

MAX RECYCLE

AEROBIC DIGESTER

Environmental Permit Variation Application

Non-Technical Summary

Prepared for: Advetec Holdings Limited on behalf of

Max Recycle UK Limited

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APPENDICES

1.0 INTRODUCTION

SLR Consulting Limited (SLR) has been instructed by Advetec Holdings Limited (Advetec) to prepare an application to vary Max Recycle UK Limited's (Max Recycle) existing environmental permit (EPR/BP2590VJ/A001) to include the operation of an Advetec unit for the treatment of residual waste generated at Max Recycle's Waste Treatment Transfer Station, Blackthorn Way, Sedgeleth Industrial Estate, Fencehouses, Tyne and Wear DH4 6JW. (hereafter referred to as 'the Site').

This Non-Technical Summary (NTS) provides a summary of what is being applied for, the regulated facility and outlines the key technical standard and control measures that will be implemented at the Site as a result of the risk assessments.

1.1 The Site

The Site is located within Max Recycle, Blackthorn Way, Sedgeleth Industrial Estate, Fencehouses, Tyne and Wear, DH4 6JW, centred on National Grid Reference (NGR) NZ 32115 50546. The village of Houghton Le Spring is located 2.3km southeast and the City of Sunderland lies 10km to the northeast.

To the south and east, the Site is immediately bounded by buildings as part of Sedgeleth Industrial Estate. To the north lies an area open ground. Immediately to the east lies industrial and commercial properties and residential properties. The landscape surrounding the Site is primarily comprised of residential areas with the exception of park land to the north and west.

There are two areas of Ancient Woodland and a Site of Special Scientific Interest (SSSI) located within 2km of the Site boundary. In addition, there a number of Grade II listed buildings, as well as a registered park and garden situated within 2km radius of the Site. Further information on the Site's setting can be found in the Environmental Risk Assessment in Section 4 of the application.

The site is accessed via an unnamed road which leads off Blackthorne Way.

The Site Location is illustrated on Drawing 001 and the Environmental Permit Boundary is illustrated in Drawing 002, both can be found in Section 3 of this application.

1.2 Aerobic Digestion

Aerobic digestion is a natural bacterial process in which micro-organisms breakdown organic material in the presence of oxygen. Aerobic bacteria digest and consume the organic material, typically only producing by-products of heat, water vapour, carbon dioxide (CO₂) and a post-process floc.

Aerobic digestion has typically been used to treat sewage sludge however the process has been proved to also be an effective method of solid waste treatment, reducing volume, mass and moisture content, and enabling simpler handling for the operator. The process is able to accept a range of feedstocks including food waste, green waste, selected industrial waste and food by-products.

A diagrammatic overview of an aerobic digestion process is provided as Figure 1.

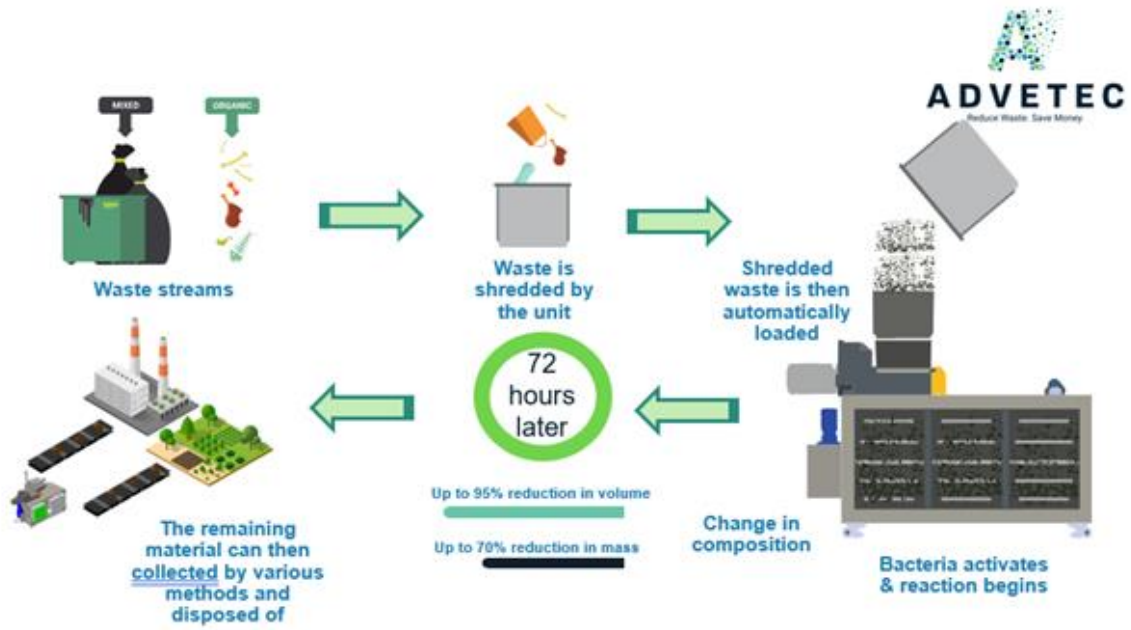


Figure 1 - Aerobic Digestion Process Overview

2.0 OVERVIEW OF PROPOSED DEVELOPMENT

The proposed Max Recycle aerobic digester will only accept waste generated within the Max Recycle Waste Transfer Station namely residual municipal waste.

Advetec have produced a range of aerobic digester systems. It is proposed that Advetec's XO22 model is installed at Max Recycle's Site.

Max Recycle proposes to install one XO22 unit at the Site which will treat up to 10 tonnes of waste per day, approximately 3,650 tonnes per annum. Following digestion, an approximate mass reduction of 62.5% and volume reduction of 70% is expected, resulting in an approximate output of 3.75 tonnes per day of floc suitable for onwards recovery off-site as Solid Recovered Fuel (SRF).

This permit variation application seeks to allow the treatment of no more than 10 tonnes of non-hazardous waste per day, equating to 3,650 tonnes per annum.

The waste will be loaded within the existing waste transfer station building into a bulk loading system feeding a shredder. The bulk loading system and shredder are located within the building. The shredder shreds the waste into 50mm² particle size. The shredded waste is then augered into the digester, where bacteria and bio-stimulants are automatically dosed into the waste. The digester will be located externally to the building on a concrete pad served with drainage to foul sewer.

The XO22 has two chambers, with an internal mass of 22m³ at any given point, through which the waste is moved for digestion. Movement is by a centralized shaft with engineered paddles that rotate according to pre-programmed algorithms. The paddles allow the system to stay aerobic while ensuring residence, and index mass throughout the process.

The only by-products of the aerobic digestion system are water vapour, carbon dioxide, condensate and a post-process residue (floc). The process uses exothermic aerobic respiration; therefore, it generates its own heat which is channelled internally back into the process, using a closed-loop heating system. The process does not use water. Condensate will be discharged to sewer in accordance with the waste transfer station's Trade Effluent Discharge Consent.

The entire aerobic digestion process takes approximately 72 hours to complete, after completion the post-process floc exits the unit via an enclosed auger which conveys to a 40 yd³ Roll-on Roll-off (RORO) compactor with a maximum capacity of up to 8 tonnes. Waste is stored within the compactor before being collected, transferred off-Site and replaced with an empty RORO container. Up to 8 tonnes of waste will be stored in the compactor at any one time. The compactor is collected and emptied a minimum of once a week but as and when required if more frequent collections are needed.

A basic process flow diagram of this process is provided as Figure 2.

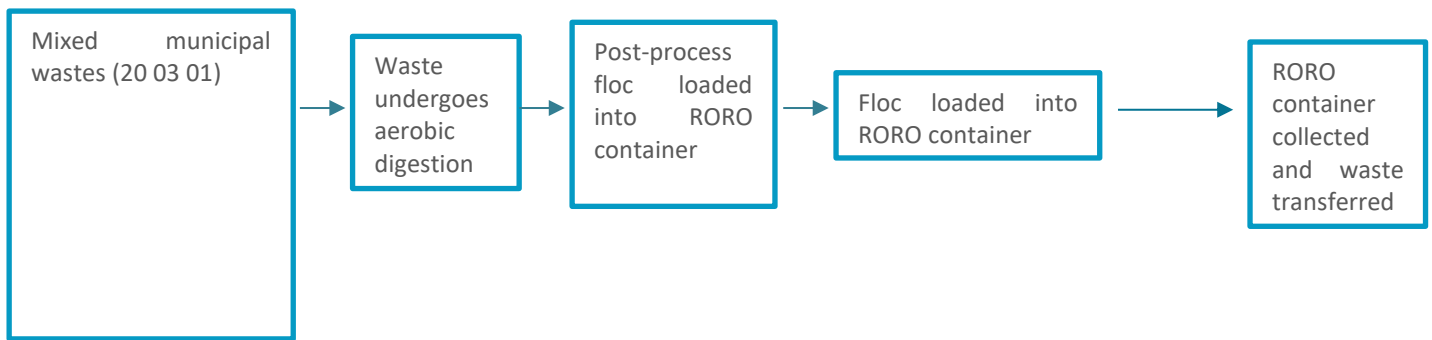


Figure 2 – Process Flow Diagram of Site Treatment and Storage

The XO22 is accessible via a regulated cloud-based portal. Data points are collected, logged and stored at programmable intervals, including temperature, humidity, rotational speeds, emissions monitoring, power consumption, maintenance schedules. Alert and alarm levels are programmed into the system to notify in the event of system errors or parameters moving out of range. There is also an in-line gas monitoring system which continuously monitors levels of methane (CH₄), carbon monoxide (CO), volatile organic compound (VOCs) and sulphur dioxide (SO₂), which in the event of detection of any of these parameters, an alarm is raised.

The Environmental Permit Boundary and Site Layout is illustrated on Drawing EP2. A picture of a similar installation can be seen in Figure 3 for illustrative purposes only.

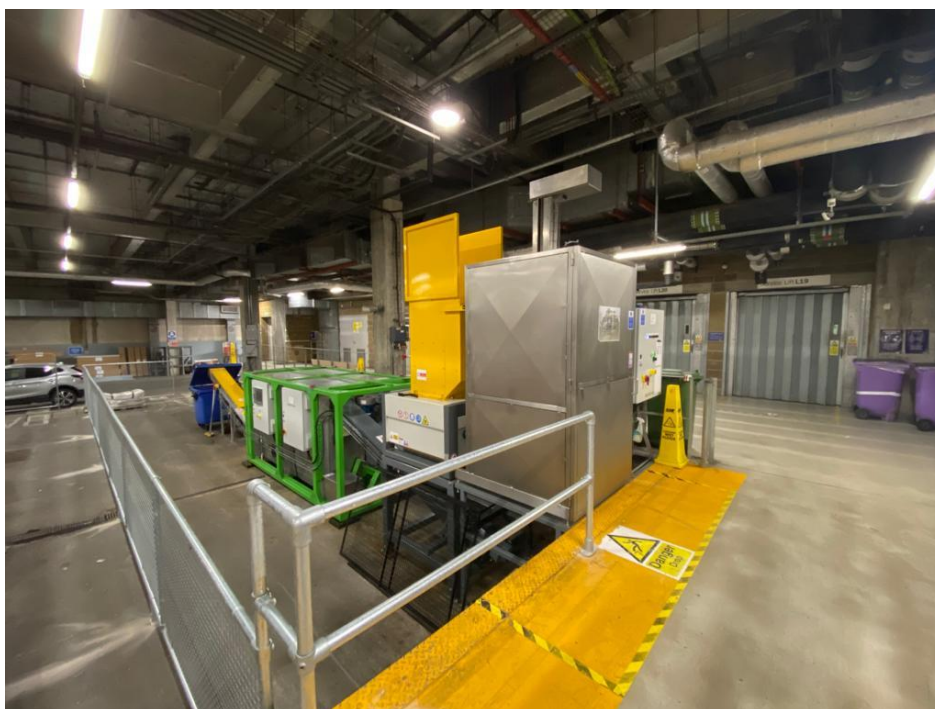


Figure 3 - Advetec Installation at Cribbs Causeway

3.0 PERMITTED WASTE OPERATIONS

The activities at the Site will be regulated as a bespoke waste operation as per the Environmental Permitting (England and Wales) Regulations 2016 (as amended).

This permit application seeks to vary Max Recycle UK Limited's (Max Recycle) existing Standard Rules SR2008No3_25kte- household, commercial and industrial waste transfer station and treatment, (EPR/BP2590VJ/A001) to a bespoke permit to include the use of an Advetec aerobic digester.

A number of waste management activities as described in the Waste Framework Directive 2008 will be undertaken at the Site. These include:

- R3 - Recycling or reclamation of organic substances that are not used as solvents;
- R5 - Recycling/reclamation of other inorganic materials; and
- R12 - Exchange of wastes for submission to any of the operations numbered R1 to R 11.

3.1 Waste Types and Quantities

The maximum quantity of waste proposed for treatment by aerobic digestion is up to 10 tonnes per day, 3,650 tonnes per annum. Table 1 lists the wastes which are proposed for treatment by aerobic digestion.

Table 1
List of Wastes Proposed for Acceptance

List of Waste Code	Description
20	MUNICIPAL WASTES AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES INCLUDING SEPARATELY COLLECTED FRACTIONS
20 03 01	Mixed municipal waste

3.2 Waste Storage

Waste awaiting processing will be stored within Max Recycle's waste transfer station building in accordance with their currently permitted arrangements on Site.

Post-process floc will be stored within an on-site 40 yd³ RORO container prior to transfer off-Site. The RORO container has a 40 yd³ capacity and up to 8 tonnes of waste will be stored within the container at any one time.

4.0 APPLICATION OVERVIEW

This environmental permit application describes how the Site has been designed and will be operated in accordance with the relevant technical standards. In addition to this Non-Technical Summary, the application comprises the following elements, each of which are described below:

- Section 2 - Application forms (Parts A, B2, B4 and F1);
- Section 3 - Drawings;
- Section 4 - Environmental Risk Assessment;
- Section 5 - Site Condition Report;
- Section 6 – Operations and Environmental Management Plan;
- Section 7 - Fire Prevention Plan;
- Section 8 - Odour Management Plan;
- Section 9 - Site Specific Bioaerosols Risk Assessment

4.1 Application Forms

Parts A, B2, B4, and F1 of the EA's application forms have been completed in support of the application and are enclosed as Section 2 of the application.

4.2 Drawings

Section 3 contains drawings for the Site, these include:

- Drawing EP1 Site Location Plan;
- Drawing EP2 Environmental Permit Boundary & Site Layout;
- Drawing EP3 Environmental Site Setting; and
- Drainage Plan.

4.3 Environmental Risk Assessment

The Environmental Risk Assessment has considered odour, fugitive emissions, dust, releases to water, litter, mud, birds, vermin and insects, and potential for accidents and incidents. The assessment concludes that with the implementation of the risk management measures described, potential hazards from the proposed development are not likely to be significant.

The Environmental Risk Assessment is enclosed in Section 4 of this application.

4.4 Site Condition Report

The Site Condition Report details the condition of soil and groundwater at the Site. It contains the information necessary to determine the current state of soil and groundwater conditions at the Site, so that a comparison can be undertaken upon the eventual cessation of activities.

A copy of the Site Condition Report is provided in Section 5 of this application.

4.5 Operations and Environmental Management Plan

The OEMP describes how the Site has been designed and will be operated in accordance with relevant technical standards and guidance. The document includes an overview of the technology, operational processes, emissions monitoring and reporting implemented at the Site.

The OEMP is enclosed in Section 6 of this application.

4.6 Fire Prevention Plan

The Fire Prevention Plan (FPP) aims to meet the 3 main objectives of the EA FPP Guidance- minimise the likelihood of a fire happening, aim for a fire to be extinguished within 4 hours and minimise the spread of fire within the site and to neighbouring sites.

The FPP is enclosed in Section 7 of this application.

4.7 Odour Management Plan

The Odour Management Plan (OMP) outlines the methods by which the operator can systematically assess, reduce, and prevent potentially odorous emissions from the facility in order to meet the Environmental Permit odour conditions for the site.

The OMP is enclosed in Section 8 of this application.

4.8 Site Specific Bioaerosols Risk Assessment

The Site Specific Bioaerosol Risk Assessment (SSBRA) assesses potential impacts associated with the operation of an aerobic digestion unit at the Max Recycle waste transfer station. The objective of the SSBRA is to establish the likely sources of bioaerosols arising from proposed operations at the site, identify the proposed mitigation and control measures to minimise potential offsite risks, assess the potential for significant risk of impact to human health at sensitive receptors located in the vicinity of the plant as a result of bioaerosol emissions from the process, and identify any additional mitigation required to control potential effects.

The SSBRA is enclosed in Section 9 of this application.

5.0 KEY TECHNICAL STANDARDS

Key technical standards laid out in the following documents have governed the design and proposed operation of the Site:

- Biological waste treatment: Appropriate measures for permitted facility, February 2024;
- Develop a management system: environmental permits, April 2023;
- Control and monitor emissions for your environmental permit, November 2022;
- Environmental Permitting Regulations - Site Condition Reports Guidance and Templates' (version 3 April 2013); and
- Risk assessments for your environmental permit, November 2023.

Due to the small scale of the aerobic digester, the risk to sensitive receptors is considered low. However, the following control measures that are necessary to ensure the Site does not give rise to significant environmental impact have been determined through the risk assessment process and are summarised below:

- Activities are managed in accordance with an environmental management system;

- Performance against the management system is audited at regular intervals;
- Odour management measures will be employed to ensure odour emissions are minimised from the Site;
 - Post-process floc will be stored within an enclosed compactor prior to collection and transfer off-Site.
- Noise management measures will be employed to minimise emissions of noise including;
 - Machinery is operated so as to minimise noise;
 - Vehicles adhere to a speed limit when accessing the Site.
- Strict waste acceptance procedures, detailed in the OEMP, will be adhered to prevent odour and contamination.
- Daily observational monitoring is undertaken at the Site boundary, for odour, noise and dust emissions.

6.0 CONCLUSION

The overall conclusion from the studies undertaken as part of the application is that there is unlikely to be a significant environmental impact as a result of the proposed operation of the Max Recycle Aerobic Digester.

Max Recycle UK is fully committed to ensuring the highest standards are met and will undertake its activities in a manner consistent with best industrial practices and in accordance with the company's environmental policy and management system.

It is therefore considered that the permit variation should be issued as detailed above.

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