

Natural Resources Wales permitting decisions

Dŵr Cymru Cyfyngedig (Cog Moors WwTW AAD Facility) Decision Document

Application for a Bespoke Permit

The application number is: PAN-008163

The Operator is: Dŵr Cymru Cyfyngedig

**The Installation is located at: Cog Moors Wastewater Treatment Works
Advanced Anaerobic Digestion Facility, Green Lane, Dinas Powys, CF64 2TR**

We have decided to grant the permit for Cog Moors WwTW AAD Facility operated by Dŵr Cymru Cyfyngedig.

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.

Structure of this document

- Table of contents
- Key issues
- Annex 1: Improvement conditions
- Annex 2: Consultation responses

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Glossary of acronyms used in this document

AAD – Advanced Anaerobic Digestion

AD – Anaerobic Digestion

AW – Ancient Woodland

BAT – Best Available Technique(s)

BAT-AEL – BAT Associated Emission Level

BREF – BAT Reference Note

CEM – Continuous emissions monitor

CHP – Combined Heat and Power

CRoW – Countryside and Rights of Way Act 2000

DAA – Directly associated activity

DCWW – Dŵr Cymru Welsh Water

DD – Decision document

ds – dry solids

DSEAR – Dangerous Substances and Explosive Atmospheres Regulations 2002

EAL – Environmental assessment level

ELV – Emission limit value

EMAS – EU Eco Management and Audit Scheme

EMS – Environmental Management System

EPR – Environmental Permitting (England and Wales) Regulations 2016

EQS – Environmental quality standard

ESOS – Energy Savings Opportunity Scheme

EU-EQS – European Union Environmental Quality Standard

GWP – Global warming potential

IED – Industrial Emissions Directive (2010/75/EU)

LHB – Local Health Board

LNR – Local Nature Reserve

LWS – Local Wildlife Site

MCP – Medium Combustion Plant

MCPD - Medium Combustion Plant Directive

MWe – Megawatt electrical

MWth – Megawatt thermal

NNR – National Nature Reserve
NO_x – Oxides of Nitrogen (NO and NO₂ expressed as NO₂)
NRW – Natural Resources Wales
OCU – Odour Control Units
OPRA – Operator Performance Risk Appraisal
PC – Process Contribution
PEC – Predicted Environmental Concentration
PHW – Public Health Wales
ppm – parts per million / µg g⁻¹
PPS – Public Participation Statement
PR – Public register
RGN – Regulatory Guidance Note
RGS – Regulatory Guidance Series
SAC – Special Area of Conservation
SG – Specified Generator
SGN – Sector Guidance Note
SMNR – Sustainable Management of Natural Resources
SPA – Special Protection Area
SSSI – Site of Special Scientific Interest
TGN – Technical Guidance Note
THP – Thermal Hydrolysis Plant
WAMITAB – Waste Management Industry Training and Advisory Board
WEEE – Waste Electrical and Electronic Equipment
WFD – Waste Framework Directive
WHO – World Health Organisation
WwTW – Wastewater Treatment Works

Key issues of the decision

1 Our decision

We have decided to grant the permit for Cog Moors WwTW AAD Facility operated by Dŵr Cymru Cyfyngedig.

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.

This Application is to operate an installation which is subject principally to the Environmental Permitting Regulations 2016 (EPR) and is subject to the requirements of the Industrial Emissions Directive (IED) and Medium Combustion Plant Directive (MCPD).

The permit contains many conditions taken from our standard Environmental Permit template including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the permit, we have considered the Application and accepted the details are sufficient and satisfactory to make the standard conditions appropriate.

This document should be read in conjunction with the application and supporting information and permit.

2 How we reached our decision

2.1 Receipt of Application

The Application was accepted as duly made on 17/04/2020. 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.

The Applicant made no claim for commercial confidentiality. We have not received information in relation to the Application that appears to be confidential in relation to any party.

2.2 Consultation on the Application

We carried out consultation on the Application in accordance with the Environment Permitting Regulations (EPR), our statutory Public Participation Statement (PPS) and our Regulatory Guidance RGN6 for Determinations involving Sites of High Public Interest.

Furthermore, we have also considered the Well-Being of Future Generators (Wales) Act 2015 and the Environment (Wales) Act 2016 during our assessment process.

We advertised the Application by a notice placed on our website, which contained all the information required by the EPR and IED, including advising people where and when they could see a copy of the Application. The consultation started **21 April 2020** and ended **20 May 2020**. A copy of the Application and all other documents relevant to our determination 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”:

- **Public Health Wales**
- **Vale of Glamorgan Council**
- **Health and Safety Executive**

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

Further details along with a summary of consultation comments and our response to the representations we received can be found in Annex 2. We have taken all relevant representations into consideration in reaching our determination.

2.2.1 Draft Permit Consultation

We have carried out a consultation on our draft decision. This consultation began on **07 October 2020** and ended on **04 November 2020**.

2.3 Requests for Further Information

The application was received on 04 December 2019 and was duly made as of 17 April 2020. In order for us to be able to consider the Application duly made, we needed more information. We requested further information relating to the site condition report, risk assessments and incomplete application forms. Upon receipt of this information we were able to consider the application Duly Made.

Further information was also requested by way of three Schedule 5 Notices:

- Schedule 5 Notice (1) requested information on the air emissions risk assessment, it was sent on 21/04/20 with a response date of 05/05/20. The additional information supplied satisfied the requirements of the Schedule 5 Notice.
- Schedule 5 Notice (2) requested information on the odour impact modelling, it was sent on 07/05/20 with a response date of 22/05/20. The additional information supplied satisfied the requirements of the Schedule 5 Notice.
- Schedule 5 Notice (3) requested information on the containment measures present at the site, it was sent on 21/05/20 with a response date of 14/07/20. The additional information supplied did not satisfy the requirements of the Schedule 5 Notice therefore further information was requested on 20/08/20, 03/09/20, 08/09/20 and 14/09/2020. All additional responses satisfied the requirements of the Schedule 5 Notice.

A copy of the information notice and e-mails requesting further information were placed on our public register as were the responses when received.

3 The Legal Framework

The Permit will be issued under Regulation 13 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* as described by the IED;
- subject to aspects of the Well-Being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016 which also have to be addressed.
- subject to the Medium Combustion Plant Directive

We address the legal requirements directly where relevant in the body of this document. NRW is satisfied that this decision is consistent with its general purpose of pursuing the sustainable management of natural resources (SMNR) in relation to Wales, and applying the principles of SMNR. In particular, NRW acknowledges that it is a principle of sustainable management to take action to prevent significant damage to ecosystems. We consider that, in granting the Permit a high level of protection will be delivered for the environment and human health through the operation of the Installation in accordance with the permit conditions. NRW is satisfied that this decision is compatible with its general purpose of pursuing the sustainable management of natural resources in relation to Wales and applying the principles of sustainable management of natural resources

4 The Installation

4.1 Description of the Installation and related issues

4.1.1 The permitted activities

The Installation is subject to the EPR because it carries out an activity listed in Part 1 of Schedule 1 of the EPR:

- Section 5.4 Part A(1)(b)(i): Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities and excluding activities covered by Council Directive 91/271/EEC (i) biological treatment

The installation is also subject to Schedule 25A of EPR – Medium Combustion Plant due to:

- 2x 3.679 MW thermal input biogas fuelled Combined Heat and Power (CHP) engines
- 2x 4.408 MW thermal input natural gas/biogas fuelled boilers

The above Medium Combustion Plant is classed as ‘new’ as put into operation after 20 December 2018.

The installation is not subject to Schedule 25B of EPR – Specified Generator as the two CHP engines are classed as excluded generators as they are part of an installation site under Chapter II of the Industrial Emissions Directive. The two boilers are not Specified Generators as they do not produce electricity.

An installation may also comprise “directly associated activities”, which at this Installation includes:

- Biogas storage and transfer plant
- Steam and electrical power supply
- Emergency flare operation
- Siloxane removal plant
- Digestate storage
- Discharge of condensate
- Odour Control Units

Together, these listed and directly associated activities comprise the Installation.

4.1.2 The Site

Cog Moors Wastewater Treatment Works (WwTW) is located west of Cardiff, approximately 2 km east of Barry and 1 km south of Dinas Powys. The surrounding area is predominantly fields, the nearest residential receptor is approximately 230 m to the east. The Advanced Anaerobic Digestion (AAD) facility with associated CHP plant is an extension to the existing Cog Moors WwTW Anaerobic Digestion (AD) plant, it is a newly permitted installation as the existing WwTW AD plant has previously been operating under a waste exemption (T21). The installation boundary includes the

new AAD facility, CHP plant and any existing AD plant such as the primary and secondary sludge tanks. The Applicant has provided a plan which we consider is satisfactory, showing the extent of the installation and emission points.

A plan is included in the permit and the Applicant is required to carry on the permitted activities within the site boundary.

4.1.3 What the Installation does

The installation uses waste which is a blended combination of sludge imports from other Dŵr Cymru sites and indigenous sludge from the Cog Moors WwTW. The imported sludge is wetted and the indigenous sludge is dewatered to achieve a suitable dry solids content for thermal hydrolysis. The wetted imported and dewatered indigenous sludges are combined in the Thermal Hydrolysis Plant (THP) feed silos, each silo has a capacity of 450 m³ which represents the total waste capacity of the installation, equating to 2.8 days of storage prior to the thermal hydrolysis process.

Thermal hydrolysis or *Cambi-THP* breaks down the sludge into an easily digestible feed for anaerobic digestion, where approximately 50 – 80 % of organic matter is made available, which results in an increased amount of biogas which is rich in methane and low in H₂S (hydrogen sulphide). The methane content of the biogas will be monitored in addition to a number of other parameters as part of process monitoring requirements. The THP uses steam generated from two natural gas boilers to increase the temperature to 165 °C and control the pressure at 6 bar to pre-treat the sludge. The boilers are predominantly expected to use natural gas as fuel however could occasionally use biogas if required. The sludge is then cooled via water coolers to 37 °C via which is the optimum temperature for anaerobic digestion.

There are four anaerobic digesters. The feed concentration and retention time for anaerobic digestion will be 10 % dry solids (ds) and 16 days. Ferric dosing will be conducted in order to control hydrogen sulphide levels in the resulting biogas. Any material collected in the base of the digesters will be extracted by suction tankers and disposed of off-site. The biogas produced from anaerobic digestion will be transferred to a 2000 m³ gas holder, then via a siloxane removal plant to the two CHP engines for use as a fuel to produce electricity. Removal of siloxanes from the biogas is imperative

to avoid deposits of solid silica and silicates within the CHP engines. The siloxane plant uses activated carbon and is expected to reduce the concentration of siloxanes in the biogas to below 10 ppm (parts per million or $\mu\text{g g}^{-1}$). Spent activated carbon will be removed and replaced by a licensed contractor. The two CHP engines have a thermal input of 3.679 MW and an electrical output of 1.5 MW, they will use 100 % biogas as fuel. The CHP engines will be operational for 8760 hours per year, any excess heat produced will be used to supplement the THP, any unused biogas will be flared off in the waste gas burner.

There are two post digestion tanks and three centrifuges which will dewater the resultant digestate from the anaerobic digestion process, this will separate the solids from liquids producing a cake fraction and a liquid fraction. The solid cake fraction will be stored in one post digestion silo with a capacity of 650 m³ awaiting collection by licensed waste contractor. The liquid fraction will be returned to the head of the Cog Moors WwTW.

There are three odour control units (OCU) used to treat the malodorous air from the various treatment processes. They use a two-stage process using two different filters (a biofilter then a carbon filter). Hydrogen sulphide continuous monitoring devices will be installed at the inlet and the outlet of the OCUs which will alarm if pass specific concentration thresholds. The operator has proposed to monitor odour in line with BAT requirements.

4.1.4 Key Issues in the Determination

The key issues arising during this determination included;

- Emissions to air
- Best available techniques
- Containment

We discuss these issues in more detail in this document.

4.2 The site and its protection

4.2.1 Assessment of site baseline condition report

The operator has submitted a site baseline condition report which included a geotechnical and geo-environmental intrusive investigation for the proposed installation. A comprehensive desk study review was completed, this detailed the history of the site location, site history, geology, hydrogeology and hydrology and summary of any potential contaminant sources from existing data. The installation is not within a groundwater source protection zone. The majority of the site lies within Flood Zone 3 (land having a 1 in 100 or greater annual probability of river flooding; or land having a 1 in 200 or greater annual probability of sea flooding) , the northern parts lie within Flood Zone 2 (land having between 1 in 100 and 1 in 1000 annual probability of river flowing; or land having between a 1 in 200 and 1 in 1000 annual probability of sea flooding).

The ground investigation comprised of boreholes, trial pits, combined gas and groundwater monitoring and radon monitoring. Laboratory testing was undertaken for geo-technical and geo-environmental purposes. The area referred to as ‘the mound’ is considered to be comprised of arisings from excavations from constructions works to the Cog Moors WwTW, the source of the materials is unknown therefore included in the contamination assessment. The geo-environmental analysis of soil and groundwater samples made the following conclusions

- Soils – samples from the made ground and natural soils did not show elevations against respective screening values therefore they are unlikely to pose a risk to human health. Three samples from ‘the mound’ area was identified to contain asbestos, ‘the mound’ area is expected to be removed and disposed of appropriately.
- Groundwater - marginally elevated levels of copper, lead, chromium VI and chromium III were found in tested samples, however are considered to be at a level which is unlikely to present a significant risk.
- Leachates – marginally elevated levels of copper, lead and zinc were recorded within leachate samples, it was concluded that these may represent background levels and are unlikely to present a significant risk.
- Ground gas – Elevated levels of carbon dioxide were identified in the alluvium underlying ‘the mound’ area, classed as ‘CS2’ and low risk and will require protective measures for building which have been incorporated into the design.

All other areas are designated 'CS1' and very low risk not requiring any protection measures.

- Waste soils – waste soils were assessed as being non-hazardous, however the three that contained asbestos are classed as potentially hazardous, WAC testing undertaken confirmed the soil samples could be disposed of at an inert landfill.

Therefore, no significant contamination has been identified to be present at the site based on the desktop review and ground investigation studies completed. We are satisfied the operator has provided a satisfactory description of the condition of the site. This decision was taken in accordance with our guidance on site condition reports – guidance and templates (H5).

4.2.2 Proposed site design: potentially polluting substances and prevention measures

The operator has provided a comprehensive report that details the containment measures that will be present at the site, this was received in response to the Schedule 5 Notice dated 21st May 2020 and further ongoing discussions between the operator and NRW between August and September 2020. A similar approach has been taken by NRW for the assessment of containment measures at Cog Moors AAD facility as was employed for Five Fords AAD facility, a similar Dŵr Cymru Cyfyngedig AAD installation. Cog Moors AAD facility is comprised of new and existing infrastructure therefore a pragmatic approach to containment has been adopted by NRW.

A full risk assessment has been completed of the primary, secondary and tertiary (where applicable) containment measures at the installation. The risk assessment was produced in-line with the recognised industry standard CIRIA736 guidelines 'Containment systems for the prevention of pollution' and the Anaerobic Digestion and Resources Association (ADBA) guidance note 'Secondary Containment at AD Plants: An Industry Guide' and the operator used the specific ADBA risk assessment tool. We have reviewed the operators risk assessment in line with the CIRIA736 guidelines and are in agreement that the overall site risk rating is classed as 'medium'. The risk assessment follows a source, pathway, receptor model and produced the following findings:

- Source has been classed as 'high hazard'
- Pathway mitigated with use of a containment system has been classed as 'low hazard'
- Receptor has been classed as 'medium hazard' due to presence of a drainage ditch adjacent to the installation boundary which eventually runs to Sully Brook, a primary river

This combination leads to an site hazard rating of 'medium'. The likelihood of loss of containment has been classed as 'medium', this combination of site hazard rating and likelihood as leads to a site risk rating as 'medium'.

Primary containment measures include the storage tanks themselves. There is a total of fourteen storage tanks that contain liquid sludge located within the installation boundary, there is existing and new infrastructure being utilised at the site. A summary of all these tanks, including what material they are constructed from and their lifetime has been included, there is a mix of concrete and steel tanks. The digester tanks are constructed with portions below and above ground, three of the digesters are concrete tanks with one constructed from stainless steel. The existing infrastructure at the site that is being re-utilised in the AAD facility has significant residual design life, with concrete structures expected to exceed their design life, steel tanks can also remain in operation after the design life is exceeded due to appropriate long-term inspection and maintenance. The operator will undertake thorough inspections of the tanks to maximise asset life balanced against the risk of failure, this will mitigate potential failure due to end of asset life. New infrastructure has been constructed with supervision from a third-party construction supervisor to ensure the structures are fit for purpose and compliant with the relevant specification and standards. The assets do not show any signs of inherent defects, this will mitigate potential failure due to inherent defects.

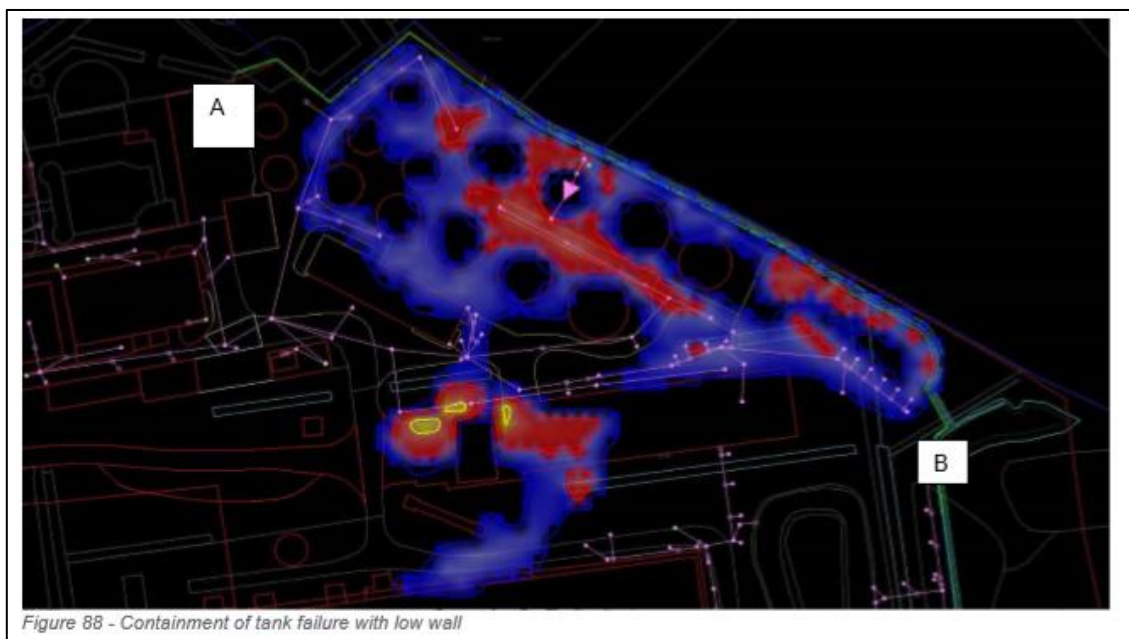
Traffic movements in the vicinity of the digesters are restricted and expected to be primarily for maintenance and on an infrequent basis. Movements around the site operate via a one-way system. Access to the area where the digesters are located is controlled via locked gates and restricted to single lane access for maintenance use only. This area of the site is also zoned as part of the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) assessment. The risk of traffic collision with the digesters is considered low due to the points explained above, therefore

collision barriers have not been proposed by the operator as would impede access to the digesters and prevent maintenance.

The arrangement of the tanks at Cog Moors AAD facility presents two settings due to their proximity to the installation boundary:

- First Setting: Tanks distant from the site boundary – Digester Tanks A and C
- Second Setting: Tanks close to the site boundary – Digester Tanks B and D

The tanks within the first setting all meet the Class 1 boundary profile which requires the height of the liquid level within the tank to be less than the horizontal distance to the edge of the hardstanding. All the tanks are contained by impermeable concrete hardstanding that is connected to the sealed drainage system which is directed to the head of the adjacent Cog Moors WwTW. The two tanks present within the second setting are in close proximity to the installation boundary and therefore do not meet the Class 1 boundary profile. The operator has modelled a major failure of the largest of these two tanks situated in close proximity to the installation boundary (Digester D), this provides a worst case scenario. The first modelling exercise indicated a baseline as it had no additional containment measures, this exercise predicted there would be contents of the digester that would enter the environment beyond the installation boundary into the drainage ditch that eventually leads to Sully Brook. Therefore the operator proposed an additional containment measure in the form of a pre-formed concrete kerbing system that would run along the whole of the northern side of the installation boundary from points A to B shown in the below plan:



The kerbing system will be 0.5 m in height or higher and will be robustly constructed in order to prevent cracking, subsidence or failure to mechanical forces during surge effects. Joints of the kerbing system will be sealed to prevent leakage and there will be limited vehicle access near the kerbing to prevent impact damage. The operator has stated that they consider this arrangement to be as robust as a reinforced concrete wall. A reinforced concrete wall cannot be provided due to constraints from the site layout and would damage root systems of protected trees within the locality.

The second modelling exercise that included the proposed containment system predicted a major failure of the largest digester D would be completely contained within the site curtilage and would be directed to the head of the adjacent Cog Moors WwTW within the sealed drainage system. The modelling also included assessment of 110 % volume of the largest digester which also predicted complete containment within the site curtilage. A jetting failure has been considered and the operator stated that cladding on the tanks would direct any jetting leak to the ground and therefore would be contained with the proposed containment measures. Further mitigation measures have been proposed by the operator and will be documented within the accident management plan. These additional mitigation measures will be in the form of on site procedures that will mitigate a scenario where the containment capacity is exceeded which would lead to flow into the drainage ditch. The accident management plan will be produced as part of Improvement Condition (IC) 3 and will require approval by NRW.

A maintenance and inspection schedule will be adopted by the operator and will include daily and weekly operational checks in addition to more detailed inspections of tanks with frequency determined by a risk based approach. The programmes will be developed informed by operations of other similar DCWW sites, subject to formal approval by management and will be reviewed, the operational staff at the site will be fully trained in the programmes.

We are satisfied the appropriate containment measures will be in place to contain a spill in the unlikely scenario of a major failure from one of the tanks. An improvement condition (IC5) has been included to ensure the proposed containment measure will

be constructed to the standard and description that has been proposed by the operator as part of this determination.

4.2.3 Closure and decommissioning

Having considered the information submitted within the permit application, we are satisfied that the appropriate measures will be in place for the close and decommissions of the installation.

Permit condition 1.1.1 requires the Operator to have a written management system in place which identifies and minimises risks of pollution including those arising from closure.

At the definitive cessation of activities, the Operator has to satisfy us that the necessary measures have been taken so that the site ceases to pose a risk to soil or groundwater, taking into account both the baseline conditions and the site's current or approved future use. To do this, the Operator has to apply to us for surrender, which we will not grant unless and until we are satisfied that these requirements have been met.

4.3 Operation of the Installation – general issues

4.3.1 Administrative issues

The Applicant is the sole Operator of the Installation. We are satisfied that the Applicant is the person who will have control over the operation of the Installation if the Permit were to be granted; and that the Applicant will be able to operate the Installation so as to comply with the conditions included in the Permit, if issued.

OPRA

We are satisfied that the Applicant's submitted OPRA profile is accurate. The OPRA score will be used as the basis for subsistence and other charging, in accordance with our Charging Scheme. OPRA is Natural Resources Wales method of ensuring application and subsistence fees are appropriate and proportionate for the level of regulation required.

Technical Competence

Technical competency is required for the permitted activities. The operator is a member of an agreed scheme, WAMITAB.

Relevant Convictions

NRW's COLINS Database has been checked to ensure that all relevant convictions have been declared. Relevant convictions were found and declared in the application, all relevant convictions cases are now closed.

The operator satisfies the criteria in RGN 5 on Operator Competence.

Financial Provision

There is no known reason to consider that the operator will not be financially able to comply with the permit. The decision was taken in accordance with RGN 5 on Operator Competence.

4.3.2 Management

The Applicant has stated in the Application that they operate an Environmental Management System (EMS) which is certified to ISO14001, a copy of the certificate confirming this was provided as part of the Application.

We are satisfied that appropriate management systems and management structures will be in place for this Installation, and that sufficient resources are available to the Operator to ensure compliance with all the Permit conditions.

4.3.3 Accident management

In order to ensure that the management system proposed by the Applicant sufficiently manages the residual risk of accidents, permit condition 1.1.1a requires the implementation of a written management system which addresses the pollution risks associated with, amongst other things, accidents. The site currently has an accident management plan which is implemented as part of their Environment Management System. An improvement conditions (IC3) has been included which requires the operator to update their accident management plan for the new installation and submit to NRW for approval.

4.3.4 Fire Prevention and Mitigation

In line with current NRW Fire Prevention and Mitigation Plan Guidance, a Fire Prevention and Mitigation Plan is not required for this activity as it is wet anaerobic digestion.

4.3.5 Site security

Access to the site is restricted to authorised persons only using a fob system and time restricted electric gates, visitors can gain access through an intercom. The site is manned 24 hours a day, 7 days a week, the site boundary is contained with 2.5 m wire fencing with barbed wire and hedging, the operator carries out regular inspections and maintenance. Having considered the information submitted in the Application, we are satisfied that appropriate infrastructure and procedures will be in place prior to start up to ensure that the site remains secure.

4.3.6 Operating techniques

We have reviewed the techniques used by the operator and compared these with relevant guidance notes. The relevant guidance notes for this installation are:

- Reference Document on Best Available Techniques for Waste Treatment (2018)
- Technical Guidance Note M1: Sampling requirements for stack emission monitoring
- Technical Guidance Note M2: Monitoring stack emissions: techniques and standards for periodic monitoring
- Technical Guidance Note M5: Monitoring of stack emissions from medium combustion plants and specified generators
- CIRIA C736: Containment systems for the prevention of pollution: Secondary, tertiary and other measures for industrial and commercial premises (2014)
- Guidance for monitoring enclosed landfill gas flares, LFTGN05 (2014)

A Best Available Techniques (BAT) assessment has been completed by the operator and assessed by us, this compares the operating techniques with those contained within the relevant BAT reference document. The operating techniques used by the operator are in line with the benchmark techniques contained within the relevant BAT reference document and sector guidance note and we consider them to present appropriate techniques for the facility. However there are four areas of the BAT

assessment that require further assessment, therefore four improvement conditions have been included to address this shortfall. Annex 1 details why these improvement conditions have been set and which areas of the BAT assessment they address.

Monitoring of point source emissions to air will be carried out in line with the monitoring requirements outlined in TGN M2 and TGN M5 and will have MCERTS accreditation. No further additional controls for monitoring are required.

Sampling of point source emissions to air will be carried out in line with the sampling requirements outlined in TGN M1. No further additional controls for sampling are required.

See section 4.2.2 of this document for more detail on how we have assessed the containment measures in line with CIRIA C736 guidance.

We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process. These are specified in the Operating Techniques table in the permit.

4.3.7 Efficient use of raw materials, water and energy

The primary raw materials at the installation are indigenous and imported sludge, the polymer used in the dewatering process, the polymer, sodium hydroxide and sodium bisulphite all used for boiler water treatment and sodium chloride (salt), there is scope for a further two chemicals to be used but only if required: ferric chloride could be used for dosing if hydrogen sulphide levels are too high and sodium bicarbonate could be used as an antifoam agent if foaming in the digesters is an issue. The sludges are used to produce biogas which is then used a fuel in the two CHP engines to produce electricity. The polymer is used in two stages of the process during dewatering of the sludge prior to thermal hydrolysis and during the post digestion dewatering. All raw materials used are industry standards and their use at the installation presents a low environmental impact when stored and used correctly.

The installation uses potable water and has one storage tank for potable water from the mains supply (200 m³). The potable water is used for the boiler water treatment package, polymer make-up and can be used as a source of firefighting water. The water treatment package is designed to provide softened water and demineralised water to the boilers. The EMS has a dedicated resource management section and therefore water use will be reviewed in line with the EMS requirements and in line with requirements of BAT.

The operator is a participant of the Energy Savings Opportunity Scheme (ESOS) and therefore completes an energy efficiency audit in the business every four years which identifies cost effective energy saving measures. The EMS contains a key objective to reduce energy consumption from the national grid which is delivered through the 'Reduction of Energy Consumption Programme', this involves production of monthly energy usage reports. There are a number of energy efficiency measures in place at Cog Moors WwTW:

- Installation purchases renewable electricity
- Heat generated from the process of when the sludge is cooled is recovered via a heat exchanger and used in the AAD process
- Steam boilers are located within a process building to protect from excessive heat loss
- The CHP engines are equipped with turbochargers which increases energy efficiency
- Continuous monitoring of plant operating parameters ensures the process is operation at optimal conditions for maximum efficiency
- Insulation of main hot water pipes and any heating equipment
- Monitoring of the heat recovered, electricity production, gas use and overall efficiency of the installation
- Production of an energy efficiency plan once the site is operational
- Any waste heat from the CHP engines will be used to supplement the THP

Through some of the measures mentioned above, the operator will ensure compliance with OFGEM and the Combined Heat and Power Quality Assurance Programme.

Having considered the information submitted in the application, we are satisfied that the appropriate measures will be in place to ensure the efficient use of raw materials, water and energy within the installation.

4.3.8 Avoidance, recovery or disposal of wastes produced by the activities

This requirement addresses wastes produced at the facility. The main waste streams for the installations are listed below:

- Screenings and grit
- Scrap metal
- Batteries and WEEE
- Waste oils and oil contaminated items
- Wooden pallets
- General and recycling waste
- Sewage waste
- Drummed waste and hazardous waste

The majority of the exported waste will be the sludge waste, the use of the modern THP process reduces allows more sludge to be converted to biogas therefore less residual material remains after anaerobic digestion. There is a 41 % waste reduction of the exported sludge between the existing AD plant and the proposed AAD plant. The installation has waste management procedures contained within the sites Environmental Management Plan which details a designated area of the site has been allocated to waste management, each waste stream with a designated container. All waste will be recycled where possible and waste removed from site will be done so by licensed contractors which are already agreed.

Having considered the information submitted in the Application, we are satisfied that the waste hierarchy referred to in Article 4 of the Waste Framework Directive (WFD) will be applied to the generation of waste and that any waste generated will be treated in accordance with this Article.

We are satisfied that waste from the Installation that cannot be recovered will be disposed of offsite using a method that minimises any impact on the environment. Permit condition 1.4.1 will ensure that this position is maintained.

5 Minimising the Installation's environmental impact

Regulated activities can present different types of risk to the environment, these include odour, noise and vibration; accidents, fugitive emissions to air and water; as well as point source releases to air, water, sewer and discharges to ground or groundwater, global warming potential and generation of waste. All these factors are discussed in this and other sections of this document.

For an installation of this kind, the principal emissions are:

- Air emissions
- Noise
- Odour

The next sections of this document explain how we have approached the critical issue of assessing the likely impact of emissions from the Installation on human health and the environment and what measures we are requiring to ensure a high level of protection.

We have reviewed the operator's assessment of the environmental risk from the facility. The operator's risk assessment is satisfactory following receipt of additional requested information.

5.1 Assessment of Impact on Air Quality

This section of the decision document deals primarily with the dispersion modelling of emissions to air from the stack and its impact on local air quality.

The Applicant has assessed the Installation's potential emissions to air against the relevant air quality standards, and the potential impact upon human health. These assessments predict the potential effects on local air quality from the Installation's stack emission.

The air impact assessments, and the dispersion modelling has been based on the Installation operating continuously at the relevant long-term or short-term emission limit values, i.e. the maximum permitted emission rate. We are in agreement with this approach. The assumptions underpinning the model have been checked and are reasonably precautionary. The way in which the Applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have

been reviewed to establish the robustness of the Applicant's air impact assessment. The output from the model has then been used to inform further assessment of health impacts.

The applicant used dispersion modelling software BREEZE AERMOD and have modelled using five years of meteorological data from the Rhose Cardiff International airport meteorological station. The applicant assessed the impact of emissions from the two boilers and the two CHP engines of oxides of nitrogen (NO and NO₂) expressed as NO₂ (NO_x), carbon monoxide (CO) and sulphur dioxide (SO₂). Emission limit values for the combustion sources were taken from the Medium Combustion Plant Directive. Background values for pollutants have been sourced from DEFRA 2017 background maps using a relevant monitoring station, this provides a conservative approach as current background levels are expected to be lower. The applicant has modelled predicted impacts of long-term and short-term NO_x, short-term SO₂ and long-term and short-term CO in line with relevant government guidance 'Air emissions risk assessment for your environmental permit', they have calculated the process contribution (PC) and predicted environmental concentration (PEC). Predicted impacts have been modelled at nine sensitive human receptors within 1 km of the proposed stack location, the closest sensitive receptor is a residential property approximately 250 m to the east.

Oxides of Nitrogen (NO and NO₂) expressed as NO₂ (NO_x)

Long-term (annual mean)

The predicted PCs and PECs have been compared against the long-term critical level of 40 µg/m³ which is the relevant environmental standard. The highest predicted PC is 8.4 % and PEC is 34.5 % of the long-term critical level therefore the long-term impacts of NO_x emissions at human health receptors can be considered insignificant in line with current NRW guidance.

Short-term (daily mean)

The predicted PCs have been compared against the short-term critical level of 200 µg/m³ which is the relevant environmental standard. The highest predicted PC is 12.8 % of the short-term critical level and 14.4 % of the short-term critical level minus twice the short-term background. Therefore, the short-term impacts of NO_x emissions

at human health receptors can be considered insignificant in line with current NRW guidance.

Sulphur dioxide (SO₂)

15-minute average

The predicted PCs have been compared against the short-term critical level of 266 µg/m³ which is the relevant environmental standard. The highest predicted PC is 24.1 % of the short-term critical level and 26.1 % of the short-term critical level minus twice the short-term background. Therefore, the short-term impacts of SO₂ emissions at human health receptors can be considered not significant as there is unlikely to be an exceedance of the critical level in line with current NRW guidance.

1-hour 99.7th percentile average

The predicted PCs have been compared against the short-term critical level of 350 µg/m³ which is the relevant environmental standard. The highest predicted PC is 5.7 % of the short-term critical level. Therefore, the short-term impacts of SO₂ emissions at human health receptors can be considered insignificant in line with current NRW guidance.

24-hour 99.2nd percentile average

The predicted PCs have been compared against the short-term critical level of 125 µg/m³ which is the relevant environmental standard. The highest predicted PC is 7.3 % of the short-term critical level. Therefore, the short-term impacts of SO₂ emissions at human health receptors can be considered insignificant in line with current NRW guidance.

Carbon Monoxide (CO)

8-hour running average across a 24-hour period

The predicted PCs and PECs have been compared against the long-term critical level of 10,000 µg/m³ which is the relevant environmental standard. The highest predicted PC is 2.5 % and PEC is 7.5 % of the long-term critical level. Therefore, the long-term impacts of CO emissions at human health receptors can be considered insignificant in line with current NRW guidance.

1-hour average

The predicted PCs have been compared against the short-term critical level of 30,000 µg/m³ which is the relevant environmental standard. The highest predicted PC is 2.9 % of the short-term critical level. Therefore, the short-term impacts of CO emissions at human health receptors can be considered insignificant in line with current NRW guidance.

We are satisfied that due to this proposal there are unlikely to be any exceedances of the long-term and short-term air quality standards for NO_x, SO₂ and CO at any of the sensitive receptors identified for the protection of human health.

5.2 Emissions to surface water

Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent pollution of ground and surface water. There will be no emissions of process effluent to surface water from the installation. All surface water will be routed within the sealed drainage system to the head of the adjacent wastewater treatment works. See section 4.2.2 of this document for more detail on the containment measures present at the site. We are satisfied that the pollution risk associated with the Installation is low based on the use of appropriate surfacing, satisfactory containment, inspection measures and the operating procedures which will be put in place as part of the ISO 14001 environmental management system.

5.3 Emissions to sewer

There is one emission to public sewer, all process water will be routed within the sealed drainage system to the head of the adjacent wastewater treatment works.

5.4 Emissions to soil or groundwater

There will be no emissions to soil or groundwater as a result of the operation of the installation. The activities will be carried out on an impermeable concrete surface with a sealed drainage system. The operator has proposed a kerbing system 0.5 m high that runs along the northern side of the installation boundary, this wall ensures 110 % capacity of the largest tank volume (1600 m³) would be completely contained within the curtilage of the site and re-routed to the sealed drainage system. See section 4.2.2 of this document for more detail on the containment measures present at the site. We are satisfied that the pollution risk associated with the Installation is low based on the

use of appropriate surfacing, satisfactory containment, inspection measures and the operating procedures which will be put in place as part of the ISO 14001 environmental management system.

5.5 Fugitive emissions

There will be no significant fugitive emissions to air associated with the installation. There will be appropriate containment measures in place for the control of liquid wastes to prevent release to the environment. The activities will be carried out on an impermeable concrete surface with a sealed drainage system. See section 4.2.2 of this document for more detail on the containment measures present at the site. Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise fugitive emissions and to prevent pollution from fugitive emissions.

5.6 Assessment of odour impact

The applicant has submitted an odour assessment which included odour dispersion modelling for the proposed installation to predict odour levels at nearby residential locations. The odour assessment reviewed odour emissions of the current treatment process at Cog Moors WwTW and assessed any changes in the odour emissions at a result of the proposed upgrade. The proposed upgrade will replace three existing odour control units (OCU 1, 2 and 3) with two new odour control units (OCU Plant A and OCU Plant C) and existing OCU 1 will be refurbished to become named 'OCU Plant B'. OCU Plant A will service the sludge storage tanks, blending tanks, and the post digestion tanks. OCU Plant C will service the centrifuge feed tank, cake import facility, cake export silos and pre/post digestion centrifuges.

The Environment Agency's H4 Odour Management Guidance is widely accepted and used in regulatory odour impact assessments, NRW has adopted this guidance. As set out in the guidance, the modelling method commonly used in the UK calculates a 98th percentile of hourly average odour concentrations over a year. The results are expressed as odour units. Odour units are determined by a standard method given in BS EN13725; 2003 Air quality, determination of odour concentration by dynamic olfactometry. One odour unit, 1 OU_E/m³ (European Odour Unit per meter cubed of air) is the point of detection. The exposure benchmarks are:

- 1.5 odour units for most offensive odours
- 3 odour units for moderately offensive odours
- 6 odour units for less offensive odours

Odours from processes involving sludge are placed in the most offensive odours category, therefore an exposure benchmark of 1.5 odour units has been used to assess the predicted impact of odour on nearby sensitive receptors. The closest sensitive receptors are located approximately 250 m to the east and 290 m to the south, both are residential properties.

The applicant has submitted odour air dispersion modelling, the odour assessment was undertaken in line with Environment Agency H4 Odour Management Guidance. The odour assessment compared the odour emissions from two scenarios: the current operations (baseline conditions) and the proposed installation, therefore allowing for a conclusion of how the odour emissions will change as a result of the proposed upgrade. The modelling software used was AERMOD version 14134. The controlled odour sources on the proposed installation are the two new odour control plants (OCU Plant A and OCU Plant C) and refurbished existing OCU Plant B, emission rates for the odour control units were based on manufacturer guarantees. The uncontrolled odour sources for the proposed installation are enclosed skips storing inert stain press material which could have adhered raw sludge, emission rates for these sources have been based on an overly conservative approach where all four skips will be in use and the odour assumed to be similar to that of the inlet works. Five years of sequential hourly meteorological data (2012 – 2016) was used in the dispersion model obtained from the Rhose Cardiff International Airport monitoring station, approximately 9 km from the installation. The installation experiences a prevailing wind direction from the west, therefore blowing towards the closest receptor.

For the current operations, the greatest odour concentration predicted at a sensitive receptor is 0.46 OU_E/m³. For the proposed upgrade, the greatest odour concentration predicted at a sensitive receptor is 0.30 OU_E/m³ and at all modelled sensitive receptor locations the odour concentrations are predicted to be below 0.5 OU_E/m³. For both scenarios, odour concentrations at sensitive receptors are predicted to be below the emission benchmark of 1.5 OU_E/m³ and it is considered unlikely for there to be unacceptable odour pollution and odour effects can be considered not significant. The

two closest receptors are predicted to experience a reduction in odour between the current and proposed operations.

Although we do not consider it necessary for the proposed installation, the operator has an odour management plan in place for the current operations, this will be updated to reflect the proposed upgrade. It is a requirement of BAT to incorporate an odour management plan as part of the Environmental Management System, this is achieved through the ISO14001 accredited EMS.

In line with BAT conclusions for Waste Treatment (2018) emission limit values have been set for odour from the three OCUs. There is a choice in the BAT conclusions for Waste Treatment (2018) of setting limits between odour or hydrogen sulphide and ammonia, the operator has chosen odour as the parameter.

Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where not practicable to minimise the effects of odour. In addition to the emission limit values set for odour, permit conditions 3.3.1 and 3.3.2 requires that emissions from the activities are free from odour at levels likely to cause pollution outside the site. We are satisfied this condition will be sufficiently protective for the proposed installation.

5.7 Noise and Vibration Assessment

The applicant has submitted a noise and vibration impact assessment which has been prepared in line with British Standard BS 4142:2014 '*Method for rating and assessing industrial and commercial sound*' and BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*'. Noise levels were assessed including existing and new sources of noise for the whole newly permitted installation. Noise levels were modelled at four closest noise sensitive receptors, the closest sensitive receptor is approximately 250 m to the east. Background survey was undertaken at four receptor locations, at the two closest receptors long-term unattended surveys were completed, at the two other locations short-term attended surveys were completed. Periods assessed included weekday daytime (07:00 – 23:00), weekend daytime (07:00 – 23:00) and overnight (23:00 – 07:00). SoundPLAN 7.4 noise mapping software was

used to predict noise from the operation of the proposed installation. A +2 dB penalty was added for tonal noise which we are in agreement with.

According to BS4142: 'the significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background source level and the context in which the sound occurs.

- The greater the difference between the background and sound source the greater the magnitude of impact
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context
- A difference of around +5 dB or more is likely to be an indication of an adverse impact, depending on the context
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact. When the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

Weekday Daytime period

The difference between the background and the sound source at all receptor locations was between -15 dB and +/-0 dB, therefore the sound source rating level was equal to or below the background rating level at all sensitive receptor locations and the specific sound source can be considered as having a low impact and there is a positive indication that complaints are unlikely.

Weekend Daytime period

The difference between the background and the sound source at all receptor locations was between -13 dB and -1 dB, therefore the sound source rating level was below the background rating level at all sensitive receptor locations and the specific sound source can be considered as having a low impact and there is a positive indication that complaints are unlikely.

Overnight period

The difference between the background and the sound source at receptor locations was between -15 dB and +2 dB. The sound source rating level was below the background rating level at three of the sensitive receptor locations and the specific sound source can be considered as having a low impact and there is a positive indication that complaints are unlikely. At one sensitive receptor location the specific sound source rating level was slightly above the background rating level and is considered unlikely to have an adverse impact. Further assessment against the WHO Night Noise Guidelines concludes the predicted specific sound source rating level at all receptor locations would be below the 40 dB Night Noise Guidelines target set to protect the public therefore should not be considered detrimental.

The operator has detailed a number of mitigation measures to reduce the impact of noise and vibration on nearby receptors;

- Limited operating hours
- Complaints procedure in place
- Planned preventative maintenance of plant equipment
- Silencing equipment
- Traffic management plans and speed restrictions

The operator has a noise and vibration management plan in place for the current operations, this will be updated to reflect the proposed upgrade. The operator is required to update the noise and vibration management plan and submit to NRW for approval as part of an improvement condition IC4. It is a requirement of BAT to incorporate a noise and vibration management plan as part of the Environmental Management System, this is achieved through the ISO14001 accredited EMS.

Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where not practicable to minimise the effects of noise and vibration. Permit conditions 3.4.1 and 3.4.2 requires that emissions from the activities are free from noise and vibration at levels likely to cause pollution outside the site. We are satisfied this condition in addition to the proposed measures will be sufficiently protective for the proposed installation.

5.8 Impact on Natura 2000/Ramsar sites, SSSIs and non-statutory conservation sites

The installation is within the relevant screening distance criteria for protected conservation sites. A full assessment of the application and its potential to affect any of the sites has been carried out as part of the permit determination process. Natura 2000/Ramsar sites, SSSIs and local nature sites will be discussed in detail separately below.

Natura 2000/Ramsar sites

The following Natura 2000/Ramsar sites are located within 10 km of the installation:

- Severn Estuary SAC UK0013030 / SPA UK9015022 / Ramsar UK11081

An OGN 200 Form 1 (Habitats Regulation Assessment) was completed to assess the potential to affect the Natura 2000/Ramsar sites, this is available on the public register. The assessment concluded the installation is not likely to have a significant effect on any of the Natura 2000/Ramsar sites. We have consulted with the conservation body in Wales on our assessment of all the sites listed above. The conservation body in Wales are in agreement with our conclusions.

SSSI Assessment

The following Sites of Special Scientific Interest (SSSI) are located within 2 km of the installation:

- Cog Moors SSSI 33WAL
- Cosmeston Lakes SSSI 33WAS

An Appendix 4 Form (CRoW Act Assessment) was completed to assess the potential to affect the SSSI sites, this is available on the public register. The assessment concluded the installation is not likely to damage any of the features of any of the SSSI sites. We have consulted with the conservation body in Wales on our assessment of all the sites listed above. The conservation body in Wales are in agreement with our conclusions.

Non-Statutory Sites Assessment

There are several non-statutory Local Wildlife Sites, Local Nature Reserves and Ancient Woodlands located within 2 km of the installation:

- Local Nature Reserve: Cosmeston Lake Country Park
- Local Wildlife Sites: Cog Moors, North of Cog Moors, Pop Hill, Cosmeston Lakes, Cogan Pond, North of Pop Hill, Shortlands Wood, Cross Common, Dinas Powys Moors, Pwll Erw-naw, Pond 11 Biglis Moors, North of North Road, Downs Wood, Cosmeston Lakes Country Park
- Ancient Woodlands: Pop Hill Woods, Shortlands Wood, Near Cross Common, Cross Common (The Breeches), Downs Wood

In line with NRW guidance, for non-statutory sites assessment criteria considers whether an installation can cause significant pollution. If the process contribution for each pollutant is less than 100 % of the critical level of load, we consider no significant pollution will be caused. The applicant screened for non-statutory sites within 2 km of the installation and included these sites in their air dispersion modelling report. Among all the non-statutory sites assessed the highest process contributions were <100 % of the relevant critical levels or loads therefore the impacts on all the non-statutory sites can be considered insignificant.

6 Setting ELVs and other Permit conditions

We have decided that emission limits should be set for the parameters listed in the permit.

The following emission limits for point source emissions to air have been set for the two boilers and the two CHP engines:

- Oxides of Nitrogen (NO and NO₂ expressed as NO₂)
- Carbon monoxide
- Sulphur dioxide (when fuel is biogas)

The emission limit values set are in line with the Medium Combustion Plant Directive, the site-specific BAT assessment did not identify the need for more stringent emission limit values than those contained within MCPD.

The following emission limit for point source emissions to air has been set for the three odour control units:

- Odour

This emission limit value has been set in line with the BAT conclusions for Waste Treatment (2018). There is a choice in the BAT conclusions for Waste Treatment (2018) of setting limits between odour or hydrogen sulphide and ammonia, the operator has chosen odour as the parameter.

It is considered that the emission limit values above will ensure that significant pollution of the environment is prevented and a high level of protection of the environment is secured.

6.1 Translating BAT into Permit conditions

Article 14(3) of IED states that BAT conclusions shall be the reference for permit conditions. Article 15(3) further requires that under normal operating conditions; emissions do not exceed the emission levels associated with the best available techniques as laid down in the decisions on BAT conclusions.

The emission limits for the combustion sources described in the air dispersion modelling sets the worst-case scenario. If this shows the emissions from the site are low and that they will not cause a breach of air quality objectives in the area, then we are satisfied that the emissions from the site will not adversely impact the surrounding environment or the health of the local community. The emission limit values set are in line with the Medium Combustion Plant Directive, the site-specific BAT assessment did not identify the need for more stringent emission limit values than those contained within MCPD.

The emission limits for the odour control units have been set in line with the BAT conclusions for Waste Treatment (2018).

6.2 Monitoring

We have decided that monitoring should be carried out for the parameters listed in Schedule 3 of the permit using the methods and to the frequencies specified in those tables. These monitoring requirements have been imposed in order to demonstrate compliance with the emissions limits in the permit.

Medium Combustion Plant

The monitoring frequency required by MCPD is every 3 years, a site-specific BAT assessment did identify the need for a more stringent monitoring frequency to be applied (annually).

Waste gas burner (emergency flare stack)

The monitoring frequency for the waste gas burner has been set in line with the requirements of LFTGN05: Guidance for monitoring enclosed landfill gas flares. The waste gas burner is an emergency flare to be used only when the Medium Combustion Plant is unavailable therefore monitoring is only required when the flare has been operational for over 10 % of a year, which equates to 876 hours.

For all emissions to air, the methods for continuous and periodic monitoring are in accordance with the Environment Agency's Guidance M2 for monitoring of stack emissions to air.

Based on the information in the Application and the requirements set in the conditions of the permit we are satisfied that the monitoring techniques, personnel and equipment employed by the Operator will have either MCERTS certification or MCERTS accreditation as appropriate.

Odour control units

The monitoring frequency for the odour control units has been set in line with the requirements of the BAT conclusions for Waste Treatment (2018). The reference period is not specified in the BATc therefore is not specified within the permit.

6.3 Reporting

We have specified the reporting requirements in Schedule 4 of the Permit to ensure data is reported to enable timely review by Natural Resources Wales to ensure compliance with permit conditions and to monitor the efficiency of material use and waste recovery at the installation.

6.4 Improvement conditions

Although this application is for a new bespoke permit it was decided by NRW that the site should be treated for permitting purposes as an existing installation as is operational and has been for a number of years, therefore improvement conditions have been set as opposed to pre-operational conditions. Based on the information on

the application, we consider that we need to impose improvement conditions. Details of the improvement conditions used and reasons why they have been set can be found at Annex 1.

6.5 Incorporating the application

We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process. These descriptions are specified in the Operating Techniques table in the permit.

OPRA

The agreed OPRA score at the installation is 45. There will also be a fixed subsistence fee for the MCP component of the permit as this is not covered in OPRA. These both will form the basis for ongoing subsistence fees.

ANNEX 1: Improvement Conditions

The improvement conditions that have been set can be seen in Table S1.3 presented below. The reasons why these were set are explained herein:

- IC1 – this is a requirement of BATc 38 for Waste Treatment. The operator was requested in Schedule 5 Notice (3) to address this BATc however the response was inadequate and therefore it has been included as an improvement condition.
- IC2 – this requires the operator to update its existing Environment Management System to include the new installation activities. This has been included as at the point of the application the system had not yet been updated and to ensure the updated system meets the requirements of BATc 1 for Waste Treatment (2018).
- IC3 – this requires the operator to update the accident management plan to include the new installation activities. This has been included as an improvement condition as at the point of the application the plan had not yet been updated and to ensure the updated plan meets the requirements of BATc 1 and BATc 21 for Waste Treatment (2018).
- IC4 – this requires the operator to update the noise and vibration management plan to include the new installation activities. This has been included as an improvement condition as at the point of the application the plan had not yet been updated and to ensure the updated plan meets the requirements of BATc 1 and BATc 17 and BATc 18 for Waste Treatment (2018) and H3 horizontal guidance.
- IC5 – this requires the operator to construct the proposed containment system to the standards and description proposed as part of this determination.

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IC1	The Operator shall submit for written approval a methodology for meeting the process parameters listed in Table S3.3 as per BAT 38 for the anaerobic treatment of waste. The methodology shall identify each of the process parameters and detail the frequency and techniques in place to record the data. Where a process parameter cannot be monitored justification should be provided and/or a suitable alternative proposed. The methodology should include trigger levels for each of the parameters with associated procedures in place if trigger levels are exceeded. The operator shall submit the report to Natural Resources Wales for approval by the date specified.	3 months from date of permit issue.
IC2	The operator shall update its existing Environment Management System to incorporate all the activities now covered by this permit in accordance with BAT 1 of the BAT conclusions for Waste Treatment, under Directive 2010/75/EU of the European Parliament and of the Council. The operator shall submit the updated Environment Management System to Natural Resources Wales for approval by the date specified.	3 months from date of permit issue.

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IC3	The operator shall update its accident management plan to incorporate all the activities covered by this permit in accordance with BAT 1 and BAT 21 of the BAT conclusions for Waste Treatment, under Directive 2010/75/EU of the European Parliament and of the Council. The operator shall submit the accident management plan to Natural Resources Wales for approval by the date specified.	3 months from date of permit issue.
IC4	The operator shall update its noise and vibration management plan to incorporate all the activities covered by this permit in accordance with BAT 1, BAT 17 and BAT 18 of the BAT conclusions for Waste Treatment, under Directive 2010/75/EU of the European Parliament and of the Council and the H3 Horizontal Guidance. The operator shall submit the noise and vibration management plan to Natural Resources Wales for approval by the date specified.	3 months from date of permit issue.
IC5	The operator shall submit for written approval a report by a qualified engineer (or equivalent) confirming that the proposed containment system has been constructed to the standards and descriptions provided in the document reference: 4793-S-203-HYD-XX-XX-RP-N-X-10593-S1-P4 September 2020. The report should reference the CIRIA 736 guidance. The operator shall submit the report to Natural Resources Wales for approval by the date specified.	3 months from date of permit issue.

ANNEX 2: 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 Public Health Wales / Iechyd Cyhoeddus Cymru	
Brief summary of issues raised:	Summary of action taken / how this has been covered
The regulator should ensure that the information and data provided is realistic and that sufficient operational measures are in place to reduce pollution, noise and odour.	Full assessments of all three risk assessments has been completed. The assumptions underpinning the models and model inputs have been checked and are reasonably precautionary. Where operational measures are required to control emissions, they have been checked to ensure they are sufficient.
The regulator should ensure they are satisfied with the rationale used in the modelling and the assessment that emissions are unlikely to adversely impact on local air quality.	A full assessment has been completed of the air emissions risk assessment including the air dispersion modelling. The assumptions underpinning the model have been checked and are reasonably precautionary. The way in which the Applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have been reviewed to establish the robustness

	of the Applicant's air impact assessment. The output from the model has then been used to inform further assessment of health impacts. We are satisfied that due to this proposal there are unlikely to be any exceedances of the long-term and short-term air quality standards for NOx, SO ₂ and CO at any of the sensitive receptors identified for the protection of human health.
It is important that good housekeeping measures are enforced to ensure that odour emissions do not cause nuisance issues. If these are complied with it is unlikely that odour emissions will adversely impact on local receptors.	A full assessment has been completed for the odour emissions including odour modelling, which concluded the effects from odour to be not significant. Although we do not consider it necessary for this installation the operator has an odour management plan which is implemented through their ISO14001 accredited Environment Management System. In addition emission limit values for odour are being set in line with requirements of BAT. Ongoing enforcement and compliance are delivered through the regulation of the site once the permit has been issued.
Regarding the noise and vibration assessment, mitigation proposals include the management of operational hours, the regulator should consider if this is appropriate mitigation and ensure that suitable management controls are included for all operations to ensure mitigation of noise.	See Section 5.7 for explanation

2) Consultation Responses from Members of the Public and Community Organisations

a) Representations from Local MP, Assembly Member (AM), Councillors and Parish / Town / Community Councils

Response Received from	
Brief summary of issues raised:	Summary of action taken / how this has been covered

b) Representations from Community and Other Organisations

Response Received from	
Brief summary of issues raised:	Summary of action taken / how this has been covered

c) Representations from Individual Members of the Public

Response Received from	
Brief summary of issues raised:	Summary of action taken / how this has been covered