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Natural Resources Wales permitting decisions

Viridor (Cardiff Energy Recovery Facility) Substantial Variation

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Variation

The variation number is: EPR/LP3030XA

The operator is: Viridor Waste Management Limited

The Installation is located at: Cardiff Energy Recovery Facility, Trident Park, Glass Avenue, Ocean Way, Cardiff, CF24 0EN

We have decided to issue the variation for Cardiff Energy Recovery Facility operated by Viridor Waste Management Limited.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Key issues of the decision

Receipt of application

The Application was accepted as duly made on 28th September 2016. This means we considered it was in the correct form and contained sufficient information for us to begin our determination, but not that it necessarily contained all the information we would need to complete that determination

Changes requested

The activities were originally permitted on 4 November 2010. Since the original permit was granted, a variation was granted on 21 August 2014 which was required due to changes to the design of the facility.

The operator has obtained operational data for the facility, including data on the composition of the waste being received and the availability of the facility.

This variation changes the following aspects within the permit:

- (1) Increase the overall permitted plant throughput from 350,000 tonnes to 425,000 tonnes per annum;
- (2) Update the emission limit for carbon monoxide to a 10-minute average as per Annex VI, Part 3, paragraph 1.5 of the Industrial Emissions Directive (IED);
- (3) Removal of some of the on-site metals recovery from bottom ash;
- (5) Amend the source of boiler feedwater from collected rainwater to mains water;
- (6) Amend the drainage arrangements for the isolation of surface water discharges in the event of a spill;
- (7) Amend the drainage arrangements to confirm that there will be 15m³/hour of effluent discharged from the installation;
- (8) Amend the emission points plan (Site Plan – Schedule 7 of the EP) to amend the location of emission point W1 in accordance with the as built design;
- (9) Add a number of additional EWC codes to the list of waste to be processed; and
- (10) Update the operating techniques to allow for the handling of large bulky items which are shredded.

Consultation

The consultation requirements were identified and implemented. The decision was taken in accordance with RGN 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements.

A copy of the Application and all other documents relevant to our determination (see below) are available for the public to view. Anyone wishing to see these documents could arrange for copies to be made.

We sent copies of the Application to the following bodies, which includes those with whom we have “Working Together Agreements”:

- Cardiff County Council Planning Authority
- Cardiff County Council Environmental Protection Department
- Dwr Cymru Welsh Water
- Food Standards Agency
- Public Health Wales

These are bodies whose expertise, democratic accountability and/or local knowledge make it appropriate for us to seek their views directly.

The consultation started on **20th October 2016** and ended on **17th November 2016**. An advert was also placed on our website.

Further details along with a summary of consultation comments and our response to the representations we received can be found in Annex 3. We have taken all relevant representations into consideration in reaching our determination.

Environmental Risk

Air

Although the operator proposes to increase the annual throughput of waste accepted at the facility from 350,000 tonnes per annum to 425,000 tonnes per annum, which is equivalent to an operational availability of 87% (7,620 hours per annum). We did not require additional modelling work to be carried out.

The operator expects that the long-term availability of the facility will be 8,000 hours per annum (approximately 91%). At this level of availability, the capacity of the facility at the nominal design capacity is approximately 370,000 tonnes per annum.

Shutdown time periods will vary from year to year. The annual fuel input capacity could increase or decrease depending on the availability of the facility. If it performed above the nominal availability during the year, it could be required to shut down unnecessarily if there was no 'headroom' allowance in the annual permitted tonnage.

There will also be fluctuations in the net calorific value of the incoming waste. If the net calorific value of the fuel received is lower than expected, the facility will operate at a higher mechanical throughput than its nominal design capacity. If the facility was operating at this increased mechanical throughput, it could be required to shut down before the end of the year if there was no 'headroom' allowance in the annual permitted tonnage.

At the expected long-term availability of the Facility (8,000 hours per annum), the maximum capacity is 425,00 tonnes per annum.

Given that the original Air Dispersion Modelling was carried out on a worst case scenario i.e. modelled at 8760 hours, we were satisfied that it was not necessary to carry out revised air dispersion modelling.

Emission limits

We have revised the emission limit for Carbon Monoxide upwards from 100 mg/m³ to 150 mg/m³ based on a 10 minute average in accordance with Annex VI, paragraph

1.5 of the Industrial Emissions Directive. No other emission Limit Values have been revised.

Biodiversity, Heritage, Landscape and Nature Conservation

The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat .

A full assessment of the application and its potential to affect the Cardiff Beech Woods SAC, Severn Estuary Ramsar, Severn Estuary SPA (or proposed SPA), Severn Estuary/ Môr Hafren SAC (candidate) habitat designations has been carried out as part of the permitting process in 2010 . As the dispersion modelling was based on operating 100% of the time we are satisfied that there is no need to carry out an additional Habitats Regulations Assessment.

Sewer

There will be a discharge to sewer of approximately 15 m³ per hour of process effluent that cannot be re-used within the system. The discharge is expected to contain ammonia, nitrate and suspended solids. The discharge to sewer is in accordance with a Trade Effluent Consent issued by Dwr Cymru Welsh Water.

Greenhouse gas assessment

The combustion of fuel for electricity generation results in the continuous release of combustion products, which include greenhouse gases such as carbon dioxide (CO₂). In this report, the CO₂ emissions of the Facility have been calculated, and other greenhouse gases released (for example N₂O) have been converted to CO₂ equivalent emissions according to their global warming potential.

The facility generates electricity from the combustion of waste. It is assumed that this displaces electricity that would have otherwise been generated in a conventional gas fired power station. It should be noted that this assessment does not consider the displacement of emissions from disposing of the waste in a landfill, or from any other alternative methods for disposal or recovery of the waste.

The following assumptions have been made regarding the energy outputs from the process:

- The Facility will generate approximately 34.3 MWe and export approximately 29.2 MWe.
- The availability of the facility will increase from 7,620 hours to 8,000 hours per annum.

There is no heat export from the facility, however the facility is designed to incorporate Combined Heat and Power (CHP), and generate up to 50 MWth, which will be available for export to potential users.

The Facility currently generates approximately 261,400 MWh of net electricity per annum, and this will displace a total of approximately 99,300 tonnes of CO₂ equivalent per year. The proposed increase in plant capacity will generate approximately 274,400 MWh of net electricity per annum, which will displace approximately 104,300 tonnes of CO₂ equivalent per year.

The proposed increase in capacity of the Facility will result in an additional 5,000 tonnes per annum of CO₂ equivalent per year being released from the combustion of waste.

The emissions of CO₂ equivalent currently released from the Facility are as follows:

- 115,500 tonnes per year of CO₂ from the combustion of non-biogenic carbon from the combustion of waste;
- 3,180 tonnes per year of CO₂ equivalent from nitrous oxide emitted from the process;
- 4,700 tonnes per year of CO₂ equivalent from the combustion of gas-oil for auxiliary firing; and
- 700 tonnes per year of CO₂ equivalent from imported electricity.

Therefore, the facility currently releases approximately 124,000 tonnes of CO₂ equivalent per annum. Furthermore, the emissions of CO₂ equivalent released following the proposed increase in capacity of the Facility are as follows:

- 140,300 tonnes per year of CO₂ from the combustion of non-biogenic carbon from the combustion of waste;
- 3,340 tonnes per year of CO₂ equivalent from nitrous oxide emitted from the process;
- 4,700 tonnes per year of CO₂ equivalent from the combustion of gas-oil for auxiliary firing; and
- 600 tonnes per year of CO₂ equivalent from imported electricity.

Therefore, the facility will release approximately 149,000 tonnes of CO₂ equivalent per annum following the proposed increase in plant capacity, which is approximately an increase of 25,000 tonnes of CO₂ equivalent per annum from the combustion of an additional 75,000 tonnes per annum of waste.

It should be noted that this does not consider the displacement of emissions from disposing of the waste in a landfill, or alternative waste treatment processes. Furthermore, no allowance has been made for the export of heat to local heat users.

Operating techniques

The Operator has proposed changes to the agreed Operating Techniques. They have proposed changes to the Operating Techniques for the following:

- Metals Recovery from IBA
- Rainwater Harvesting
- Drainage
- Bulky Items

Metal recovery from IBA

The Operating Techniques referenced in Table S1.2 sections 2.2, 4.7.2 and 6.3) state that 'After passing through a metals extraction system, the ash will be stored prior to off-site removal'. The bottom ash is transferred off-site to a suitably licensed waste management facility for recovery as an aggregate (IBAA).

The operator proposed that the metal recovery from the IBA be undertaken offsite at a suitably licensed waste management facility, in addition to on-site treatment. The waste management facility which processes the IBA into an IBAA will have dedicated specialist equipment for the recovery of ferrous and non-ferrous materials, so it is expected that there will be a higher quantity of metals recovered from off-site processing than processing on-site. Extracted metals will be recycled. Metals extraction will also help ensure that the quality of IBA is suitable for reuse in aggregates.

Rainwater Harvesting

The Operating Techniques referenced in Table S1.2 sections 4.4, 6.2.1 and 6.2.3 states that 'uncontaminated roof and surface water will be re-used within the process'.

The two principal uses of water within the Facility are:

- boiler feedwater; and
- the ash quench system.

To prevent corrosion and accumulation of solids within the boiler, feedwater is required to be a high water quality water. Due to the high quality water requirements for the boiler, harvested rainwater is an unsuitable source of feedwater.

Process effluents which are generated from the operation of the facility will be collected within the site drainage and 're-used' within the ash quench system. If rainwater was harvested for use in the ash quench, these effluents would require discharge off-site to sewer. On this basis it is considered preferable to re-use the process effluents within the ash quench rather than harvesting rainwater. During the detailed design process for the facility it was concluded that it was not feasible to harvest rainwater for re-use within the process.

The Operating Techniques within Table S1.2 are amended to reflect this.

Drainage

The Operating Techniques referenced in Table S1.2 sections 4.4 and 4.5.

Section 4.4 states 'in the event of a spillage or in the event of a fire, each lagoon will have a cut-off valve to allow the lagoon to be independently isolated from the rest of the site's surface water drainage system'. The drainage has been designed with a single penstock valve which will isolate all of the drainage to the lagoons simultaneously. This will provide the same level of environmental protection to that previously proposed.

Section 4.5 stated that 'There will be no routine process water discharge from the installation'. Following further design of the water flows for the facility, there will be approximately 15m³ per hour of process effluents from the facility which cannot be 're-used' within the ash quench. This effluent is discharged to sewer in accordance with a Trade Effluent Consent which has been issued by Dwr Cymru.

Bulky Items

Bulky waste delivered to the facility is deposited in a dedicated area on the Tipping Hall floor. The Bulky waste will then be loaded into the shredder to reduce the waste to an appropriate size. The shredded waste will then be transferred to the waste bunker for processing.

We consider the proposed techniques to represent appropriate techniques for the facility.

The permit conditions

Updating permit conditions during consolidation

We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation. The new conditions have the same meaning as those in the previous permit.

The operator has agreed that the new conditions are acceptable.

Waste types

The operator requested the addition of several new waste types. We agreed that all waste types were suitable for acceptance at the facility, however we queried the suitability of the following two waste types:

- 02 01 02 – animal tissue waste; we queried what this comprised to establish if Animal By-product Regulations Controls are required.
- 03 03 05 – De-inking sludge's from paper recycling, we queried the moisture content.

We were advised that 02 01 02 comprised food remains from meat processing but excludes animal carcasses. This waste types will be sourced from a commercial waste producer. Waste type 03 03 05 – we were advised mostly consist of short wood fibres and clay fillers, and will typically have a moisture content less than 40%.

We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility in Table S2.2 of the permit. We are satisfied that the operator can accept the additional wastes because all wastes are suitable for combustion and other means of recovery is not feasible.

OPRA

The OPRA score at permit issue is 288

ANNEX 1: Consultation Responses

A) Advertising and Consultation on the Application

The Application has been advertised and consulted upon in accordance with Natural Resources Wales Public Participation Statement. The way in which this has been carried out along with the results of our consultation and how we have taken consultation responses into account in reaching our draft decision is summarised in this Annex. Copies of all consultation responses have been placed on Natural Resources Wales public register.

1) Consultation Responses from Statutory and Non-Statutory Bodies

Response received from Dwr Cymru Welsh water

A consultation response was received from Dwr Cymru Welsh Water. The response confirmed that a Trade Effluent consent had been granted and that they had reviewed the application throughout the planning process.

Response received from the City of Cardiff Council

A consultation response was received from the City of Cardiff Council acknowledging our consultation. No detailed comments were received.