by long range pollutants, emissions to ground, accident prevention, capping	Emissions and accident prevention measures
Water	Emissions to water and ground, eutrophication by long range pollutants, spills and leaks	Emissions and accident prevention measures
Air	Emissions to air, unplanned releases, noise, dust	Emissions and accident prevention measures
Climate	Greenhouse gases	Emissions
Landscape	Visible air emission, noise, restoration measures	Emissions and Cessation of activity
Material Assets	Energy use, cooling water, waste production	Use of Resources and Waste Generation
Cultural Heritage	-	Effects on Landscape and Cultural Heritage
Interaction of the foregoing	Emissions and accidents	Emissions, Accident prevention measures and Interaction between factors

5.6 Consultation with Competent Authorities

Consultation was carried out between Clare County Council and An Bord Pleanála and the Agency under the relevant section of the EPA Act.

In response, Clare County Council did not provide any observations to the Agency on the licence application and EIS.

In response, An Bord Pleanála observed that "in granting permissions for the wind turbine development the Board determined that noise monitoring conditions would be inappropriate as the site is subject to an IPPC licence". An Bord Pleanála observed that noise did not appear to be fully addressed and brought the Agency's attention in particular to their inspector's report, the Board's final decision and their comments with respect to noise monitoring.

6. Submissions

While the main points raised in the submission are briefly summarised in the table, the original submission should be referred to at all times for greater detail and expansion of particular points.

The issues raised in the submission are noted and addressed in this inspector's report and the submission was taken into consideration during the preparation of the Recommended Determination

Table of submissions

Sub No.	Submission details		
1	**Name & Position:**	**Organisation:**	**Date received:**
	Mr Gerry Leen, Principal Environmental Health Officer	Environmental Health Service, HSE, Unit 6, Quinn Road Business Park, Ennis Co. Clare	28/11/2016
	Issues raised:		**Agency Response:**
	Issues raised with respect to the ash deposit extension include the need for a Construction Management Plan which should include a waste management plan, a dust minimisation plan (with an ELV of 350mg/m^2/day at the site boundary), a pest control plan, minimisation of noise generation to avoid noise nuisance, a waste water management plan which prevent discharges from causing pollution and associated sampling programme and compliance with the EU Landfill Directive. Issues raised with respect to the Wind farm include that the total cumulative noise from the site is within the limits of the current licence and noise monitoring to continue together with local consultation or complaints issues to ensure that noise limits are not exceeded or become a nuisance. Shadow flicker control was also raised.		Submission points considered fully when completing relevant sections of report below.

7. Emissions to Air

This section addresses the following:

- Flue-gas emissions to air from the combustion plants
- Long range transport of pollutants
- Greenhouse gases and climate impact
- VOC from storage of HFO and diesel
- Dust from coal yard and landfill.

The emissions to air from the installation can affect the environmental factors **human beings, air, water, flora and fauna, soil, climate change, character of the landscape and material assets.**

There are no emissions to air from the generation of additional electricity by wind turbines. Shadow flicker associated with wind turbines is an effect of the physical structure and therefore not a matter that comes within the Agency licensing function. The non-hazardous landfills do not generate methane or other gases.

The licensee does not propose any changes to the current limitations on emissions to air as part of this review application.

7.1 Flue-gas Emissions to Air

Table 3 below gives details on all main flue-gas emissions to air at the installation, their location, the processes which gives rise to each emission, and whether the type of abatement is considered BAT.

Table 3 Flue-gas emissions to air at the installation

Emission Reference	Location	Existing (E)	Process Description	Techniques to reduce emissions	BAT (Y/N)
A1-1	Common stack for unit 1 & 2	E	Coal fired (pulverised combustion) and HFO fired Boilers	Low NOx burners SCR* Dry FGD* Bag house Combustion management system	y
A1-2	Common stack for unit 1 & 2				
A1-3	Behind Unit 3				

*SCR – Selected catalytic reduction, *FGD – Flue gas desulphurisation

This installation comes within the scope of Chapter III and Annex V of the IED. A technical amendment to the industrial emissions licence register P0605-03 was issued in December 2015 for the purposes of compliance with the Large Combustion Plant (LCP) Regulations 2012 (Chapter III and Annex V transposed). The licence Reg. No. P0605-03 sets mass emission ceilings in accordance with the Transitional National Plan (TNP) approved by the European Commission for the period 2016 to 2020. The TNP is an option for compliance with the LCP Regulations 2012. The overall effect of the TNP (under Article 32 of the IED) is a reduction of emissions year on year until the TNP expires in June 2020 where upon the concentration ELVs set out in Annex V apply. The techniques used on-site to reduce emissions to air are BAT and are specified in the RD. In addition to annual mass emission limits, the

current licence also specifies concentration limits, hereafter referred to as 'current concentration ELVs'.

It should be noted that the current concentration ELVs are characteristic of unabated emissions levels and do not represent concentrations achievable by the abatement equipment installed and therefore do not represent BAT. The current licence specifies that in the event of a malfunction of abatement equipment, the licensee must reduce or close down operations where a return to normal operation is not achieved within 24 hours.

The following is an assessment of the impact of flue-gas emissions on the environmental factors of air, human beings, flora and fauna and landscape.

Impact Assessment and Mitigation

The 2003 air dispersion model report and an updated April 2017 air dispersion modelling report were submitted with the application.

The most recent modelling was in accordance with published Agency guidance, and was considered sufficiently detailed and conservative to adequately assess the impact of the flue-gas emissions to air.

The model assessed three scenarios;

- current concentrations ELVs (worst case),
- future Annex V ELVs and
- average actual emissions.

It is worth noting that the average actual emissions levels (mass emissions) are lower even than mass emissions that would arise based on the future Annex V ELVs.

Both AERMOD and ADMS software was used. ADMS was used to model the effects of the wind turbines on the dispersion of emissions. The models used five years meteorological data from Shannon airport (2011-2015), terrain data and on-site building data. In AERMOD NOx was modelled using the plume volume molar ratio method. In ADMS a ratio of 0.5 was applied to the 1 hour maximum results for NO_2 and nothing to the annual average results. The SSE Generation Ireland limited power generating station (licence register P0607-01) is approximately 4km south east of the site across the estuary in Co. Kerry. The SSE installation has not reported releases to air under Pollutant Release and Transfer Register (PRTR) since 2011 and is therefore no longer a major point source requiring consideration under cumulative impact assessment. The foregoing is in line with Agency guidance.

The effect of the wind turbines on the dispersion of emissions was considered and found not to be significant.

Table 4 below gives details of the predicted impact of the main pollutants (the highest ground level concentrations reported in any particular year using either model with or without turbine effect) under the worst case scenario of the current concentration ELVs. This worst case scenario (unabated emissions on a 24 hour, 365 days per year basis) is hypothetical. The licence register number P0605-03 sets mass emissions limits that do not allow this level of emission other than on a short-term basis as a result of malfunction/ breakdown of equipment. The predicted impact must be considered as highly unlikely to occur but it does indicate that unabated emissions of short duration will not have a significant impact on air quality.

The other two scenarios predicted significantly lower ground level concentrations.

Table 4 Air dispersion modelling at the installation based on worst case scenario.

Parameter	Averaging Period	Background concentration (µg/m3) Zone D	Process contribution (µg/m³)	PEC Note 1 (µg/m³)	PEC as % of Air Quality Standard	Air Quality Standards/ Guidelines (µg/m³) Note 2
NO_2	99.8%ile hourly	22	76.6 Note 3	98.6	49.3	200
	Annual	11	4.7 Note 3	15.7	39	40
NO_x	Annual - ecosystem	11	11.03	22	73	30
SO_2	1 hour (99.73%ile)	5	281	286	82	350
	24 hour (99.18%ile)	5	119.3	124.3	99	125
	Annual - ecosystem	2.5	20.05	22.6	113	20
PM_{10}	Daily (90.4%ile)	12	5.3	17.3	35	50
	Annual	12	1.61	13.6	34	40
$PM_{2.5}$	Annual	7.2	1.61	8.81	35 / 88	25 (10 –WHO)
	24 hour 99%ile	7.2	8.76	15.96	64	25(WHO)

Note 1: Predicted Environmental Concentration (PEC) = process contribution + background concentration.
Note 2: Air Quality Standards Regulations, SI 58/2009 and 180/2011, unless otherwise stated.
Note 3: Process contribution with turbines using ADMS software.

Emissions to air have an indirect effect on human health and ecosystems. Compliance with air quality standards for ecosystems contributes to the achievement of the conservation objective to restore/ maintain favourable conservation status. In practice the installation operates at significantly lower emission levels than the current concentration limits. It is reasonable to remove the headroom that is inherent in the current concentration ELVs (albeit limited by annual emissions ceilings) and ensure concentration limits represent BAT.

The RD specifies:

- for normal operation until 30/06/2020 (i.e. until the TNP expires in June 2020), concentration limits based on the model input values described in the licensee 2003 air dispersion model report and which represent BAT and
- from 01/07/2020 the Annex V ELVs apply.

The same ELVs apply when firing on coal and/or heavy fuel oil. For ease of reference Table 5 summarises the changes:

Table 5 Changes to ELVs

Parameter	Current concentration ELVs mg/m³	Proposed concentration ELVs mg/m³ until 30/06/2020	% reduction	Proposed concentration ELVs mg/m³ from 01/07/2020
SO_2	2,000	400	80	200
NO_2	1,100	500	55	200
Dust	150	50	66	20

These proposed ELVs are in line with the BAT associated emission levels set out in the EPA BAT Guidance Note for the Energy (LCP) Sector (2008).

Upon implementation of the Commission Decision on BAT conclusions for large combustion plants, the ELVs for these pollutants will be considered again in the context of the BAT associated emission levels specified therein.

The RD carries forward the TNP annual ceiling limits and conditions relating to operation of the combustion plant, during start-up / shutdown and malfunction, with some minor amendments to wording for enforceability purposes. Definitions in line with the EPA *Policy on Unabated Operation at Large Combustion Plants Licensed by the EPA* 2016 are included in the glossary and reference is made to it with respect to unabated operation. Conditions referencing the NERP have not been carried forward as it was replaced by the TNP.

Where the plant is operated in accordance with the proposed concentration limits, the air quality standards will be observed. A pro rata reduction of the predicted impact set out in table 4 can be applied to derive the predicted impact under proposed concentration ELVs operation scenario. For example, the ELV for SO_2 is proposed to be reduced initially by 80% to 400 mg/m^3, and subsequently in 2020 reduced by a further 50% to 200 mg/m^3.

As coal can contain heavy metals including mercury and arsenic, the licensee also modelled their impact. The licensee reports emissions levels for these parameters annually as part of their PRTR returns. The licensee modelled the impact of the mass emission as reported in 2016 PRTR. The modelling results indicate that process contributions are a fraction of background levels and the EU air quality target value for Arsenic and WHO guideline value for mercury will be observed.

Upon adoption of the LCP BAT conclusions and subsequent review, limits will be specified in the future for mercury and other pollutants. In the interim, the RD requires monitoring for these pollutants (hydrogen fluoride, hydrogen chloride, mercury etc).

7.2 Long range transport of pollutants

Emissions of nitrogen oxides and sulphur dioxide contribute to acidification of soils and surface waters, tropospheric ozone formation and nitrogen saturation in terrestrial ecosystems (eutrophication). $PM_{2.5}$ emissions are now recognised for their transboundary nature. Power generation and motor vehicles are the principal source of nitrogen oxides. This installation accounts for approximately 7.3% of Ireland's

nitrogen oxides emissions. Nitrogen oxides, sulphur dioxide and dust emissions decreased at Moneypoint by over 70% between 2007 and 2013 with the introduction of FGD, SCR and low NOx burners.

The National Emissions Ceiling Directive 2001/81/EC aims to control these emissions. Ireland remains above the National Emissions Ceilings (NEC) target for NOx. It is noted that the key step towards the achievement of the target is a reduction in the contribution of transport combustion as reported in *Irelands Environment 2016 – An Assessment*.

The cumulative impact of the emissions from this installation and others at a national level requires a pan European approach and the EC has started the EU Clean Air Policy package including a revised NEC.

The RD contains emissions limit values which may be further reduced on implementation of the BAT Conclusions for Large Combustion Plant.

7.3 Greenhouse Gases emissions and Climate Impact

Climate change is a significant global issue which affects weather and environmental conditions (**air, water and soil**) which consequently affects human resources (**human beings and material assets**) as well as biodiversity and habitats (**flora and fauna**). Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

As a power generating station, this installation has a likely significant effect on climate due to the emissions of carbon dioxide. The landfill does not generate methane and therefore has no global warming effect. The proposed wind farm is a source of renewable power generation.

This installation is a large industrial source of GHGs and is subject to the EU Emissions Trading Scheme. This installation accounts for about 7% of the total GHG for Ireland in 2015 and 38% of the contribution from Energy Industries. The installation holds a GHG permit from the Agency. This permit controls emissions of carbon dioxide and the EU Emissions Trading Scheme (ETS) sets limits on carbon dioxide and aims to reduce overall emissions. The table below outlines the sources of GHG emissions from the activity and provides details of the GHG permit associated with the activity.

Table 6 Greenhouse gas emissions

Sources of GHG emissions from the activity	3 x boilers, 3 x diesel generators, 2 x diesel fire pump
Estimate of the total annual emission of CO2 from the activity	4.5 million tonnes per year
GHG Permit Number	IE-GHG070-10381-3
Category of activity under	Combustion of fuels in installations with a total rated thermal

the GHG Regulations[1]	input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)
Relevant conditions included in the RD	Energy efficiency auditing Assessment of resource use efficiency Environmental Management Plan objective and targets, including use of cleaner production

Trends and drivers of change

The EPA reported Ireland's provisional GHG emissions in November 2015, indicating that the Energy Sector showed an increase of 5.4% on 2014 which is primarily attributable to an increase in coal use. Renewables now account for 27% of electricity generated in 2015.

Ireland's National Policy position is to reduce CO_2 emissions by 2050 by 80% on 1990 levels and the 2015 emissions for all sectors are heading in the wrong direction. For Ireland, mitigation and adaption actions are framed and informed by UN, EU and national policy. Mitigation action for this installation is addressed under EU Emissions Trading Scheme. It has been agreed to increase the annual reduction cap from 1.74% to 2.2% from 2021.

The wind farm proposal continues the trend in the uptake of renewable energy in power generation sector. Renewable energy is a key action to address climate change and thus the proposed wind farm is a positive effect.

Climate change impacts are evident in the global temperature record, sea levels, loss of glaciers / ice sheets and changes in the nature and intensity of precipitation events and have had indirect impacts on human health, water resources, ecosystems etc. No adaption measures were proposed for the installation.

Based on the assessment above, we consider that the impact of greenhouse gas emissions from this installation are primarily controlled and addressed by its GHG permit under the EU ETS. Measures are specified in the RD to ensure that energy and resources are used efficiently within the installation. The wind farm is a positive action on climate change. This power generating station is not new and is part of the draft National Mitigation Plan (March 2017). It is stated in the draft plan, that *the most suitable low carbon generation technology will have to be identified* and that *key decisions on the future of Moneypoint will be taken before 2020*. Any requirements arising from the final plan that are within the scope of IED licensing will be incorporated into the IED licence as appropriate.

7.4 Fugitive Emissions

ESB store large volumes of HFO and diesel on-site. VOC emissions may arise from their storage as a result of standing and working losses. These petroleum derivatives are not very volatile. The licensee modelled the impact of standing and

[1] European Communities (Greenhouse Gas Emissions Trading) Regulations 2012 which gives further effect to the Emissions Trading Directive

working loss VOC emissions from the storage of petroleum derivatives (HFO, diesel) and assumed all VOCs were benzene which is a very conservative approach. The results indicate the ground level concentrations from process contributions are less than 15% of the air quality standard for benzene.

Dust generation is associated with the coal yard and the landfills. There has been a number of complaints regarding dust from both the landfill and coal yard.

Coal is stored in the open and it may give rise to dust emissions. The BAT employed by the licensee include visual inspections, weather monitoring, dust suppression systems, unloading coal when wind speeds are less than 24m/s, covered conveyors and cleaning roads.

The development and operation of the landfills will result in fugitive dust emissions from construction type activity. In addition, wind-blown dust may arise from the surface of the landfill. Ash waste for deposition at the landfill is dusty in nature. However, while the ash is being actively landfilled it is wetted to prevent dust.

Given the rural location of the installation, there are no other developments, installations or activities in the vicinity which are likely to release significant quantities of dust that could lead to likely or significant cumulative effects from dust deposition on any area beyond the installation boundary.

The RD carries forward the current limits and controls for dust, and extends their application to include the coal yard.

Based on the above assessment, we are satisfied that there will not be a significant impact on the environment from dust emissions from the activity.

Overall Conclusions in relation to effects of air emissions from the activity on the environment

We are satisfied that where the activities are operated in accordance with the conditions of the RD, there will not be significant impacts on air, soil, landscape, human beings, water, flora and fauna or any other aspect of the environment from air emissions arising from the operation of the activity.

8. Discharges to Water and Ground

This section addresses the following:

- Process emissions to surface waters, including leachate
- Storm water discharges

8.1 Emissions and discharges to Waters including Groundwater

This application for review did not propose any changes regarding emissions to water. There are 13 discharge points from this installation to the Lower Shannon Estuary (SH_060_0300). The waste water emissions from the activities on-site include cooling water, band screen wash water, leachate from the ash disposal facility, domestic effluent, waste water from steam generation processes (blowdown) and site drainage. There is no waste water arising from flue gas treatment systems.

The environmental factors potentially affected by process emissions to waters include: **Water, Human beings, Flora and fauna, and soil**.

BAT employed on-site to reduce or prevent emissions to water includes:

1. Bottom ash transfer to silos by means of water-driven ejectors, where water is decanted off and returned to settling chambers for reuse.
2. Water recycling – Internal re-use of surface water run-off, and treatment and reuse of effluent from neutralised water treatment.
3. Settlement pond tank in use to collect runoff at the ash disposal facility
4. Monitoring of residual chlorine in cooling water.

Table 7 below gives details on the installation's emissions to waters, the processes which contribute to the emissions, the type of on-site treatment and the proposed maximum daily flows (where relevant), as well as details of the receiving water. The largest emission from this plant is cooling water. The pollutants in other emissions are characterised by mineral oil and suspended solids in the main.

Table 7 Emissions to waters at the installation

Process emissions			
Emission Reference	Description	Abatement	Max. flow (m^3/day)
SW1	Leachate from ash disposal facility	Settling tank	Not limited.
SW2 / SW7	Boiler blowdown, ash tank overflow, station drainage (and compressor cooling water -SW7 only)	--	400 /1,200
SW4A	Band screen wash water	--	14,400
SW5/ SW6	Engine room drains and station drainage (including minor leaks)	Oil interceptors	225 each
SW8	Condenser cooling water	--	2,760,000
SW9	Run-off from coal yard	Settling tank	300
SW3, SW10	Domestic sewage effluent	Activated sludge systems	15/50
SW14, SW15	FGD landfill	--	Not limited
Details of the receiving water			
Receiving water name and code: Lower Shannon Estuary (SH_060_0300)			

Waterbody type: Transitional		
WFD status: Moderate due to fish status (2010-2015)	WFD risk: At risk	
WFD protected areas		**Distance from discharge**
Cappagh Pier, Kilrush (PA3_0010)		~2.5km
West Shannon Ballylongford shellfish waters (PA2_0061)		~3.5km
Lower River Shannon SAC (2165), River Shannon and River Fergus Estuaries SPA (4077)		Direct discharge
Trophic status: Unpolluted (2014)		
Pollution Reduction Programme: West Shannon Ballylongford pollution reduction programme		
General comment: There are no key pressures currently impacting shellfish water quality. The SPA conservation objectives supporting document (2012) did not list industrial activities or wind farm activities as causing disturbance to the water birds. The installation has not been identified as a significant pressure as part of the Water Framework Directive characterisation process. The water body is at Moderate ecological status due to the Fish assessment, which returned Moderate status. It is noted that localised water quality issues may affect water birds directly and indirectly.		

The OEE advise that ammonia and suspended solids exceedances have occurred in the emissions from SW2 and ammonia exceedance in the emission from SW7 which are likely to be associated with the ash tank overflow. There have been suspended solids exceedances in the emissions from the coal yard (SW9) also. The licensee has not requested any changes to the current limits. The RD increases the monitoring frequency for ammonia and suspended solids and applies a suspended solids limit of 100mg/l to SW7 (as it has a similar character to the emissions discharged at SW2).

Storm water discharges from the installation via SW4, SW5 partially, SW6 partially, and SW13. Trigger levels for storm water discharges from SW4 and SW13 established under the current licence have been included in the RD. There are oil interceptors on SW5 and SW6 and some of the drainage to SW2 consists of a naturally occurring stream.

Assessment and mitigation for process emissions (excluding leachate)

In 2011 the EPA initiated a review of the licence P0605-02 for the purposes of bringing the licence into conformity with the European Communities Environmental Objectives (Surface Waters) Regulations 2009, the European Communities Environmental Objectives (Ground water) Regulations 2010 and Council Directive 1999/31/EC on the landfill of Waste (Landfill Directive).

The limits and controls specified in the subsequent licence issued (P0605-03) on process emissions to surface waters aimed to achieve the environmental objectives and standards established in the European Communities Environmental Objectives (Surface Waters) regulations 2009. This application for a review of a licence does

not propose any changes to existing aqueous discharge limits in the licence and there has been no change to any relevant environmental quality standards and objectives since the last review of the licence. These objectives and standards are for the protection of water (as a resource), water quality and water dependant habitats and indirectly protect fauna dependant on these habitats. In short there have been no noteworthy changes at the installation or in the environment since the last review of the licence.

The mitigation measures outlined above are BAT. No additional stricter measures have been identified as necessary for the protection of receptors. Except for SW1 and as described above, the RD carries forward all the limits, controls and monitoring requirements set out in the current licence. The leachate emissions at SW1 are discussed in more detail below in the context of the extension to the ash disposal facility.

Accidental emissions to water could occur in the event of a spill from oil delivery/ storage, fire water or breach in the stability of the embankments around the ash landfills, causing potential adverse effects on water quality in the event of discharge to the receiving environment. Accident prevention measures are considered in more detail in the "Prevention of Accidents" section below. Prevention and mitigation measures will minimise the likelihood of accidental emissions to water occurring and limit the consequences for water environment.

Leachate management

The applicant has provided information on the characteristics of leachate from the ash disposal facility. They are characterised by high levels of sulphates and chlorides. These are major ions in the composition of seawater and there are no environmental quality standards associated with them. The leachate also contains metals and metalloids.

A surface water lagoon at the east end of the ash disposal facility acts to capture and regulate the flow of the Moylougha River before it passes into a culvert under the ash disposal facility. The lagoon water is partially used to provide a water source for wetting the ash to prevent dust emissions.

Storm water runoff from the ash disposal facility is collected in a toe drain around the landfill. Any storm water that infiltrates the ash in the ash disposal facility is collected as leachate in interlinked land drains beneath the landfill and mixed with the storm water runoff in a collection chamber; from there, it is discharged to the Moylougha Stream as it emerges from culverts under the ash disposal facility, before being discharged to the River Shannon Estuary at SW1.

At the FGD landfill, according as a cell is completed, it is capped with a stabilised FGD mix and with subsoil and topsoil layers. The cap incorporates a drainage layer with a higher permeability than the FGD waste, which reduces the infiltration of storm water and consequent generation of leachate arising from the landfill. The drainage layer discharges to a toe drain which in turn drains to a surface water lagoon. The water in the lagoon is used for dust suppression within the landfill and in the event of its capacity being exceeded, overflows to the River Shannon Estuary at SW15.

Rainwater falling on the landfills has the potential to infiltrate through the mass of waste deposited and discharge to groundwater beneath the landfills. This may result in the leaching of metals into the groundwater, depending on the chemical state of

the metals within the ash and FGD residues, the permeability and infiltration rate of rainwater through the landfills and the pozzolonic properties of the ash and FGD residues.

Following testing, the permeability of the coal ash has been determined by the licensee to be low, at 1.3 x 10^{-7} m/s. Boron, molybdenum, cadmium, selenium and vanadium show the highest leachability. Schedule C.3 of the current licence requires quarterly monitoring of the metal composition of the coal ash and this requirement has been carried forward to the RD. Groundwater is not used at the installation or downgradient of the site and the estuary is not used for potable water supply. Therefore, the only sensitive receptor of groundwater is the River Shannon Estuary.

Assessment and mitigation

The proposed extension of the ash disposal facility is vertical, rather than lateral. Therefore, the surface area will remain the same, with no consequent increase in the volume of storm water runoff. The existing drainage regime will remain in place. When the landfill is completed it is proposed to be capped with an impermeable barrier layer, under a stone drainage layer, subsoil and finally topsoil, which will, through decreased infiltration, likely increase the surface water runoff.

The impermeable barrier layer consists of compacted stabilised FGD material. Each cell will be capped as it becomes filled and the FGD capping layer will be compacted to achieve a maximum permeability of 1 x 10^{-9}m/s. The overlying drainage layer will have a minimum hydraulic conductivity of 1 x 10^{-4}m/s and will discharge to the toe drains. An additional surface water lagoon will be constructed to the south west end of the ash disposal facility, which will facilitate the recycling of the collected runoff back to the main power station for reuse. Excess runoff collected will be discharged to the estuary at SW1.

Approval of the proposed capping system using stabilised FGD material was sought by the licensee from the Agency in 2015. Upon assessment of the proposal, it was highlighted that groundwater beneath the FGD landfill indicates elevated levels of total dissolved solids and major ions, arising from the FGD residues deposited in bulk. However, the use of FGD residues as a capping material at the ash disposal facility, being blended with pulverised fuel ash and cement, would have a permeability at least two orders of magnitude lower than the bulk FGD residue landfilled at the FGD landfill. Therefore, while an adverse impact on groundwater may not be a risk at the ash disposal facility due to the limited infiltration of rainfall through the capping layer, surface water is likely the primary potential receptor at risk of increases in total dissolved solids. The proposal was approved by the Office of Environmental Enforcement in July 2016, subject to specified mitigation measures to address drainage and more frequent monitoring of surface water discharges and groundwater monitoring. These requirements have been reflected in the RD.

Coal combustion ash such as furnace bottom ash and pulverised fuel ash may have elevated levels of metals, depending on the metal content of the coal combusted. Leachate tests on the ash generated at the installation indicate that boron, cadmium, chromium, selenium and molybdenum may be generated at a sufficient concentration to have a potential adverse environmental impact. Rainwater falling on the ash disposal facility will infiltrate the ash deposited to some extent. The low permeability of the blended FGD residue capping layer will contribute to a lower rate of infiltration.

There are currently no emission limit values placed on the discharge from the ash disposal facility at SW1. However, monitoring of a range of parameters at SW1 is

required and these monitoring results have been used by the licensee to describe the nature and characteristic of the discharge. Monitoring results indicate that concentrations of metals (boron, cadmium, chromium, selenium and molybdenum) in the culverted stream are likely to result from rainwater leaching the metals from the ash into the culverted stream and subsequently into the Lower Shannon Estuary. The licensee presented analytical results for surface water samples collected from the Lower Shannon Estuary, both upstream and downstream of the discharge at SW1. The results indicate that the concentrations of metals were all below the relevant assessment criteria, which in turn indicates that the dilution capacity of the water body is negating any impacts from the discharge. However, given that the discharge at SW1 is a process emission, it is considered appropriate that the RD provides for some control on the discharge. Accordingly, emission limits for pH and suspended solids are specified in line with the EPA BAT Guidance Note for the Landfill Sector for discharges at SW1. This approach has also been proposed in the RD for SW14 and SW15 discharges from the FGD Landfills, albeit that there is currently no discharge taking place at these points.

Further, the RD proposes that trigger levels are to be established for cadmium and chromium in these discharges. The RD also requires a review of the trigger levels every two years and calculation of revised trigger levels where appropriate. Cadmium and chromium are recognised as high risk substances, depending on their concentrations in the discharge. The maximum flow rate of the discharge from the culvert at SW1 is presented in the licence review application form as 400 m^3/day (0.0046 m^3/s). Therefore it is likely that any elevated concentrations of cadmium or chromium in the discharge would be reduced to background levels very rapidly, with no consequent impact on water quality or flora and fauna.

Ballymacrinan Bay to the west of the site is noted for the *Perennial vegetation of stony banks* and *Estuaries* habitats and the marine community type; *Subtidal sand to mixed sediment with Nephtys spp community complex.* The conservation objective is to maintain the favourable conservation condition of these habitats. The impact assessment indicates that the discharges from the landfills are not likely to have a significant impact on the water quality in the estuary. However, the emissions contain specific pollutants and priority substances and it is important to consider the on-going condition of the habitats. The RD requires an annual survey of the Ballymacrinan habitats and communities and for results to be reported to the NPWS.

Groundwater analytical data indicates that only aluminium, boron and iron appear to be present in groundwater to a significant extent. Concentrations of selenium and molybdenum were also observed in a number of the monitoring wells. The licensee has recorded a number of incidents where groundwater monitoring has indicated exceedances of groundwater trigger levels for certain parameters in a number of boreholes, most recently in relation to ammonia at Boreholes 1 and 21 (April 2017). Groundwater trigger levels that were established under the current licence have been specified in C.6 of the RD.

The aquifer beneath the site is classified as locally important and the groundwater vulnerability is predominantly extreme or high beneath the landfills.

The licensee carried out a hydrogeological assessment in accordance with condition 6 of the current licence. As part of the assessment, the licensee presented a conceptual site model and identified elevated levels of aluminium, arsenic, barium and boron in the groundwater beneath the landfills, to varying degrees. Total ammonia was also observed at elevated levels in a number of boreholes; in particular, in Borehole 1 which is located between the ash disposal facility and

agricultural land to the north west of the installation, and Borehole 4 which is located adjacent to the ash disposal facility. The elevated levels of total ammonia may be attributed to the proximity to these potential sources. Seawater typically has a high concentration of boron; therefore, it is not anticipated that boron would have a significant impact on water quality or flora and fauna.

The assessment presented also stated that the concentrations of aluminium are no higher than in the receiving water and, in the case of barium, decline to background concentrations before discharging into the estuary. In the case of both arsenic and barium, the exceedances were isolated and therefore not considered to pose a significant risk to groundwater.

The existing licence includes a number of provisions for the control of landfill activities at the installation, and in compliance with the Landfill Directive:

- On-going maintenance of Landfill Operational Plans;
- Standard requirements for Specified Engineering Works relating to landfill development
- On-going requirement for landfill liners to comply with the Landfill Directive;
- Standard requirements for landfill capping;
- The landfill operational plan provided for in condition 3.15 includes a requirement for surface water and groundwater management and protection. Monitoring of the discharge at SW1 and groundwater monitoring is provided for in Schedule C.

The RD includes a number of additional provisions as follows:

- The frequency of monitoring set out in Schedule C.2.2 in relation to the discharge from the landfill surface water lagoons and Schedule C.6 in relation to groundwater monitoring have been increased in accordance with the approval granted in July 2016 by the Agency for the use of FGD in the capping plan submitted to the Agency in September 2015.
- Additional measures for drainage and final capping have been provided for in condition 10.6.
- Groundwater trigger levels are specified and the licensee is required to assess groundwater monitoring data and demonstrate compliance with the European Communities Environmental Objectives (Groundwater) Regulations 2010 as amended.

Accidental emissions to water could occur if an uncontrolled release of ash occurred, causing potential adverse effect on the quality of surface water and groundwater in the vicinity of the installation. Accident prevention measures are considered in more detail in the “Prevention of Accidents” section below. Prevention and mitigation measures will minimise the likelihood of accidental emissions to water occurring and limit the consequences for water environment.

It is therefore considered that direct impacts as a result of process water emissions from SW1 are considered to be neither likely nor significant. The installation is located in a rural area and there are no other installations in its vicinity. Therefore it is considered that there will be no significant cumulative impact from process water emissions from SW1 and other water emissions from other activities/developments in this part of the Lower Shannon Estuary. It is also considered that no secondary or indirect effects are likely as a result of these water emissions from the activity.

We are satisfied that based on the above assessment, the nature of the activity, the mitigation measures in place, and the conditions in the Recommended Determination that the likelihood of a significant effect on the environment occurring as a result of water emissions from SW1 is negligible.

Based on the assessment above, we consider that the process emissions to the lower Shannon Estuary are not likely to have a significant impact on water, human beings, flora and fauna where the activity is operated in accordance with the conditions of the recommended determination.

Overall Conclusions in relation to effects of emissions to water and ground on the environment

We are satisfied that there will not be significant impacts on human beings, flora and fauna, water quality, soil quality or any other aspect of the environment from emissions to water and ground arising from the operation of the activity.

9. Noise

The main noise sources at the installation include coal combustion, coal handling, emission control equipment, waste handling and development and on-going operation of the landfill. The nature of the noise at the landfill will be similar to construction noise. The proposed wind turbines are also a source of noise. Noise emissions from the installation are not uniform and events such as steam discharging during start-up / shut down can be a significant short term source.

The noise emissions from the installation are reduced through a combination of techniques including enclosures, silencing equipment, siting of plant, timing of noisy operations and wind turbine siting and design. All wind turbines are located at a distance greater than 500m from the nearest residence.

The installation is located in a rural environment with noise mainly due to traffic on the N67 adjacent to the installation. The site itself is a large scale industrial installation. There are no other developments, installation or activities in the vicinity that are likely to generate noise to an extent that could lead to likely or significant cumulative effects beyond the site boundary.

The environmental factors potentially affected by noise emissions from the activity include: **human beings** and **fauna**.

Noise arising from the site could have the potential to cause nuisance for those living in the vicinity of the activity. There are three noise sensitive receptors located to the north of the installation, one of which is adjacent to the installation boundary to the east of the ash disposal facility. The Agency received a noise complaint in March 2017 and another complaint was reported by the licensee in June 2017.

The wind turbines are located within the boundary of the existing installation. Noise emissions from the entire installation including the wind turbines may cause disturbance to species within the SPA and dolphins within the SAC. A survey was carried out in 2012 of background noise levels in the estuary with a follow up survey during turbine construction in 2016, and concluded that noise levels were well under levels that would interfere with the dolphins.

As part of the current licence, a noise monitoring survey is carried out annually. The applicant reports that all operations are within the current licence limits. Noise propagation modelling has been used to predict worst-case impacts of noise emissions from the proposed wind turbines and other on-site sources at nearby

sensitive locations. The licensee states that speed control measures are available to ensure compliance with the noise limits set out in the *Wind Turbine Operations at EPA licensed sites* (NG3). Therefore no net increase in noise from the installation is predicted and the impact on local residences and species is not considered significant.

The noise limits specified in the RD have been updated in line with the EPA document *Guidance Note for Noise: Licence Applications, Surveys and Assessments in relation to Scheduled Activities (NG4) (2012)* and *Wind Turbine Operations at EPA licensed sites (NG3)*. The ELVs set include a new evening limit of 50 dB $L_{Ar,T}$ and a specific wind turbine noise limit of 45dB L_{Aeq}.

Overall Conclusions in relation to effects of noise emissions from the activity on the environment

Based on the above assessment and the controls in place, we are satisfied that noise emissions will not significantly impact on the human beings or fauna where the installation is operated in accordance with the conditions of the RD.

10. Waste Generation

Waste generated at the installation consists primarily of ash and other residues from the coal combustion process. These and other wastes can be summarised as follows:

- Furnace bottom ash
- Pulverised fuel ash
- Flue gas desulphurisation residues
- Non-hazardous mixed waste
- Dry recyclable wastes
- Timber
- Mixed metals and cabling
- WEEE and batteries
- Seaweed and grass cuttings
- Hazardous wastes including oils, oily sludge and asbestos

Ash and flue gas desulphurisation residues are managed onsite at landfills authorised under the licence. Seaweed removed from band screens at the cooling water pump house and grass cuttings from grounds maintenance at the installation are composted in a segregated area of the ash landfill. All other waste generated on site is transported and recovered/disposed off-site in accordance with National and European Legislation and in accordance with the waste hierarchy. A proportion of the pulverised fuel ash is sold to other industries for various uses, including cement manufacture. Furnace bottom ash has recyclable potential and for this reason is landfilled in a segregated area in order to facility its future recovery in the event of demand.

The RD requires that disposal or recovery of waste on-site shall only take place in accordance with the conditions of this licence and in accordance with the appropriate National and European legislation and protocols.

For the purposes of EIA, the environmental factors potentially affected by waste generated by the activity include: **human beings**, **landscape** and **flora and fauna**.

The storage of uncovered wastes at the installation could result in visual disamenity for people living in and visiting the surrounding area. In addition, the extension of the landfill will result in temporary loss of grassland cover (on the existing capped areas) on a phased basis, causing temporary habitat loss.

However, the landfill operational plan set out in condition 3.15.1 of the RD controls the management of the landfill, including elements such as landscaping, screening, restoration and aftercare. In addition, condition 6.20 of the RD requires that only one working face shall exist at the landfill at any one time, thus limiting the extent of disturbance to habitats and associated fauna. In addition, habitat clearance will take place outside the bird nesting season to avoid ground disturbance to nesting species of birds.

If dealt with in accordance with the conditions of the RD, the management of waste generated at the facility will be in accordance with the requirements of Article 11(e) of the Industrial Emissions Directive.

The Environmental Management System in place at the installation includes a procedure for the management of waste. This identifies and addresses waste types and outlines their management routes.

There are standard conditions in the RD pertaining to the storage and management of waste generated by the activity.

The controls in the RD in relation to waste will prevent the occurrence of possible direct and indirect negative effects.

Overall Conclusions in relation to effects of the generation of waste from the activity on the environment

Based on the above assessment and the mitigation measures in place, we are satisfied that there will not be significant effects on the environment from the generation of wastes from the operation of the activity.

11. Use of Resources

The operation of the installation involves the consumption of water, oil and electricity. The estimated annual consumption is given in Table 8 below. Full details of raw materials used in power generation and the treatment of waste gases are in the review application.

Table 8 Use of resources

Resource	**Quantity per annum**
Electricity	572 GWh
Water – public supply	1,363,827 m^3
Water – estuarine cooling water	115,000 tonnes/hour
Gasoil (H411 toxic to aquatic life with long lasting effects)	2,108 tonnes (600 tonnes stored)

Heavy fuel oil (H412 – harmful to aquatic life with long lasting effects)	36,000 tonnes (50,000 tonnes stored)
Coal	2,200,000 tonnes (630,000 tonnes stored)
R53 materials – Hydrazine	0.25 tonnes

The environmental factor potentially affected by resource use is **material assets**. Having regard to the functions of the Agency under Part IV of the EPA 1992 as amended, the material assets in scope are the sustainable use of the estuary and energy in particular.

The estuary is a water resource that is affected by abstraction for cooling water purposes. Water is abstracted for a once through cooling system and the resulting emission is characterised by a thermal load and residual chlorine. The RD carries forward the limits and controls from the current licence regarding cooling water discharges. In line with BAT and in order to reduce chlorine emissions in cooling water discharges, the RD requires an efficiency assessment of raw materials used in all processes including biocide dosing. Improvements identified through this assessment are to be integrated into the EMS. The effect of abstraction on environmental factors is outside the scope of the licensing function.

Energy is used in the power plant and ancillary activities. The licensee states that a programme of efficiency improvement measures has been undertaken in recent years. As detailed in section 2 above, the RD specifies a number of requirements in line with BAT to ensure energy is used efficiently. The five wind turbines are a source of renewable energy capable of meeting future demand from the grid. The cumulative effect on energy supply from the power plant, ash storage extension and wind turbines proposal is not significant as renewable energy is a positive effect.

Wind turbines utilise wind exposure but the effect of wind take as a result of the turbines turning on environmental factors is outside the scope of the licensing function.

Overall Conclusions in relation to effects of the use of resources by the activity on the environment

We are satisfied that there will not be significant impact on material assets from the use of natural resources where the activity is operated in accordance with the conditions of the RD.

12. Prevention of Accidents

ESB Moneypoint is an upper tier site for the purposes of the Chemical Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (Seveso III Directive) by virtue of the storage of HFO in particular. ESB have a major accident prevention policy and safety management system certified to ISO 18001.

ESB carried out an environmental liabilities risk assessment (ELRA) and identified the potential hazards with the highest risk scores as a spill/leak from oil delivery or storage followed by unabated flue gas emissions, fire in the coal stock piles and breach in ash stability. OEE advised there have been 6 fires on-site since 2013 which mainly related to coal. The licensee reported that firewater run-off was associated with 2 of the 6 incidents with an estimated 204m^3 run-off (in the first hour) for one incident and unknown quantity for another.

It should be noted that the hazard with the highest risk score, spill/leak from oil delivery or storage, is also the worst case scenario for the purposes of assessing appropriate financial provision.

The following table lists the measures to be taken to prevent these likely accidents and limit consequences. Many of the measures are BAT as set out in the reference documents detailed in section 4 above.

Measures to be taken to prevent accidents and limit consequences

Table 9 Summary of potential accidents and prevention/mitigation measures

Potential hazard	**Licensee's proposed measures to reduce risk**	**Licensee's proposed surveillance of measure**	**Condition/ Schedule in RD**
Spill/leak from oil delivery or storage	Major accident prevention policy, safety management system certified to ISO 18001, handling and emergency procedures, EMS (training programme) Preventative maintenance programme including an inspection programme, Use of painting and cathodic protection to prevent corrosion Tank bunds, High level alarms, 10 oil interceptors, designated areas,	Detailed external inspection of tanks and non- destructive testing on sections every 5 years and NDT on whole tanks every 10 years, internal tank inspection every 20 year. Integrity inspection on 3 yearly basis Procedures review	Maintenance programme (Condition 2) Tank, container and drum storage, bunding etc, containment booms , oil separators, High level alarms, **new leak detection system** (Condition 3) Integrity testing, desludging & inspection (Condition 6) Loading and unloading & storage in designated area requirements (Condition 8) Accident prevention policy and emergency response procedure (condition 9) Storm water trigger levels (Schedule C) ELRA & Financial provision (condition 12)
Unabated flue gas emissions	Ensure correct operation of abatement equipment	Consult CEMS team to ensure review efficiency of monitoring equipment	Breakdown, startup and maintenance requirements (Condition 3), control of automated measuring systems by means of parallel measurements (Condition 6), Schedule B ELVs
Fire at coal stock piles	Hot work permit, emergency response procedure, training, fire protection system (fire detection equipment and fire fighting	Review of procedures Temperature monitoring of stock piles	Accident prevention policy and emergency response procedure and **new Fire safety**

Potential hazard	Licensee's proposed measures to reduce risk	Licensee's proposed surveillance of measure	Condition / Schedule in RD
	system), Stockpile management procedures		**system** (condition 9)
Breach in ash stability	Adherence to recommendations presented in the Slope Stability Analysis	Integrity monitoring of embankments	Stability monitoring required (condition 6.21)

The RD carries forward all the accident prevention measures included in the current licence and as detailed above in Table 9. In addition to these existing requirements, the RD requires a leak detection system for all storage areas containing liquids other than water. This system will include tank inspection and testing.

As part of the licence review application, the licensee carried out a review of the firewater risk assessment. It concluded that the risk of firewater run-off from the majority of the site was low and that no dedicated retention infrastructure was required. The firewater risk assessment report recommended an emergency response plan dealing with tank farm fires including the option to deal with controlled burn strategy. The RD requires a fire safety system to be established and implemented and to include an emergency response plan for a tank farm fire.

The risk of accidents and their consequences, and the preventative and mitigation measures listed in the table above, have been considered in the assessments carried out throughout this report.

It is considered that the conditions of the RD and the mitigation measures proposed will significantly reduce the likelihood of accidental emissions occurring and limit the environmental consequences of an accidental emission should one occur.

13. Cessation of activity

The application included a Decommissioning Management Plan and a Closure, Restoration and Aftercare Management Plan which detailed the measures to be employed upon cessation of the activity. These Plans have been assessed by the Office of Environmental Enforcement and costings have been agreed (see Fit and Proper Person Assessment section below for further details).

Condition 10 of the RD requires procedures to be put in place to ensure the proper closure of the activity with aim of protecting the environment.

Baseline Report

Article 22(2) of the IED requires that where the activity involves the use, production or release of relevant hazardous substances and having regard to the possibility of soil and groundwater contamination at the site of the installation, the operator shall prepare and submit to the competent authority a baseline report before the revision of a licence.

The baseline report is a tool that permits, as far as possible, a quantified comparison between the state of the site described in that report and the state of the site upon definitive cessation of activities, in order to ascertain whether a significant increase in pollution of soil or groundwater has taken place.

A Baseline Report was not originally provided with the licence application. A HFO spill occurred in 2011 and contaminated soil within the bunded area was excavated and removed by a licensed waste contractor. The Agency determined that a Baseline Report was required having regard to the possibility of soil and groundwater contamination. Subsequently a baseline report (ref: QS-000139-01-R460-015, date: 10/07/17) was submitted with the application.

The site was formed through extensive cut and fill operations. The relevant hazardous substances stored on-site are ammonia liquor, gasoil and HFO. The report refers to groundwater monitoring data from March 2015 to May 2017. The report concludes that metals are leaching into groundwater from the FGD waste and ash waste but concentrations are either no higher than in the receiving water or decline to background concentrations. Hydrocarbons are detected on an intermittent basis only. The report concludes that from the available soil data and groundwater data there has been limited impact to soil from activities on-site.

The RD requires annual groundwater monitoring, soil monitoring for relevant hazardous substances every ten years, a Decommissioning Management Plan and Closure, Restoration and Aftercare Management Plan and financial provision.

We are satisfied that there will not be significant effects on the environment from the measures that will be taken upon cessation of the activity.

14. Other matters relating to EIA

14.1 Effects on landscape and cultural heritage

There are no effects from the operation of the activity that is likely to a significant impact on landscape and cultural heritage. Any visual effect on the landscape or effects on the cultural heritage of an area are matters dealt with in the decision of the planning authority to grant planning permission for the developments on site and are not controlled by the Agency.

No mitigation measures have been proposed in the RD.

Overall Conclusions in relation to effects on landscape and cultural heritage from the activity

We are satisfied that there will not be significant effects on landscape, material assets and cultural heritage from the operation of the activity.

Accordingly, if the activity is carried out in accordance with the RD and the conditions attached, the operation of the activity will not cause environmental pollution.

14.2 Interaction between the factors

We have considered the interaction between human beings, flora and fauna, soil, water, air, climate, landscape, material assets, cultural heritage and the interaction of the likely effects identified throughout this report.

The interaction between factors as a result of the operation of the installation are summarised below:

Interaction of factors

	Human Beings	Flora and Fauna	Soil	Water	Air	Climate	Material assets, landscape, cultural heritage
Human Beings							
Flora and Fauna							
Soil							
Water		✓	✓				
Air	✓	✓		✓			
Climate	✓	✓			✓		
Material assets, landscape, cultural heritage	✓					✓	

The assessment above outlined the direct and indirect impacts of the activities on environmental factors. In this circumstance, the main factors affected are air, human beings, flora and fauna and climate. Human beings may be impacted through air quality, noise, dust nuisance and accidents such as fires and landfill stability as well as climate change. The protected areas of the SPA and SAC may be impacted by emissions and accidents and in the longer term by climate change. The RD sets out requirements for the efficient use of energy, the reduction of emissions and the prevention of accidents.

Based on the assessment carried out throughout this report, and the mitigation measures proposed (including the relevant conditions in the licence), we do not consider that the interactions identified are likely to exacerbate effects of the activity as they relate to licensing function.

15. Reasoned Conclusion on Environmental Impact Assessment

Having regard to the effects (and interactions) identified, described and assessed throughout this report, we consider that the mitigation measures proposed will enable the activity to operate without causing environmental pollution. We also consider that the measures proposed to prevent accidents and limit consequences are acceptable.

Accordingly, if the activity is carried out in accordance with the RD and the conditions attached, the operation of the activity will not cause environmental pollution. The conditions of the RD and the mitigation measures proposed will

significantly reduce the likelihood of accidental emissions occurring and limit the environmental consequences of an accidental emission should one occur.

16. Appropriate Assessment

Appendix 1 lists the European Sites assessed, their associated qualifying interests and conservation objectives along with the assessment of the effects of the activity on the European Sites.

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the activities (wind turbines and extension to ash landfill), individually or in combination with other plans or projects are likely to have a significant effect on any European Site. In this context, particular attention was paid to the European Sites at River Shannon and River Fergus Estuaries SPA (Site Code: 004077) and Lower River Shannon SAC (Site Code: 002165).

The activities are not directly connected with or necessary to the management of any European Site and the Agency considered, for the reasons set out below, that it cannot be excluded, on the basis of objective information, that the activities, individually or in combination with other plans or projects, will have a significant effect on any European Site and accordingly determined that an Appropriate Assessment of the activities was required.

The reasons for this determination are:

- The operation of the wind turbines has the potential to cause disturbance of species in the European Sites.
- Discharge from the ash disposal facility may cause adverse impacts on water quality.

It is noted that Natura Impact Statements were submitted on 18 October 2016, and an addendum was submitted on 20 April 2017. It is noted that Appropriate Assessment has been carried out by other authorities namely the planning authorities and Department of Housing, Planning, Community and Local Government and their reports have been considered.

An Inspector's Appropriate Assessment has been completed and has determined, based on best scientific knowledge in the field and in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, pursuant to Article 6(3) of the Habitats Directive, that the activities, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site, in particular River Shannon and River Fergus Estuaries SPA (Site Code: 004077) and Lower River Shannon SAC (Site Code: 002165), having regard to their conservation objectives and will not affect the preservation of these sites at favourable conservation status if carried out in accordance with this recommended determination and the conditions attached hereto for the following reasons:

- There will be no net increase in noise emissions.
- There will be no change to the nature and quantity of discharges to the estuary.

The matters that come within the licensing function for the purposes of this Appropriate Assessment as it relates to the proposed activities of operating wind

turbines and an extension to ash landfill are the effects of noise emissions and leachate emissions. The RD specifies limits for noise emissions in line with current guidance and requires noise monitoring. In addition, the RD proposes ELVs for pH and suspended solids in the discharge from the landfill and the establishment and review of trigger levels for cadmium and chromium are also proposed. This will ensure that no uncontrolled emissions can occur from the ash disposal facility. The monitoring frequency relating to emissions from the landfills has also been increased. In addition, the RD provides for an ecological survey to be carried out on an annual basis. No in-combination impacts have been identified in relation to the new developments and the entirety of activities at the installation; therefore, no additional mitigation measures are required.

In light of the foregoing reasons no reasonable scientific doubt remains as to the absence of adverse effects on the integrity of those European Sites River Shannon and River Fergus Estuaries SPA (Site Code: 004077) and Lower River Shannon SAC (Site Code: 002165).

17. Fit & Proper Person Assessment

The Fit & Proper Person test requires three elements of examination:

Technical Ability

The licensee has provided details of the qualifications, technical knowledge and experience of key personnel. It is considered that the licensee has the technical knowledge required.

Legal Standing

The licensee was prosecuted and convicted under the Environmental Protection Agency Act 1992 as amended on 5th July 2017. The licensee pleaded guilty and remedial actions were taken.

Financial Provision/Strength

For this installation the EPA has agreed costings of €12,932,146 and €5,055,720 for the Decommissioning Management Plan and Closure, Restoration and Aftercare Management Plan (DMP/CRAMP) and ELRA respectively. The licensee is currently working with OEE to put in place the appropriate financial provision.

The RD requires financial provision for both to be put in place within one month of the date of grant of licence.

Fit & Proper Conclusion

It is our view, and having regard to the provisions of section 84(5) of the EPA Acts 1992 as amended and the Conditions of the RD, that the licensee can be deemed a Fit & Proper Person for the purpose of this application for a review of their licence.

18. Cross Office Consultation

We consulted OEE Inspectors, Martin O'Reilly and Linda Dalton-O'Regan in relation to this site. In general, the OEE have no significant concerns regarding the proposed changes to the licensable activity. We consulted with OEA scientific officer Nigel Hayes in relation to the receiving water.

19. Charges

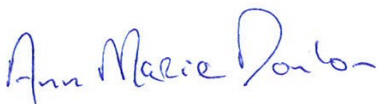
The annual enforcement change recommended in the RD is €25,212, which is the same as the enforcement charges invoiced for 2017.

20. Recommendation

The RD specifies the necessary measures to provide that the installation shall be operated in accordance with the requirements of Section 83(5) of the EPA Act 1992 as amended, and has regard to the AA and EIA. The RD gives effect to the requirements of the Environmental Protection Agency Acts 1992 as amended and has regard to submissions made.

We recommend that a Proposed Determination be issued subject to the conditions and for the reasons as drafted in the RD.

Signed



Ann Marie Donlon and Caitríona Collins

Procedural Note

In the event that no objections are received to the Proposed Determination of the application, a licence will be granted in accordance with Section 87(4) of the Environmental Protection Agency Acts 1992 as amended as soon as may be after the expiration of the appropriate period.

Appendices

Appendix 1: Assessment of the effects of activity on European sites and proposed mitigation measures.

European Site (site code)	**Distance / Direction from installation**	**Qualifying interests** (* denotes a priority habitat)	**Conservation objectives**	**Assessment**
River Shannon and River Fergus Estuaries SPA (004077)	Adjoining the southern boundary of the installation.	**Species** A179 Black-headed Gull (Chroicocephalus ridibundus) A141 Grey Plover (Pluvialis squatarola) A038 Whooper Swan (Cygnus cygnus) A140 Golden Plover (Pluvialis apricaria) A048 Shelduck (Tadorna tadorna) A157 Bar-tailed Godwit (Limosa lapponica) A046 Light-bellied Brent Goose (Branta bernicla hrota) A137 Ringed Plover (Charadrius hiaticula) A156 Black-tailed Godwit (Limosa limosa) A160 Curlew (Numenius arquata) A164 Greenshank (Tringa nebularia) A050 Wigeon (Anas penelope) A162 Redshank (Tringa totanus) A142 Lapwing (Vanellus vanellus) A017 Cormorant (Phalacrocorax carbo) A056 Shoveler (Anas clypeata) A052 Teal (Anas crecca) A143 Knot (Calidris canutus) A062 Scaup (Aythya marila) A054 Pintail (Anas acuta) A149 Dunlin (Calidris alpina)	As per NPWS (2012) Conservation Objectives: River Shannon and River Fergus Estuaries SPA 004077. Version 1.0. (dated 17/09/2012).	The potential impact on the species is disturbance by additional noise emissions associated with the wind turbine operation. The RD specifies noise limits to ensure the wind turbines will not adversely affect the integrity of the European site. Further, the RD proposes ELVs for pH and suspended solids in the discharge from the landfill and the establishment and review of trigger levels for cadmium and chromium are also proposed. This will ensure that no uncontrolled emissions can occur from the ash disposal facility. The RD requires an annual survey of the Ballymacrinan habitats and communities and this is to be reported to the NPWS.

European Site (site code)	Distance / Direction from installation	Qualifying interests (* denotes a priority habitat)	Conservation objectives	Assessment
		Habitats: Wetlands		
Lower River Shannon SAC (002165)	Adjoining the southern boundary of the installation.	**Habitats:** 1110 Sandbanks which are slightly covered by sea water all the time 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 1150 Coastal lagoons* 1160 Large shallow inlets and bays 1170 Reefs 1220 Perennial vegetation of stony banks 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) 1410 Mediterranean salt meadows (Juncetalia maritimi) 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* **Species** 1099 River Lamprey (Lampetra fluviatilis) 1096 Brook Lamprey (Lampetra planeri) 1095 Sea Lamprey (Petromyzon marinus) 1106 Salmon (Salmo salar)	As per NPWS (2012) Conservation objectives for Lower River Shannon SAC (002165). Generic Version 1.0. Department of Arts, Heritage and the Gaeltacht (dated 07/08/2012).	The potential impact on the species is disturbance by additional noise emissions associated with the wind turbine operation. The RD specifies noise limits to ensure the wind turbines will not adversely affect the integrity of the European site. Further, the RD proposes ELVs for pH and suspended solids in the discharge from the landfill and the establishment and review of trigger levels for cadmium and chromium are also proposed. This will ensure that no uncontrolled emissions can occur from the ash disposal facility. The RD requires an annual survey of the Ballymacrinan habitats and communities and this is to be reported to the NPWS.

European Site (site code)	Distance / Direction from installation	Qualifying interests (* denotes a priority habitat)	Conservation objectives	Assessment
		1029 Freshwater Pearl Mussel (Margaritifera margaritifera) 1355 Otter (Lutra lutra) 1349 Common Bottlenose Dolphin (Tursiops truncatus)		

Appendix 2

Relevant European legal instruments

The following Irish and European and international legal instruments are regarded as relevant to this application assessment and have been considered in the drafting of the Recommended Determination.
Industrial Emissions Directive (IED) (2010/75/EU)
Environmental Impact Assessment (EIA) Directive (85/337/EEC, as amended)
Habitats Directive (92/43/EEC) & Birds Directive (79/409/EC)
Water Framework Directive [2000/60/EC]
Air Quality Directives (2008/50/EC and 2004/107/EC)
Seveso Directive (2012/18/EU)
Waste Framework Directive (2008/98/EC)
Landfill Directive (1999/31/EC)

Appendix 3

Other BREF documents and National BAT notes relevant to this assessment

Sectoral BREF	Publication date
Reference Document on the Best Available Techniques for the Large Combustion Plants	June 2013
Horizontal BREF	Publication date

Reference Document on the Best Available Techniques on Emissions from Storage	July 2006
Reference Document on the Best Available Techniques for Energy Efficiency	February 2009
Reference Document on the application of Best Available Techniques to Industrial Cooling Systems	December 2001
National BAT notes	Publication date
BAT Guidance Note – Waste Sector (Landfill)	December 2011
BAT Guidance Note for the Energy (LCP) Sector	2008