CQA INTERNATIONAL LIMITED

Earlstree Road AD Plant

Containment System Assessment

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Contents

1.	Introduction	1
1.1	Terms of Reference	1
1.2	Scope of Report	1
1.3	Biowaste Sector Permit Review	2
1.4	Professional Competency	3
2.	Overview of Industry Best Practice	4
2.1	Basis of Assessment	4
2.2	CIRIA Report C736	4
2.3	Definition of Containment Systems	5
3.	Site Context	6
3.1	Site Location & Layout	6
3.2	Site Setting (Compliance with General Permit Conditions)	7
3.3	Operations	8
3.4	Geology	9
3.5	Hydrogeology	9
3.6	Surface Water Features	10
3.7	Protected Environmental Receptors	10
4.	Site Inspection and Assessment	11
4.1	Site Overview	11
4.2	Assessment of Infrastructure	12
4.3	Summary of Site Infrastructure	14
5.	Risk Assessments and Classification	15
5.1	Overview	15
5.2	Site Risk Rating Methodology	15
5.3	Site Risk Rating Result	16
5.4	Risk Assessment Methodology for Specific Scenarios	18
5.5	Risk Assessment of the Current Situation	19
5.6	Current Mitigation Measures	21
5.7	Suggested Additional Mitigation Measures	21
5.8	Effect of Mitigation Measures on Risk Rating	21
6.	Conclusions and Recommendations	23
7.	References	24

Tables

Table 1	Compliance with Generic Permit Conditions	7
Table 2	Summary of Site Observations	12
Table 3	Methodology for Deriving the Site Risk Rating	15
Table 4	Site Risk Rating and Classification Result	18
Table 5	Risk Assessment Scheme	19
Table 6	Risk Assessment of Current Situation	19
Table 7	Suggested Additional Mitigation Measures	22

Figures

Figure 1	Site location (Image reproduced from Bing Maps/Ordnance Survey)	6
Figure 2	Aerial image of the site (Image reproduced from Google Earth)	7
Figure 3	BGS geological map – Solid Geology	9
Figure 4:	BGS hydrogeology map	10
Figure 5	Site Plan Showing Defined Zones	11

Annexes

Annex A	Site Photographs
Annex B	Site Permit
Annex C	Site Layout Plan

1. Introduction

1.1 Terms of Reference

CQA International Ltd (CQAI) was appointed by Sandfield Penstock Solutions Ltd on behalf of Waste4Generation Ltd (W4G) to assess the containment system at W4G's anaerobic digestion (AD) Plant in Corby, Northamptonshire (the site). A site inspection was made by CQAI on 7 March 2023. The report presents the results of the study and forms the inspection and works programme for the sites primary and secondary containment.

1.2 Scope of Report

This report presents details of an inspection and assessment of all primary and secondary containment systems present on site. It also includes a works programme to ensure that the containment systems present are fit for purpose in line with the Environment Agencies (EA) Environmental Permitting (England and Wales) Regulations 2016 Regulation 61(1) requirements. The assessment was requested by the Environment Agency (EA) as part of the operators plans to vary the site permit to an Installation. The requirements form part of the biowaste sector permit review process discussed in Section 1.3.

> *A detailed assessment of site infrastructure should be provided (e.g. secondary containment, tank specification, surfacing, storage lagoon etc.). The site infrastructure should be compared with the relevant industry /construction standards (e.g. CIRIA guidance C736 for secondary containment and C535 for above-ground tanks etc.).*
>
> *The assessment should include:*
>
> - *The physical condition of primary containment systems (storage and treatment vessels), secondary containment (bunds), loading and unloading areas, transfer pipework/pumps, temporary storage areas and liners underlying the site.*
> - *The suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure;*
> - *Any work required to ensure compliance with the industry standards or equivalent; and*
> - *A preventative maintenance and inspection regime for site infrastructure.*

This report addresses the above requirements and includes additional information, such as a description of the containment systems and the environmental context. Definitions of containment systems are also included.

Any suggestions for measures to be taken are conceptual, and not design statements. The recommendations could be used as a framework for further discussion and agreement with the EA, prior to undertaking any necessary investigation, design and construction.

1.3 Biowaste Sector Permit Review

The EA has been carrying out a Biowaste Treatment Sector permit review as required by legislation, to ensure that permit conditions deliver compliance with relevant legislative requirements and appropriate standards to protect the environment and human health. The process covers all permit holders within the sector.

The scope of the sector wide permit review covered the following areas:

- the requirement for bioaerosols monitoring and compliance with M9 bioaerosols monitoring requirements;
- the design and construction of primary and secondary containment;
- review of process monitoring requirements;
- review of waste types;
- review of tonnages to ensure compliance with the Industrial Emissions Directive;
- review of permit conditions where required.

The review process commenced with the issuance of a Regulation 61 notice and request for information, with the recommendations following assessments included within varied permits as improvement conditions. However, some permits were automatically varied with the requirements listed as improvement conditions, as was the case with all Standard Rules Permits. Any operator wishing to vary their permit was also required to comply with the requirements.

The improvement programme requirements and pre-operational measures specific to this report require a technically competent person to undertake an inspection and produce a works programme to ensure that all primary and secondary containment is fit for purpose (generally referred to as meeting Best Available Techniques (BAT)). This often includes providing a written 'primary and secondary containment plan' detailing the level of compliance with CIRIA C736, however specific requests may vary.

Non-Hazardous and Inert Waste Appropriate Measures Guidance states that there is overlap between best available techniques (BAT) for waste installation facilities and necessary measures for waste operation facilities. The Environment Agency uses the term 'appropriate measures' to cover both sets of requirements.

The guidance sets out what must be considered when the appropriate measures for the facility are assessed, however it is not definitive and does not replace obligations to assess appropriate measures fully for the site. Appropriate measures will depend on the:

- activities being carried out
- size and nature of the activities
- location of the facility

Where a measure is not suitable or relevant, an operator can propose alternative measures that achieve the same level of environmental protection. Or they can provide an explanation of why the specific measure is not relevant. In certain situations, a higher standard of environmental protection may be needed, for example:

- where there are local sensitive receptors
- if the facility is affecting the local environment or human health despite using appropriate measures
- if there is a risk that you may breach an Environmental Quality Standard

'BAT conclusions' are contained in a reference document that defines the best available techniques for a process or sector, including emission levels, consumption levels, monitoring and where appropriate, remediation measures. The Non-Hazardous and Inert Waste Appropriate Measures Guidance refers to EU Directive 2010/75 on industrial emissions.

1.4 Professional Competency

CQAI is an engineering consultancy which specialises in containment engineering, typically for waste management, environmental and mining projects. The company developed from Containment Quality Associates Ltd, which was established in 1993 to provide design and supervision services in the containment of solid and liquid wastes and wastewater.

CQAI's experienced staff has designed and supervised the construction, closure and energy optimisation of numerous containment systems in the UK and overseas, for a range of purposes, including waste management, mining, petrochemical, agriculture, water supply and anaerobic digestion.

CQAI have been approved by the EA to undertake containment system assessments for the biowaste sector based upon submission and review of the company's experience and competency within the required fields.

2. Overview of Industry Best Practice

2.1 Basis of Assessment

This assessment has been carried out in compliance with industry best practice as defined by CIRIA Report C736 - Containment systems for the prevention of pollution, secondary, tertiary and other measures for industrial and commercial premises, 2014 (hereafter, C736) which is widely accepted by the EA and planning authorities as the appropriate guidance document to assist owners and operators of industrial and commercial facilities to identify and manage the risks associated with storing substances (inventory) that may be flammable, combustible or hazardous to the environment.

2.2 CIRIA Report C736

C736 is applicable to industrial and commercial facilities for the containment of a wide range of inventories, which have the potential to pollute land and water, and to sites ranging from small commercial premises, which may contain a single tank, through to large industrial concerns, including chemical or petrochemical sites.

The report advocates a risk-based approach to managing the storage of inventory. However, it is important to ensure that the risk assessment methodology used is appropriate to the regulatory regime within which the facility is operating, including statutory requirements, regulations and the planning framework.

C736 deals principally with managing the potential consequences of failure of primary containment systems, such as storage or process tanks. Combustion of inventory is also covered, but has less relevance to wet systems, such as AD. Secondary containment is provided to mitigate these consequences and reduce the risk of the following substances reaching the wider environment:

- inventory
- firefighting agents
- contaminated surface water (such as incident rainfall)

Where flammable inventory is stored, it is often impractical to provide sufficient secondary containment near the primary containment, for the firefighting and cooling water that might be applied during an incident. Tertiary containment can provide a further level of protection should the secondary containment be overwhelmed by firefighting and cooling water.

The application of the report's guidance to existing facilities should be based on risk. Designs may be subject to "as low as reasonably practicable" (ALARP) and/or "best available techniques" (BAT) tests and supporting cost-benefit analyses (CBA) depending on the relevant regulations (COMAH, EPR etc.).

2.3 Definition of Containment Systems

The generally accepted definitions of containment systems are set out below:

Primary Containment	The operational storage, processing and transfer of inventory, such as tanks, intermediate bulk containers (IBCs), drums, pipework, valves, pumps and associated control systems. May also include equipment that prevents the breach of primary containment under abnormal conditions, such as high-level alarms linked to shut-down systems.
Secondary Containment	Minimises the consequences of a failure of the primary storage by preventing the uncontrolled spread of the inventory. Secondary containment is achieved by equipment that is external to and structurally independent of the primary storage. Typically, secondary containment systems are located close to the primary containment, such as bunds around storage tanks. However, perimeter systems may act as combined secondary containment on complex sites. Secondary containment may also provide temporary storage capacity for rainfall, and firefighting water.
Tertiary Containment	Provides back-up for secondary containment, possibly with additional allowance for rain and firefighting water. On complex sites, the definition and roles of secondary and tertiary containment may overlap or be combined, and this will need to be understood and explained in the management plan.
Combined Containment	Has both local and remote elements and are designed to contain some of the escaped inventory close to the source, as in local containment, and to transfer by gravity, or by pumping, to a further secondary containment facility at a remote location.

In addition, the guidance requires containment systems to be classified into one of three classes (Class 1 = low risk, Class 3 = high risk) on the basis of a risk assessment. The risk assessment shall be based on the source, pathway, receptor paradigm, together with an assessment of the likelihood of loss of containment. The resulting site risk rating is used to determine the class. The risk assessment and resulting classification for this site is addressed in section 5.

3. Site Context

3.1 Site Location & Layout

The site is located on Earlstree Road, within the Earlstree Industrial Estate, approximately 2km north of the centre of Corby, Northamptonshire. The approximate grid reference is SP 88770 90796 and the postcode is NN17 4AZ. The surrounding area is predominantly industrial and commercial land use. The closest residential dwellings are located approximately 300m south west of the facility, on Hooke Close.

Figure 1 Site location (Image reproduced from Bing Maps/Ordnance Survey)

The site is permitted under Environmental Permitting Regulations, permit reference EPR/CB3902XP. The site boundary is shown in Figure 2 and a site layout plan is included in the Site Permit presented in Annex B. Photographs of the site are presented in

Annex A. The facilities infrastructure is spread over the site, with the feedstock, AD Plant, CHP unit and flare located to the far west of the site, reception tank and waste water treatment moving east and complex waste treatment occurring within the building.

Figure 2 Aerial image of the site (Image reproduced from Google Earth)

3.2 Site Setting (Compliance with General Permit Conditions)

The site inspection confirmed that the layout of the site matched the description. The geographical and environmental setting was also observed. The process infrastructure was inspected to assess compliance with the regulatory requirements (generally referred improvement conditions). The assessment of infrastructure is summarised in Section 4.2.

The site is compliant with general permit conditions concerning location, as summarised in Table 1.

Table 1 Compliance with Generic Permit Conditions

General permit condition	**Compliance status**
200 metres of the nearest receptor as measured from any combustion stack or stacks, unless the stacks are at least 7 metres high and the effective stack height of each stack is greater than 3 metres.	Compliant. No residential properties within 200m of the CHP stack. Only industrial buildings are present within this radius.
250 metres of the nearest sensitive receptor where any processing or storage of digestate fibre is in the open.	Compliant. No sensitive receptors within this radius.
500 metres of a European site (within the meaning of Regulation 8 of the Conservation of Habitats and Species Regulations 2017) or a Site of Special	Compliant. Nearest SSSI is 4km distant.

Table 1 Compliance with Generic Permit Conditions	
General permit condition	**Compliance status**
Scientific Interest, including candidate or proposed sites or a marine conservation zone.	
a groundwater source protection zone 1 or 2, or if a source protection zone has not been defined then within 50 metres of any well, spring or borehole used for the supply of water for human consumption (including private water supplies)	Compliant. Nearest GPZ is 10+km distant
250 metres of the presence of great crested newts, where it is linked to the breeding ponds of the newts by good habitat.	Great crested newts are understood not to be confirmed within this distance
10 metres of any watercourse.	Compliant. (see section 3.6)
50 metres of a Local Nature Reserve, Local Wildlife Site, Ancient Woodland or Scheduled Monument.	Compliant. Nearest LNR 3.5+km No LWS identified nearby Nearest AW/SNAW 0.8km Nearest SM 2km
50 metres of a site that has species or habitats of principle importance (as listed in Section 41 of the Natural Environment and Rural Communities Act 2006) that the Environment Agency considers at risk to this activity.	Compliant. No listed habitats near the site.
a specified Air Quality Management Area.	Compliant. Not within such an area.

3.3 Operations

The plant utilises high-rate anaerobic digestion technology to treat wastes in 24 hours in order to produce biogas and an effluent low in solids and COD which is able to be discharged to sewer The facility specialises in difficult-to-treat waste streams as well as conducting research & development into optimising feedstocks and how best to use these in the AD process to maximise their potential. High quality feedstocks are produced for the AD market to benefit both the plant and process, improve gas production and to supply key nutrients vital for bacterial colony health.

The R&D facility was first permitted in 2015, with upgrades to the plant being made between 2018-2021. The facility is currently permitted for an annual waste throughput to not exceed 35,000 tonnes. The AD Plant energy output is rated at up to 150kW$_e$.

3.4 Geology

The site is located on land forming the Earlstree Quarry, which was operational in the 1960s for the extraction of ironstone to feed the nearby Corby steel works.

According to the British Geological Survey online map, Figure 3, bedrock in the vicinity of the site is Northamptonshire Sand Formation (ironstone). This is described as a sandy, berthierine-ooidal and sideritic ironstone, historically described as estuarine deposits.

Superficial geology is recorded at the site as glaciofluvial deposits, however this is unlikely to be present now. Shallow soils are expected to be fill material, which was deposited after closure of the ironstone quarry. Numerous borehole records from the period of the industrial estate development in 1977 confirm the geology, with clayey fill extending to a depth of approximately 5-6m, overlying ironstone; the depth of ironstone is unconfirmed.

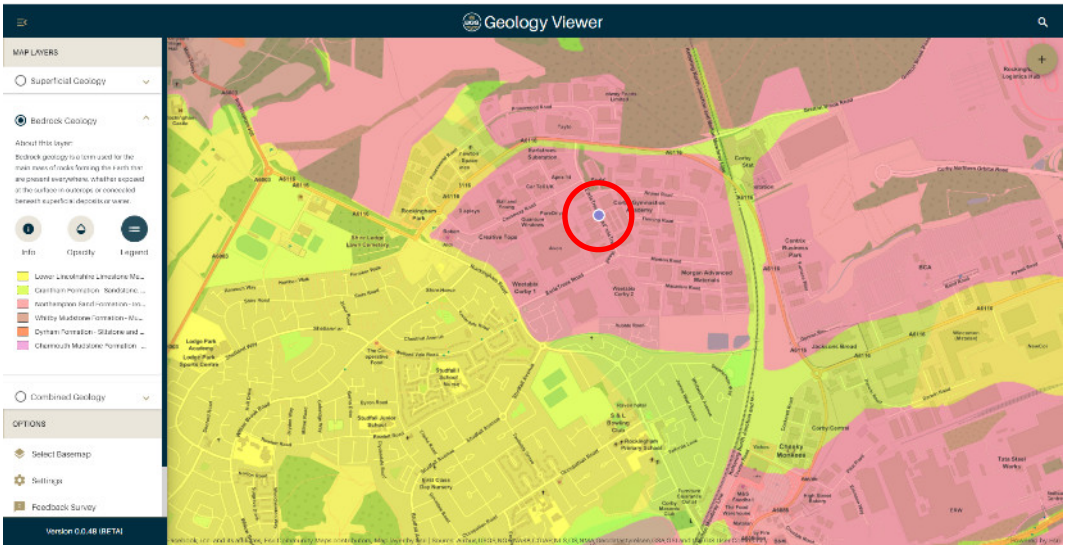

Figure 3 BGS geological map – Solid Geology

3.5 Hydrogeology

The bedrock beneath the site forms a moderately productive, Class 2B, aquifer. The site is located within a drinking water safeguard zone for surface water, however no nearby abstractions have been identified. The site is within a nitrate vulnerable zone (NVZ).

There are no source protection zones within a 10km boundary of the site.

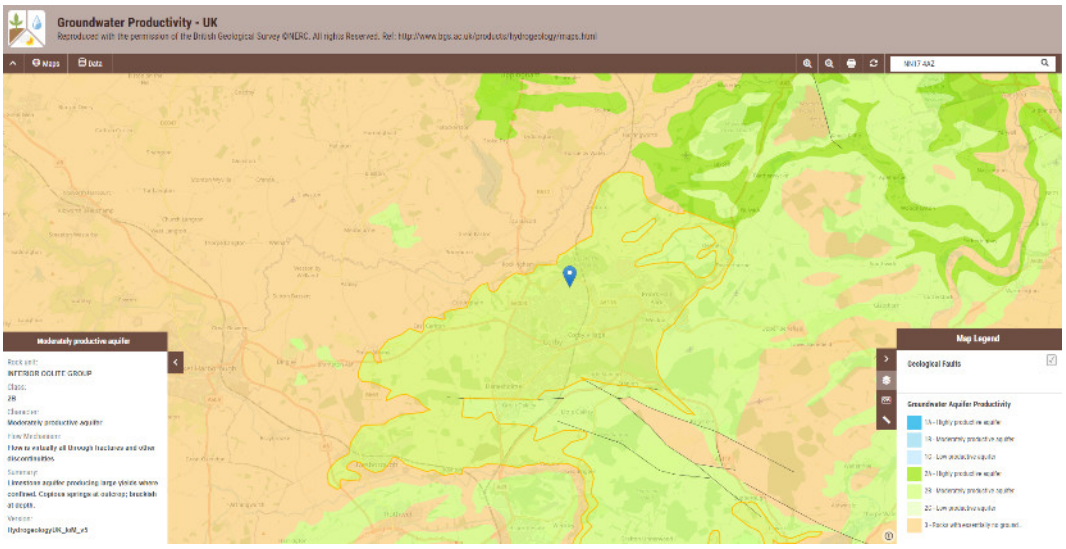

Figure 4: BGS hydrogeology map

3.6 Surface Water Features

The UK Centre for Ecology and Hydrogeology Flood Estimation Handbook suggests that there is a water flow approximately 30m to the north of the site entrance, however there is no evidence of this locally and it is assumed that the stream course is culverted, possibly from a spring issuing to the northwest, discharging into a lagoon approximately 1.5km south east of the site. It is unconfirmed if any surface water from site would be discharged into this culvert, however it is possible that the culvert and lagoon serve the industrial estate. The closest open watercourse is shown as a small brook over 500m south of site.

All of the local surface water features are manmade following the infilling and regeneration of the old quarry.

3.7 Protected Environmental Receptors

There are no SSSI located within 2km of the site.

4. Site Inspection and Assessment

4.1 Site Overview

The Site, located to the west of and directly accessed from Earlstree Road, Corby covers an area of approximately 4,000m^2. The Site includes parking, offices, warehouse, general access areas, the AD Plant and general tank storage areas. The site elevation rises westwards from the entrance (119m AOD approximately) to the rear of the site (120m AOD approximately).

A large number of tanks, mostly relatively small, are located around the site, with the largest tanks being associated with the high rate AD plant located near the western boundary of the site. The layout of tanks and their specific locations are included in the site plan, presented in Annex C. A simplified plan is presented as Figure 5, with zones defined by CQAI to support the descriptions presented in Table 2.

Zones 1-5 are associated with the existing permit, while zone 6 is associated with the R&D and expansion associated with the permit amendment.

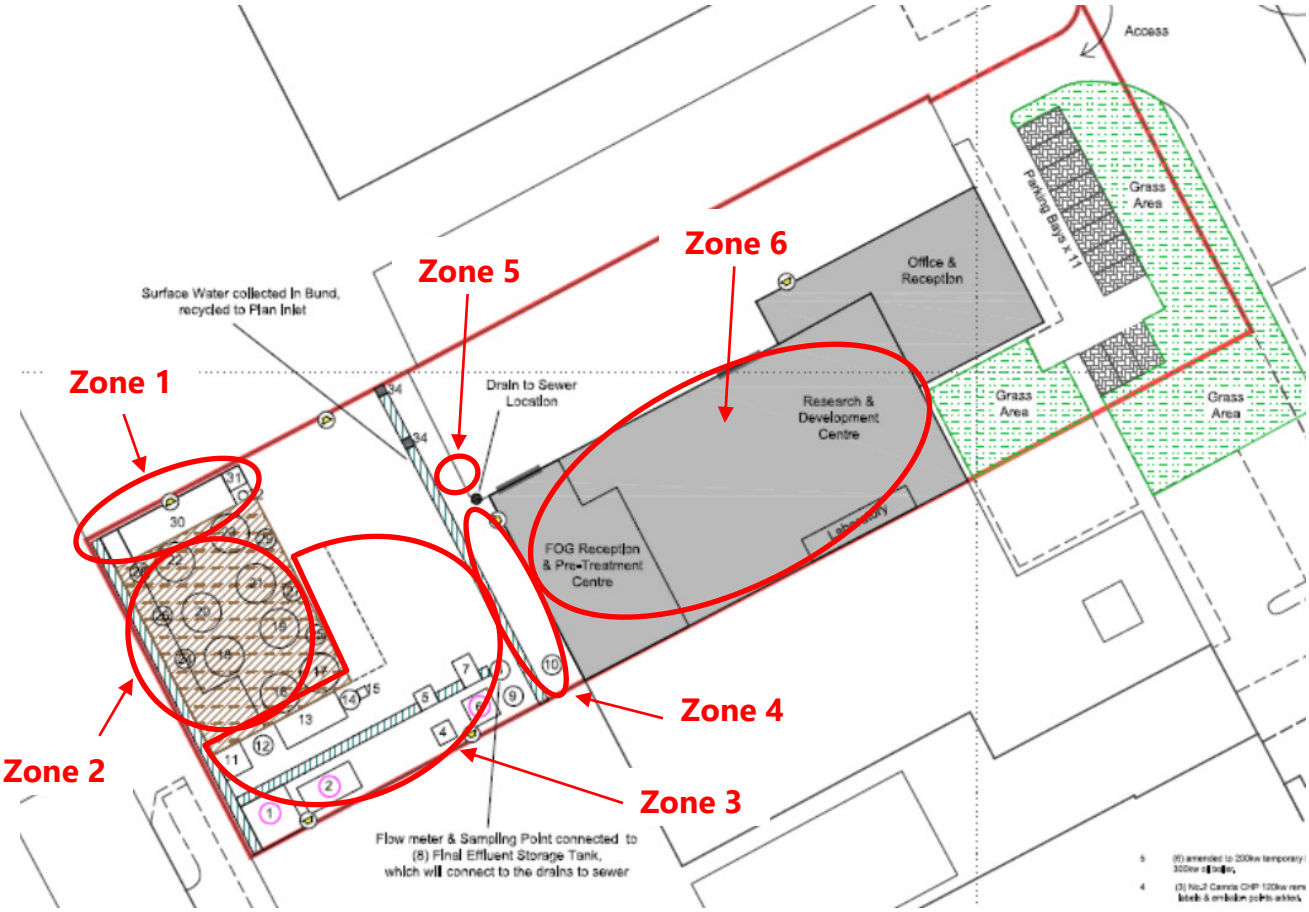

Figure 5 Site Plan Showing Defined Zones

4.2 Assessment of Infrastructure

CQA's assessment of the condition of the AD plant, storage tanks and associated infrastructure, at the time of the site visit in March 2023, is summarised in Table 2.

Table 2 Summary of Site Observations

Zone	**Observations**
Zone 1 Feedstock	Including tanks: 31, 32, 33 & 34 Total volume of tanks: 151m^3 Comprises two single skin horizontal cylindrical steel tanks and one rectangular corrugated single skin steel tank ((FE DAF Sludge Tank not noted). Tanks connected by HDPE pipework. Surrounded on 3 sides by low level concrete block wall of varying height.
Zone 2 AD Plant	Including tanks: 3, 4, 5, 6, 7, 8, 9, 10, 11, 16, 17, 18, 19, 20 & 21 Total volume of tanks: 394m^3 Comprises 6 AD reactor vessels (vertical insulated tanks of what appears to be similar construction) and 2 balance tanks (vertical GFS sectional bolted tanks). Reactor vessels construction date of 2004, balance tanks construction date of 2006. Other smaller tanks referenced as hot water tanks, kerosene and DAF tanks of various construction. Tanks connected by number of HDPE pipes and valves within bunded area. Balance tanks noted to have had repairs to epoxy seals between sections. Age and condition of tanks unconfirmed. Tanks located within secondary containment comprising single skin concrete block wall to all sides with what is understood to be a sealed pumped drainage system.
Zone 3 Yard	Including tanks: 2, 12, 13, 14, 15, 22, 23, 24, 25, 26, 27, 30 & 66 Total volume of tanks: 156m^3 Comprises a number of tanks, the largest being reception tank 2 and the silver storage tank forming 2/3 of the total tank volume within this zone. DAF (Siltbuster) connected to polypropylene feed tank and polypropylene sludge tank Polishing tanks of polypropylene construction Age and condition of tanks unconfirmed. Tanks located on yard area of site with no secondary containment provided around tanks. Single height concrete block wall found to south, no kerbing to boundary on west, single height concrete block wall found to north and to the east is the ACO drain with low level speed hump beyond. ACO type drains run east west and north south, however their construction is unconfirmed. It is understood that the drains feed to site pumping stations.
Zone 4 Site Pumping Stations	Including tanks: 28 & 29 Total volume of tanks: 6m^3 Comprising gravity fed drainage system to PVC (IBC) reception/pumping station tank and PVC drum screen pumping station tank. Tanks located within single skin concrete block walls forming secondary containment.

Table 2 Summary of Site Observations	
Zone	**Observations**
	Tanks connected by number of HDPE pipes for inlet with HDPE pumped outlet. Age and condition of tanks unconfirmed.
Zone 5 Reception Tank 1	Including tank: 1 Total volume of tanks: 30m^3 Steel single skin tank located within a single skin concrete block wall forming secondary containment. HDPE inlet and outlet pipes with pumped drainage to pumping stations. Tank age and condition unconfirmed.
Zone 6 R&D and Expansion Area	Including tanks: 40 to 65 Proposed total volume of tanks: 422.5m^3 Currently level concrete floored warehouse containing a quantity of IBC's and unused polypropylene tanks. No secondary containment present. No drainage observed within building. Two vehicle entry exit doors to the north of building.
Site Drainage	The site is understood to contain and utilise any liquids, such as spills, drips or rainwater, within the AD process, however the site benefits from a trade effluent discharge consent which allows for the discharge of any surplus water arising from site processes or rainfall through the public foul sewer (trade effluent discharge consent Ref: TEDI-0120-2021). It appeared that the site drainage system in the yard area was being used as a transfer system on site, however it did not appear that there was any direct discharge to foul sewer associated with the yard drainage system. This discharge consent permits the discharge of: *Used waters from i) treatment of high strength wastes through anaerobic digestion ii) low strength wastes to bypass AD treatment for discharge in compliance with consent conditions. Volume to not exceed 150m^3/24 hours and no more than 5 litres/second.* It is understood that the site has no connection to a surface water sewer system (informed that this is blocked to prevent discharge, however this is unconfirmed).
CHP unit	The CHP unit is understood to be rated at 150kW and incorporates a H_2S carbon scrubber for pre-treatment of the gas.
Pipework	Pipework used on site is almost entirely of HDPE construction, connected by electrofusion couplers.
Surface finishing	Surface conditions are noted to be as follows: Entrance and general access area – Good condition tarmacadam surface, however ACO drainage system damaged along its length as well as around what is assumed to be the foul sewer connection point. Concrete area around RT1 and the warehouse area of concrete construction and jointing incomplete or not present. Yard area – Tarmacadam in part (northern half) and generally in satisfactory condition, however some discrete areas require repair. Concrete construction to south and in good condition. Interface between concrete and tarmacadam surfaces requires remedial works to repair cracking. Warehouse – Good condition with no evidence of deterioration or cracking

4.3 Summary of Site Infrastructure

The primary containment systems comprised the tanks and pipes present on site. These are constructed from various materials and are of varying age and condition. It is unclear if any previous assessment of the tanks condition has been undertaken and for the purpose of the assessment it is assumed not to have occurred. Some of the tanks are in exposed locations and do not benefit from collision barriers, double valves secondary containment.

The site has partial secondary containment, in that this is present around the AD tank farm. The condition and method of construction varies across the site.

5. Risk Assessments and Classification

5.1 Overview

Two forms of risk assessment can be carried out on this, and similar sites:

A site risk rating to determine the overall classification.

Assessment of specific risks to assess the design and construction.

The methodology for the two approaches are described below, followed by the results of applying these approaches to the site.

5.2 Site Risk Rating Methodology

Assessing the risk rating and classification of the site was undertaken using the qualitative approach defined in Chapter 2 of C736. This involves assigning "low", "medium" or "high" hazard scores for the sources, pathways and receptors, together with rules for combining the scores to produce a site hazard rating. This is modified by the evaluated loss of containment to produce a site risk rating. This rating is used to define the site classification, as shown in Table 3.

Table 3 Methodology for Deriving the Site Risk Rating

"Parameter"	Summary of reasons	Hazard Assessment (*tick as applicable*)		
		Low	Moderate	High
Source				
Pathway				
Receptor				
Site Hazard Rating	Low = LLL, MLL, MML, HLL Moderate = MMM, HML, HHL High = HHH, HHM, HMM			
Likelihood of Loss of Containment	Low = <0.001% Moderate = 0.001% - 1% High = >1%			
Site Risk Rating	Low = LL, ML, LM Moderate = MM, HL, LH High = HH, HM, MH			
Result	Site Risk Rating	Low	Moderate	High
(delete as applicable)	Containment Classification	Class 1	Class 2	Class 3

5.3 Site Risk Rating Result

The assessment of the sources, pathways and receptors, necessary to derive a site risk rating, are described below.

Sources	The primary sources of liquid contamination at the site are the tanks and pipelines that store and transfer the various feedstocks, comprising a range of food wastes. Additional sources of potential contamination are the IBC containers that are used to store, blend and mix the feedstock, and the road tankers used to transport the feedstocks, during loading and unloading on site. All feedstocks are considered to be potentially harmful to the environment if released in large volumes due to the high nutrient content and oxygen demand. However, the individual tanks on site are reasonable small, and so the potential volume of an accidental release would be limited.
Pathways	The potential pathways from the site are infiltration into the ground and overland flow onto adjacent sites. The pathway into the ground is largely impeded by concrete pavements that cover most of the site, although adjacent land to the east, west and north appears to be soil with grass, shrub and trees. The fences would not prevent migration of released liquid off site. The site drainage system is connected to a sewer and has a discharge consent. The pathway to groundwater would be through the unsaturated zone of the clayey quarry backfill and underlying bedrock.
Receptors	There are no particularly sensitive receptors on or near the site. The bedrock on site is classified as a "Secondary A" aquifer. However, the formation is expected to be thin and to have poor quality groundwater, and be covered by up to 6m of clayey backfill. The site is not in a drinking water safeguard zone for groundwater and there are no source protection zones within 10km. There are no streams near the site, and the closest possible channel (a roadside ditch) is 350m distant, with very low gradient towards the feature.

The potential for loss of primary containment is assessed to be "Moderate" because there the tanks on site have a range of different designs and ages, and it is not confirmed if they have been subjected to recent specialist inspection.

These assessments are incorporated into the site risk assessment in

Table 4	Site Risk Rating and Classification Result

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Table 4 Site Risk Rating and Classification Result				
"Parameter"	Summary of reasons	Hazard Assessment (*tick as applicable*)		
		Low	Moderate	High
Source	Oxygen demand and nutrient levels of the feedstock and digestate			✓
Pathway	Connectivity to waste water treatment plant and lack of secondary containment		✓	
Receptor	Site is not on an aquifer at risk from the operation, distance to surface water bodies and not immediately adjacent to any sensitive receptors	✓		
Site Hazard Rating	Low = LLL, MLL, MML, HLL Moderate = MMM, HML, HHL High = HHH, HHM, HMM		✓ (HML)	
Likelihood of Loss of Containment	Low = <0.001% Moderate = 0.001% - 1% High = >1%		✓	
Site Risk Rating	Low = LL, ML, LM Moderate = MM, HL, LH High = HH, HM, MH		✓ (MM)	
Result	Site Risk Rating		Medium	
(delete as applicable)	Containment Classification		Class 2	

According to C736, class 2 containment systems should provide an intermediate level of integrity.

5.4 Risk Assessment Methodology for Specific Scenarios

The site risk rating defines the level of containment that needs to be used on a site. A further risk assessment is helpful when assessing existing sites, to determine the suitability and performance of the measures that have been installed, and to identify any mitigation that may be required. A relatively common approach has been used, as follows:

Identify realistic, potential hazards to the environment.

Estimate the severity of each hazard.

Estimate the probability of each hazard occurring.

Combine the hazard and severity scores to produce a risk rating.

The risk rating can be used to determine if the containment system is suitable for the scenario in question, or if mitigation measures are necessary.

A semi-quantitative approach is used to assess the risk. Values are assigned to the severities and probabilities, using the scheme presented in Table 5. These values are then multiplied to produce a numerical assessment, or risk rating.

The rating system is applied to each identified hazard to determine the level of risk in each case, and whether any mitigation measures are required.

Table 5 Risk Assessment Scheme

Probability (P)	**Severity (S)**	**Risk Rating (R) = P x S**
0 Highly unlikely	0 No environmental impact	0 – 6 Low
1 Very unlikely	1 Minor impact, potentially not requiring clean-up	7 – 15 Medium
2 Unlikely	2 Minor impact, requiring simple clean-up	15+ High
3 Likely	3 Moderate impact, requiring local intervention	"R = Low" activities can be undertaken as planned.
4 Very likely	4 Major impact, requiring emergency intervention	"R = Medium" additional control measures required.
5 Almost certain	5 Severe impact, requiring emergency and longer-term, wider-area intervention	"R = High" activities should not be undertaken without design revisions.

5.5 Risk Assessment of the Current Situation

A summary of the identified hazard scenarios and assessed risk ratings is shown in Table 6. Highly improbable hazards, which may be considered force majeure, were not included in the assessment.

Table 6 Risk Assessment of Current Situation

Hazard Scenario	**Receptor at risk**	**Severity, S**	**Probability, P**	**Risk, R**
Construction risks				
A. Failure of tanks due to age, corrosion etc, resulting in release	Groundwater	3 High oxygen demand, low toxicity, hardstanding and unsaturated zone, groundwater probably impacted and not utilised.	3 Likely, tanks are variable in age and construction, some tanks showing evidence of leaks	9 Medium

B. Failure of tanks due to age, corrosion etc, resulting in release	Surface water (remote ditch)	3 High oxygen demand, low toxicity, long distance to receptor.	3 Likely, tanks are variable in age and construction, some tanks showing evidence of leaks	9 Medium
Operational Risks				
C. Leakage from tanks due to age, corrosion etc, resulting in release	Site	3 High oxygen demand, low toxicity, but quantities low and probably captured by site drainage	4 Very likely, tanks are variable in age and construction, some tanks showing evidence of leaks, secondary containment volume inadequate	12 Medium
D. Leakage from pumps or pipes, resulting in release	Site	3 High oxygen demand, low toxicity, but quantities low and possibly captured by site drainage	4 Very likely, staining of concrete likely be due to cumulative effects of drips and small spills	12 Medium
E. Collision of vehicle with tank or pipework leading to release of feedstock	Groundwater and / or Surface water (remote ditch)	3 High oxygen demand, low toxicity, hardstanding and unsaturated zone, groundwater probably impacted and not utilised.	3 Likely, some tanks and pipework unprotected adjacent to pavements, secondary containment volume inadequate,	9 Medium
F. Spills from pipes and IBCs during mixing and transfer of feedstock	Site	2 High oxygen demand, low toxicity, but quantities low and probably captured by site drainage	4 Very likely. Frequent operation and some small spills and drips likely difficult to avoid.	8 Medium
G. Overtopping of tanks during filling	Site	2 High oxygen demand, low toxicity, but quantities low and probably captured by site drainage	4 Very likely, due to manual procedures	8 Medium

The site has a "Moderate" risk rating, on the basis of the overall assessment, and all the specific identified risks are also rated as "Moderate". The risks are not deemed particularly serious, due to the small volumes of feedstock and the relative low sensitivity of the immediate area of the site.

The site risk rating defines that Class 2 containment measures are required. Masonry (blockwork) walls are unsuitable for Class 2. Other requirements include the need to line earth bunds with impermeable materials, allowing for potential jetting from holes in tanks and pipes, and the methods of removing accumulated rainwater from bunded areas.

Secondary containment measures are effectively absent on site, and so there is very low level of compliance with C736.

5.6 Current Mitigation Measures

The concrete pavements have ACO type gully drains (with slotted covers), which lead into a piped drainage system that feeds a small pumping station. It is understood that the liquid collected is returned to and used within the AD process on site. The site has a discharge consent with Anglian Water, and we understand that the local sewage treatment plant could cope with releases of the feedstocks.

5.7 Suggested Additional Mitigation Measures

As a result of CQAI's inspection of the site, a number of additional mitigation measures are suggested to reduce specific risks on the site. These will address the risks assessed above and also the lack of comprehensive secondary containment system. The recommended measures are detailed in

.

5.8 Effect of Mitigation Measures on Risk Rating

The effect of these modifications will be to reduce the risk rating on the possible scenarios identified above.

The overall risk rating of the site would therefore be reduced to low.

Table 7 Suggested Additional Mitigation Measures

Measure Ref	Element of risk	Mitigation Measures Required
1	Tank integrity	Specialist tank inspections to EEMUA 159 standard
2	Lack of secondary containment	Secondary containment around individual areas would be very difficult to install retrospectively, and would probably make site operations impracticable. It may be possible to surround the site with a perimeter wall, therefore providing perimeter containment to divert any surges which may occur following catastrophic tank failure. Catastrophic failure of tanks however is uncommon and most commonly associated with vehicle collision as detailed in Measure Ref 3. Due to the site topography, any modifications would likely make the whole site the secondary containment system. This will need a detailed topographic survey and spill mapping design, however due to the relatively small volumes, any secondary containment would likely only require low level walls due to the relatively large footprint of the lower part of the site and warehouse. Any secondary containment measures will need to be constructed in line with C736, incorporating appropriately designed and constructed bunding, water bars and pipe penetrations. Tertiary containment could also be provided by the transfer to the sewage treatment works. Modifications to the sewer discharge may be required to throttle the discharge as this can only accept a low flow rate. This may require an orifice flow control chamber, buried balancing tank and pump or similar. This would also require confirmation that the drains are fed from all areas
3	Anti-collision barriers	Suitable barriers should be installed to prevent accidental impacts on the tanks by vehicles. The barriers could comprise "Arco" type rails and individual bollards and should be suitable for the types of vehicle that will approach the tanks and pipes.
4	Filling point protection	Diversion walls should be constructed around the perimeter of the site where filling points are located to reduce the risk of fugitive emissions.
5	General surfacing condition	Areas of damage to surfacing to be repaired, joints sealed with suitable sealant and repairs to site drainage system
6	Site drainage	Remedial works to damaged drainage to ensure containment
7	Tank inlet & outlet point	Tank inlet and outlet points (specifically at tanker connection points should be upgraded to have two valves, separated by a rated break point.

6. Conclusions and Recommendations

The site inspection identified that, while the site has partial secondary containment in place around the AD plant, the facility has expanded since this was constructed and many tanks and pipes are in areas without secondary containment. Some tanks and pipes are also exposed to possible vehicle impact, and would benefit from protection measures.

Due to the age, type and general condition of the tanks, an assessment of the primary containment by a specialist company may be necessary. This likely to identify the need for remedial works or upgrading, which will have considerable cost. In addition, some the operating procedures used on site present a risk of loss of primary containment.

The existing secondary containment, as well as having insufficient extent and volume, does not comply with suitable dimensions and methods of construction, as defined in the industry guidance.

The potential issues arising from the lack of secondary containment are partially mitigated by the characteristics of the site location. The risk rating determines the general environmental risk to be moderate, however the tank volumes are relatively small and any loss of containment would not be particularly severe, requiring simple clean up or local intervention. Potential pathways from the site are present, particularly for surface water, however these can be mitigated with limited intervention and there are no particularly sensitive receptors on or near the site which could be impacted by the likely volume of release which could occur.

Secondary containment will be required to comply with industry best practice, defined in C736, and therefore, with regulatory requirements. As individual secondary containment systems would be impracticable, CQAI suggests adapting the entire site to provide overall secondary containment capacity. This would involve perimeter walls and minor repairs to pavements. An accurate topographic survey and 3D modelling would be required to confirm the feasibility. However, due to the relatively small volumes of the tanks, the required capacity would be relatively small, and should be achievable.

The discharge consent to sewer will also provide an additional level of protection, equivalent to tertiary containment.

7. References

"CIRIA C736: Containment systems for the prevention of pollution, Secondary, tertiary and other measures for industrial and commercial premises, 2014"

Biological waste treatment: appropriate measures for permitted facilities https://www.gov.uk/guidance/biological-waste-treatment-appropriate-measures-for-permitted-facilities

Commission Implementing Decision (EU) 2018/1147 of 10 August 2018 establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2018.208.01.0038.01.ENG&toc=OJ%3AL%3A2018%3A208%3ATOC

The Environment Agency's approach to groundwater protection. February 2018 Version 1.2

UK Gov guidance no climate change allowances

https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

British Geological Society – Geology of Britain Viewer
https://mapapps.bgs.ac.uk/geologyofbritain/home.html

Natural England MAGIC website
https://magic.defra.gov.uk/

Ordnance Survey Maps
https://osmaps.ordnancesurvey.co.uk/

Historic imagery: Google Earth

Annex A Site Photographs

1.Site entrance and sewer connection points

2. Site entrance area identified for possible site wide secondary containment storage

3.ACO type drainage system

4.RT1 tank secondary containment system

5.High rate AD plant and upper yard area with reception tank

6.Site pumping station

7. Northern site boundary, view east

8. Upper yard area, view north

9.AD plant, balance tanks in foreground, reactor vessels in background

10. Evidence of historic repairs to leaks on balance tanks

11. Reception tanks in north west corner of site

12. Western boundary of site, vie south

13. Reception tanks in north west corner of site, view north

14. R&D and expansion area, internal view of warehouse

Annex B Site Permit

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Waste4generation Ltd

Earlstree Road Facility
12B Earlstree Road
Corby
NN17 4AZ

Permit number

EPR/CB3902XP

Earlstree Road Facility
Permit number EPR/CB3902XP

Introductory note

This introductory note does not form a part of the permit

The main features of the permit are as follows.

This permit allows the anaerobic digestion of 35,000 tonnes per annum of biodegradable liquid waste. The plant utilises high-rate anaerobic digestion technology to treat wastes in 24 hours in order to produce biogas and an effluent low in solids and COD which is discharged to sewer.

The plant also conducts research and development to look at ways of breaking down different waste streams to divert from landfill. They propose a pre-treatment process to increase digestibility of difficult wastes.

A pre-operational condition for future development has been included outlining that the operator must demonstrate that certain wastes can be adequately treated using this technology and gain written consent from the Environment Agency before accepting these waste on a long term basis.

The site is located on an industrial estate, the nearest residential properties are 500m from the site boundary but there are sensitive receptors adjacent to it. There are no protected sites, habitats or species within the 1km of the permitted area.

The status log of the permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/CB3902XP/A001	Duly made 30/07/2015	Application for an anaerobic digestion facility with combustion of biogas.
Response to Schedule 5 Notice issued 01/10/2015	13/10/2015	Revised risk assessment, waste acceptance procedures, odour management plan, Environmental Management System and novel waste types
Permit determined EPR/CB3902XP	09/11/2015	Permit issued to Waste4generation Ltd.

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number

EPR/CB3902XP

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

Waste4generation Ltd ("the operator"),

whose registered office is

1 Meadow Farm Close
Flore
Northampton
NN7 4NT

company registration number 07866574

to operate waste operations at

Earlstree Road Facility
12B Earlstree Road
Corby
NN17 4AZ

to the extent authorised by and subject to the conditions of this permit.

Name	Date
Tracey Pollard	**09/11/2015**

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.1.4 The operator shall comply with the requirements of an approved competence scheme.

1.2 Avoidance, recovery and disposal of wastes produced by the activities

1.2.1 The operator shall take appropriate measures to ensure that:

(a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and

(b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

(c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

1.2.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in red on the site plan at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 For the following activities referenced in schedule 1, table S1.1 (A1 to A3.) the activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.

2.3.2 If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation ("plan") specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan , and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.3 Waste shall only be accepted if:

(a) it is of a type and quantity listed in schedule 2 table(s) S2.1 and S2.2; and

(b) it conforms to the description in the documentation supplied by the producer and holder.

2.4 Pre-operational conditions

2.4.1 The operations specified in schedule 1 table S1.3 shall not commence until the measures specified in that table have been completed.

2.5 Technical requirements

Hazardous waste storage and treatment

2.5.1 Hazardous waste shall not be mixed, either with a different category of hazardous waste or with other waste, substances or materials, unless it is authorised by schedule 1 table S1.1 and appropriate measures are taken.

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2 and S3.3.

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

3.3.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;

(b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:

(a) point source emissions specified in tables S3.1, S3.2.

(b) process monitoring specified in table S3.3;

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.3.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.

3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.2 and S3.3 unless otherwise agreed in writing by the Environment Agency.

3.6 Pests

3.6.1 The activities shall not give rise to the presence of pests which are likely to cause pollution, hazard or annoyance outside the boundary of the site. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved pests

management plan, have been taken to prevent or where that is not practicable, to minimise the presence of pests on the site.

3.6.2 The operator shall:

(a) if notified by the Environment Agency, submit to the Environment Agency for approval within the period specified, a pests management plan which identifies and minimises risks of pollution from pests;

(b) implement the pests management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 Within one month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.2; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables..

4.3 Notifications

4.3.1 The Environment Agency shall be notified without delay following the detection of:

(a) any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution;

(b) the breach of a limit specified in the permit; or

(c) any significant adverse environmental effects.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(a) any change in the operator's name or address; and

(b) any steps taken with a view to the dissolution of the operator.

In any other case:

(a) the death of any of the named operators (where the operator consists of more than one named individual);

(b) any change in the operator's name(s) or address(es); and

(c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) the Environment Agency shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

5 Schedule 1 – Operations

Table S1.1 activities		
Activity reference	**Description of activities for waste operations**	**Limits of activities**
A1: Anaerobic digestion facility	R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced) R3: Recycling/reclamation of organic substances which are not used as solvents	Treatment operations shall be limited to: • Biological treatment consisting only of anaerobic digestion for the purpose of recovery (no more than 100 tonnes per day including waste and non waste solids and liquids). • Pre-treatment includes pH correction, nutrient dosing, hydrolyisation, blending, chemical addition of sodium bicarbonate and aeration of waste. • The treatment capacity of any plant shall not exceed 10 tonnes per day of animal waste. • Treatment of digestate including screening to remove plastic residues, centrifuge or pressing, addition of thickening agents (polymers) or drying. • No more than 10 tonnes per day of hazardous waste to be treated at the site under an R3 activity All bulking, transfer and pre-treatment of waste shall be carried out in an enclosed building. Waste types as specified in Table S2.1
A2: Gas engines	R1: Use principally as a fuel or other means to generate energy D10: Incineration on land	The combustion of biogas for the purpose of generation of electricity and heat for use within the facility and export to the grid. Emissions of unburned biogas and the operation of the auxiliary flare shall be minimised. Any significant emissions of unburned biogas (including the operation of the pressure relief valves) and the operation of the auxiliary flare shall be recorded. All biogas condensate shall be discharged into a sealed drainage system or recirculated back to the digester. Gas cleaning by biological or chemical scrubbing. Gas storage and drying.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	Document(s) provided in response to section 3a – technical standards, Part B4 of the application form.	24/07/2015
Application	Management plan for a bespoke anaerobic digestion operation, Appendix 5: Waste Acceptance and Rejection	13/10/2015

Table S1.3 Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational measures**
1	Use of waste codes listed in Table S2.2 in any of the activities authorised by this permit	The waste types set out in Table S2.2 shall not be accepted at the site for pre-treatment or treatment until adequate assessment using the Jacobs Framework novel waste procedure has been approved in writing by the Environment Agency.
2	Use of waste codes listed in Table S2.2 in any of the activities authorised by this permit	A written justification for the treatment of wastes listed in table S2.2 of this permit shall be submitted to the Environment Agency for approval. As a minimum, the justification shall take into account the principles specified in the guidance for the recovery and disposal of hazardous and non hazardous waste S5.06. Address whether the treatment of each of the wastes listed table S2.2: - is effective, including validation of the process using worst case scenario conditions; - is an efficient use of energy and raw materials; - impedes waste recovery or recycling; - compromises the treatment of any hazardous waste; - has an effect on emissions from the activity. No wastes specified in Table S2.2 shall be accepted for treatment unless we have given prior written approval under this condition.

Schedule 2 – Waste types

Table S2.1 Permitted waste types and quantities for anaerobic digestion	
Maximum quantity	**Annual throughput shall not exceed 35,000 tonnes.**
Waste code	**Description**
02	**Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing**
02 01	wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing
02 01 01	sludges from washing and cleaning - food processing waste, food washing waste
02 01 02	animal-tissue waste including blood, animal flesh, fish processing waste, fish carcasses, poultry waste
02 01 06	animal faeces, urine and manure including spoiled straw
02 02	wastes from the preparation and processing of meat, fish and other foods of animal origin
02 02 01	sludges from washing and cleaning - food processing waste, food washing waste
02 02 02	animal-tissue waste including blood, animal flesh, fish processing waste, fish carcasses, poultry waste
02 02 03	materials unsuitable for consumption or processing (biodegradable only)
02 02 04	sludges from on-site effluent treatment (biodegradable only)
02 02 99	sludges from gelatine production, animal gut contents
02 03	wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation
02 03 04	materials unsuitable for consumption or processing (biodegradable only)
02 03 05	sludges from on-site effluent treatment (biodegradable only)
02 03 99	sludge from production of edible fats and oils to include seasoning residues, molasses residues, residues from production of potato, corn or rice starch
02 04	wastes from sugar processing
02 04 03	sludges from on-site effluent treatment (biodegradable only)
02 05	wastes from the dairy products industry
02 05 01	materials unsuitable for consumption or processing
02 05 02	sludges from on-site effluent treatment
02 06	wastes from the baking and confectionery industry
02 06 01	materials unsuitable for consumption or processing (biodegradable only)
02 06 03	sludges from on-site effluent treatment (biodegradable only)
02 07	wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials including brewing waste, food processing waste, fermentation waste
02 07 02	wastes from spirits distillation including spent grains, fruit and potato pulp, sludge from distilleries
02 07 04	materials unsuitable for consumption or processing including brewing waste, food processing waste, fermentation waste, beer, alcoholic drinks, fruit juice
02 07 99	spent grains, hops and whisky filter sheets/cloths, yeast and yeast-like residues,

Table S2.1 Permitted waste types and quantities for anaerobic digestion	
Maximum quantity	**Annual throughput shall not exceed 35,000 tonnes.**
Waste code	**Description**
	sludge from production process
03	**Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard**
03 03	wastes from pulp, paper and cardboard production and processing
03 03 02	green liquor sludge (from recovery of cooking liquor)
04	**Wastes from the leather, fur and textile industries**
04 02	wastes from the textile industry
04 02 10	organic matter from natural products (for example grease, wax)
07	**Wastes from organic chemical processes**
07 01	wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals
07 01 08*	other still bottoms and reaction residues - glycerol residue from biodiesel manufacture from non-vegetable oils only
08	**Wastes from the manufacture formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks**
08 04	wastes from MFSU of adhesives and sealants (including waterproofing products)
08 04 14	aqueous sludges containing adhesives or sealants other than those mentioned in 08 04 13
08 04 16	aqueous liquid waste containing adhesives or sealants other than those mentioned in 08 04 15
19	**Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use**
19 02	wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)
19 02 10	combustible wastes other than those mentioned in 19 02 08 and 19 02 09 - glycerol not designated as hazardous i.e. excludes EWC 19 02 08
19 06	wastes from anaerobic treatment of waste
19 06 03	liquor from anaerobic treatment of municipal waste
19 06 05	liquor from anaerobic treatment of animal and vegetable waste
19 08	wastes from waste water treatment plants not otherwise specified
19 08 09	grease and oil mixture from oil/water separation containing only edible oil and fats
19 08 12	sludges from industrial biological treatment
20	**Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions**
20 01	separately collected fractions (except 15 01)
20 01 08	biodegradable kitchen and canteen waste
20 01 25	edible oil and fat

Table S2.2 Permitted waste types requiring prior approval	
Waste code	**Description**
07	**Wastes from organic chemical processes**
07 02	**wastes from the MFSU of plastics, synthetic rubber and man-made fibres**
07 02 08*	other still bottoms and reaction residues (Waste from Synthomer)

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1 [Point 2 on site plan in Schedule 7]	CHP engine 1 [note 1]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	500 mg/m^3	Hourly average	Annual	BS EN 14792
		Sulphur dioxide	350 mg/m^3			BS EN 14791
		Carbon monoxide	1400 mg/m^3			BS EN 15058
		Total VOCs	1000 mg/m^3			BS EN 12619:2013
A2 [Point 1 on site plan in schedule 7]	Emergency flare [note 2]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	150 mg/m^3	Hourly average	[note 3]	BS EN 14792
		Carbon monoxide	50 mg/m^3			BS EN 15058
		Total VOCs	10 mg/m^3			BS EN 12619:2013
A3 [Point 6 on site plan in schedule 7]	Auxiliary boiler(s)	No parameter set	No limit set	--	--	--
Pressure relief valves	Digesters	No parameter set	No limit set	--	Record of operating hours	--
Vents from tank(s)	Oil/Fuel Storage tank(s)	No parameter set	No limit set	--	--	--
Methane Scrubber	Methane Scrubber	No parameter set	No limit set	--	--	--

Note 1 - These limits are based on normal operating conditions and load - temperature 0°C (273K); pressure: 101.3 kPa and oxygen: 5 per cent (dry gas). The measurement uncertainty specified in LFTGN08 v2 2010 shall apply.

Note 2 - These limits are based on normal operating conditions and load - temperature 0°C (273K); pressure: 101.3 kPa and oxygen: 3 per cent (dry gas). The measurement uncertainty specified in LFTGN05 v2 2010 shall apply.

Note 3 - Monitoring to be undertaken 12 months after commissioning of the emergency flare. Following commissioning, monitoring to be undertaken in the event the emergency flare has been operational for more than 10 per cent of a year (876 hours).

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**

Table S3.2 Point source emissions to sewer, effluent treatment plant or other transfers off-site – emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. Unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
Drain to sewer on site plan in schedule 7 emission to Anglian Water Sewage Treatment Works	Digestate/Effluent Treatment Plant	No parameter set	No limit set	--	--	--

Table S3.3 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Biogas from Digester(s)	Flow	Continuous	In accordance with EU weights and measures Regulations	--
Biogas from Digester(s)	Methane	Continuous	--	Gas monitors to be calibrated in accordance with manufacturer's recommendations
	Hydrogen sulphide		None Specified	
Waste reception building; Digester(s) and storage tank(s)	Odour	Daily	Olfactory monitoring	Odour detection at the site boundary
Biofilter and/or equivalent abatement system	Temperature	Daily	Temperature probe	Biofilter and/or equivalent abatement system shall be regularly checked and maintained to ensure appropriate temperature and moisture content
	Moisture			
	Thatching/compaction			
Digester and storage tank(s)	Integrity checks	Weekly	Visual assessment	--

Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Emissions to air Parameters as required by condition 3.5.1.	A1, A2, A3.	Every 12 months	09/11/2015

Table S4.2 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Form air 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY

Schedule 5 – Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	**Notification period**

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B – to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 – Interpretation

“accident” means an accident that may result in pollution.

“anaerobic digestion” means a process of controlled decomposition of biodegradable materials under managed conditions where free oxygen is absent, at temperatures suitable for naturally occurring mesophilic or thermophilic anaerobes and facultative anaerobe bacteria species, which convert the inputs to a methane-rich biogas and whole digestate.

“Annex I” means Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“Annex II” means Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“animal waste” means any waste consisting of animal matter that has not been processed into food for human consumption.

“application” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

“authorised officer” means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

“building” means a construction that has the objective of providing sheltering cover and minimising emissions of noise, particulate matter, odour and litter.

“digestate” means material resulting from an anaerobic digestion process.

“disposal” means any of the operations provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission limit.

“emissions to land” includes emissions to groundwater.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“groundwater” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“impermeable surface” means a surface or pavement constructed and maintained to a standard sufficient to prevent the transmission of liquids beyond the pavement surface.

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

“nearest sensitive receptors” means the nearest place to the permitted activities where people are likely to be for prolonged periods.. This term would therefore apply to dwellings (including any associated gardens) and to many types of workplaces. We would not normally regard a place where people are likely to be present for less than 6 hours at one time as being a sensitive receptor. The term does not apply to those controlling the permitted facility, their staff when they are at work or visitors to the facility, as their health is covered by Health and Safety at Work legislation, but would apply to dwellings occupied by the family of those controlling the facility.

“pests” means birds, vermin and insects.

“quarter” means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

“recovery” means any of the operations provided for in Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“sanitisation stage” means the actively managed and intensive stage of composting lasting for at least five days, characterised by high oxygen demand and temperatures of over 55 °C, during which biological processes, together with conditions in the composting mass, eradicate human and animal pathogens or reduce them to acceptably low levels.

“sealed drainage system” in relation to an impermeable surface, means a drainage system with impermeable components which does not leak and which will ensure that:

(a) no liquid will run off the surface otherwise than via the system;

(b) except where they may be lawfully be discharged to foul sewer, all liquids entering the system are collected in a sealed sump.

“stable, stabilised” means the degree of processing and biodegradation at which the rate of biological activity has slowed to an acceptably low and consistent level and will not significantly increase under favourable, altered conditions.

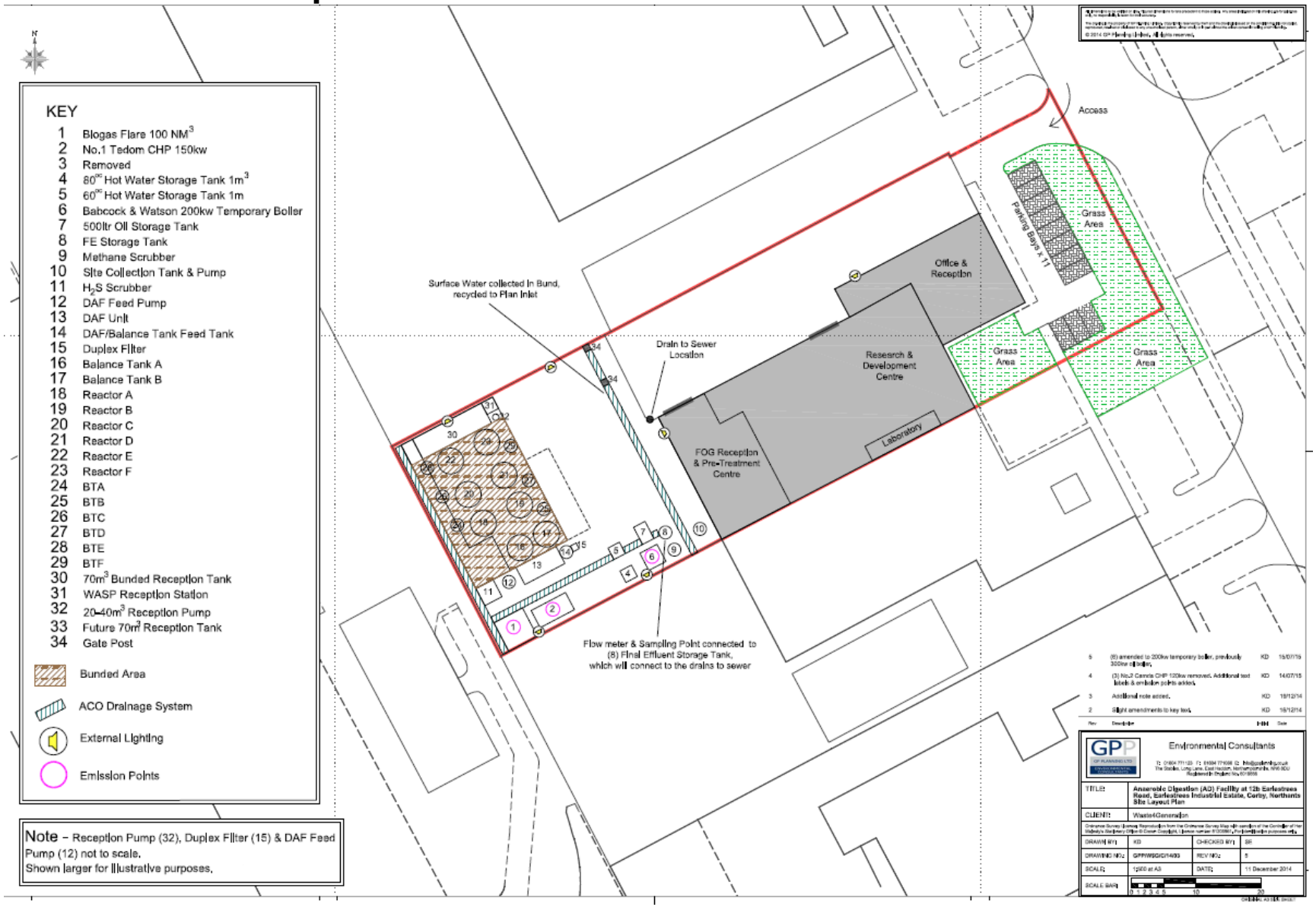
“stabilisation stage” means the stage of composting following sanitisation, during which biological conditions in the composting mass, give rise to compost that is nominally stable.

“Waste code” means the six digit code referable to a type of waste in accordance with the List of Wastes (England)Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.

“Waste Framework Directive” or “WFD” means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste.

“year” means calendar year ending 31 December.

Schedule 7 – Site plan



END OF PERMIT

Permit Number: **EPR/CB3902XP** **Operator:** **Waste4generation Ltd**

Facility: **Earlstree Road** **Facility Form Number:** **Air1 / DD/MM/YY**

Reporting of emissions to air for the period from DD/MM/YYYY to DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times [3]	Uncertainty [4]

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.

[3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.

[4] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed …… Date……..

(Authorised to sign as representative of Operator)

Notice of variation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Waste4Generation Ltd

Waste4Generation Ltd
12B Earlstree Road
Corby
Northamptonshire
NN17 4AZ

Variation application number

EPR/CB3902XP/V004

Permit number

EPR/CB3902XP

Waste4Generation Ltd Corby
Permit number EPR/CB3902XP

Introductory note

This introductory note does not form a part of the notice.

The following notice gives notice of the variation of an environmental permit.

The waste code 20 03 06 is to be added to this permit as a result of this administrative variation to enable the site to accept waste from sewage cleaning operations.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/CB3902XP/A001	Duly made 30/07/2015	Application for an anaerobic digestion facility with combustion of biogas.
Response to Schedule 5 Notice issued 01/10/2015	13/10/2015	Revised risk assessment, waste acceptance procedures, odour management plan, Environmental Management System and novel waste types
Permit determined EPR/CB3902XP	09/11/2015	Permit issued to Waste4generation Ltd.
Application EPR/CB3902XP/V002 (administrative variation)	Duly made 06/10/2016	Application to vary the permit to add additional waste codes. As part of this variation the registered office address has also been amended.
Variation determined EPR/CB3902XP	07/12/2016	Notice of Variation issued.
Application EPR/CB3902XP/V003 (administrative variation)	21/05/2017	Application to add a waste code to the permit
Application returned	03/07/2017	
Application EPR/CB3902XP/V004 (administrative variation)	Duly made 03/11/2017	Application to add a waste code to the permit
Variation determined EPR/CB3902XP	09/01/2018	Varied permit issued to Waste4Generation Ltd

End of introductory note

Notice of variation

The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies

Permit number

EPR/CB3902XP

Issued to

Waste4Generation Ltd ("the operator")

whose registered office is

12b Earlstree Road
Earlstrees Road
Earlstrees Industrial Estate
Corby
England
NN17 4AZ

company registration number **07866574**

to operate a regulated facility

Waste4Generation Ltd Corby
12B Earlstree Road
Corby
Northamptonshire
NN17 4AZ

to the extent set out in the schedules.

The notice shall take effect from 09/01/2018

Name	Date
Samantha Haddock	09/01/2018

Authorised on behalf of the Environment Agency

Schedule 1 – conditions to be deleted

None

Schedule 2 – conditions to be amended

The waste code table in Schedule 2 of the permit has been amended as a result of the application made by the operator:

Table S2.1 Permitted waste types and quantities for anaerobic digestion	
Maximum quantity	**Annual throughput shall not exceed 35,000 tonnes.**
Waste code	**Description**
02	**Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing**
02 01	**wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**
02 01 01	sludges from washing and cleaning - food processing waste, food washing waste
02 01 02	animal-tissue waste including blood, animal flesh, fish processing waste, fish carcasses, poultry waste
02 01 06	animal faeces, urine and manure including spoiled straw
02 02	**wastes from the preparation and processing of meat, fish and other foods of animal origin**
02 02 01	sludges from washing and cleaning - food processing waste, food washing waste
02 02 02	animal-tissue waste including blood, animal flesh, fish processing waste, fish carcasses, poultry waste
02 02 03	materials unsuitable for consumption or processing (biodegradable only)
02 02 04	sludges from on-site effluent treatment (biodegradable only)
02 02 99	sludges from gelatine production, animal gut contents
02 03	**wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation**
02 03 01	sludges from washing, cleaning, peeling, centrifuging and separation
02 03 04	materials unsuitable for consumption or processing (biodegradable only)
02 03 05	sludges from on-site effluent treatment (biodegradable only)
02 03 99	sludge from production of edible fats and oils to include seasoning residues, molasses residues, residues from production of potato, corn or rice starch
02 04	**wastes from sugar processing**
02 04 03	sludges from on-site effluent treatment (biodegradable only)
02 04 99	off-specification molasses from the sugar refining process
02 05	**wastes from the dairy products industry**
02 05 01	materials unsuitable for consumption or processing
02 05 02	sludges from on-site effluent treatment
02 06	**wastes from the baking and confectionery industry**
02 06 01	materials unsuitable for consumption or processing (biodegradable only)
02 06 03	sludges from on-site effluent treatment (biodegradable only)

Table S2.1 Permitted waste types and quantities for anaerobic digestion	
Maximum quantity	**Annual throughput shall not exceed 35,000 tonnes.**
Waste code	**Description**
02 07	**wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)**
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials including brewing waste, food processing waste, fermentation waste
02 07 02	wastes from spirits distillation including spent grains, fruit and potato pulp, sludge from distilleries
02 07 04	materials unsuitable for consumption or processing including brewing waste, food processing waste, fermentation waste, beer, alcoholic drinks, fruit juice
02 07 05	sludges from on-site effluent treatment
02 07 99	spent grains, hops and whisky filter sheets/cloths, yeast and yeast-like residues, sludge from production process
03	**Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard**
03 03	**wastes from pulp, paper and cardboard production and processing**
03 03 02	green liquor sludge (from recovery of cooking liquor)
04	**Wastes from the leather, fur and textile industries**
04 01	**wastes from the leather and fur industry**
04 01 05	tanning liquor free of chromium
04 01 07	sludges, in particular from on-site effluent treatment free of chromium
04 02	**wastes from the textile industry**
04 02 10	organic matter from natural products (for example grease, wax)
07	**Wastes from organic chemical processes**
07 01	**wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals**
07 01 08*	other still bottoms and reaction residues - glycerol residue from biodiesel manufacture from non-vegetable oils only
08	**Wastes from the manufacture formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks**
08 04	**wastes from MFSU of adhesives and sealants (including waterproofing products)**
08 04 14	aqueous sludges containing adhesives or sealants other than those mentioned in 08 04 13
08 04 16	aqueous liquid waste containing adhesives or sealants other than those mentioned in 08 04 15
16	**Wastes not otherwise specified in the list**
16 10	**aqueous liquid wastes destined for off-site treatment**
16 10 02	aqueous liquid wastes other than those mentioned in 16 10 01
19	**Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use**
19 02	**wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)**

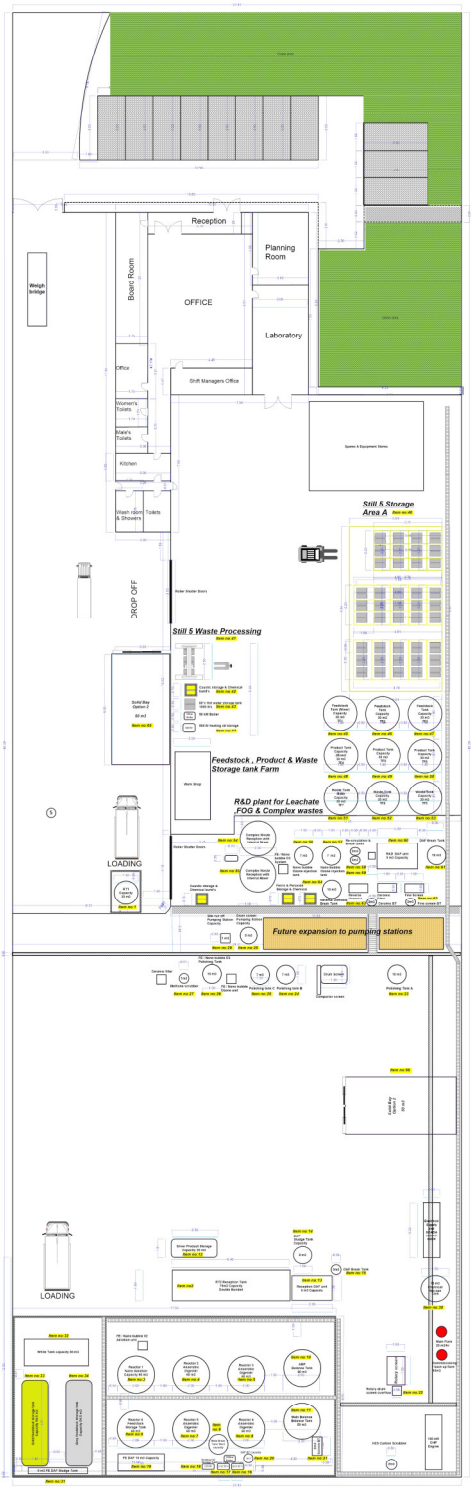
Table S2.1 Permitted waste types and quantities for anaerobic digestion	
Maximum quantity	**Annual throughput shall not exceed 35,000 tonnes.**
Waste code	**Description**
19 02 03	premixed wastes composed only of non-hazardous wastes
19 02 06	sludges from physico/chemical treatment other than those mentioned in 19 02 05
19 02 10	combustible wastes other than those mentioned in 19 02 08 and 19 02 09 - glycerol not designated as hazardous i.e. excludes EWC 19 02 08
19 06	**wastes from anaerobic treatment of waste**
19 06 03	liquor from anaerobic treatment of municipal waste
19 06 04	digestate from anaerobic treatment of municipal waste
19 06 05	liquor from anaerobic treatment of animal and vegetable waste
19 06 06	digestate from anaerobic treatment of animal and vegetable waste
19 08	**wastes from waste water treatment plants not otherwise specified**
19 08 09	grease and oil mixture from oil/water separation containing only edible oil and fats
19 08 12	sludges from industrial biological treatment
20	**Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions**
20 01	**separately collected fractions (except 15 01)**
20 01 08	biodegradable kitchen and canteen waste
20 01 25	edible oil and fat
20 03	**other municipal wastes**
20 03 01	mixed municipal waste
20 03 02	waste from markets
20 03 06	waste from sewage cleaning

Schedule 3 – conditions to be added

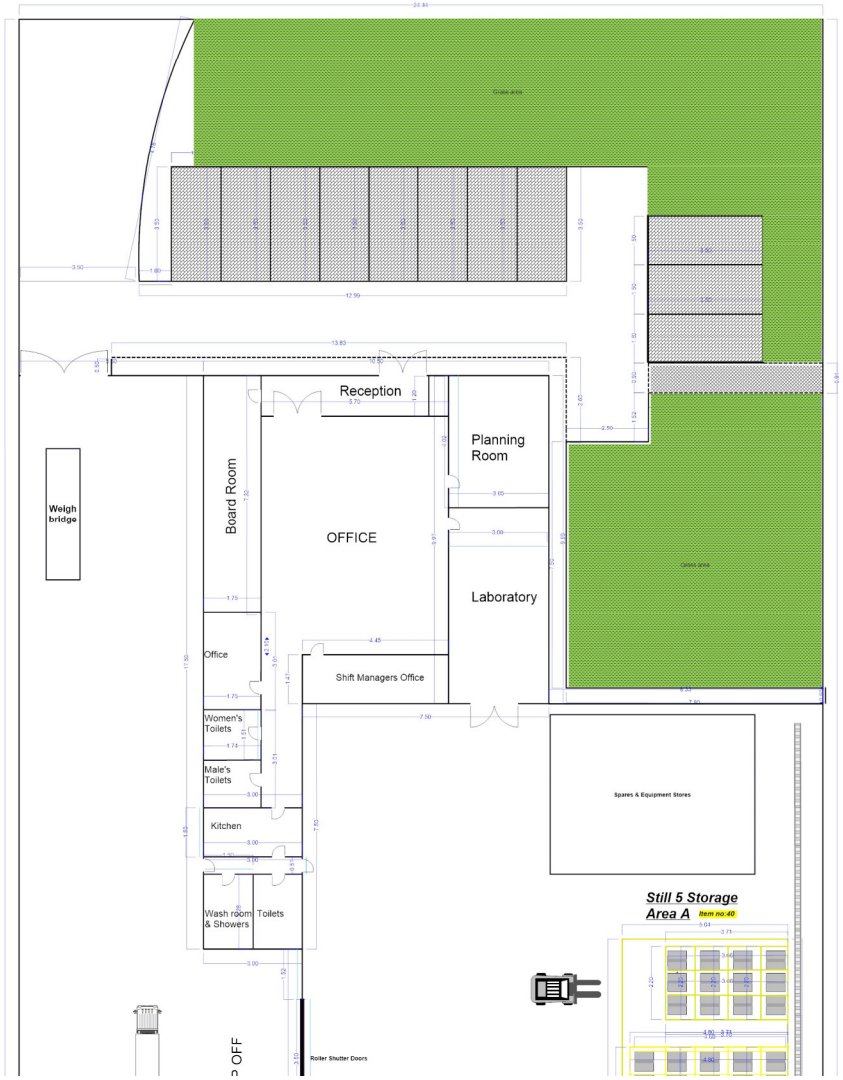
None

Annex C Site Layout Plan

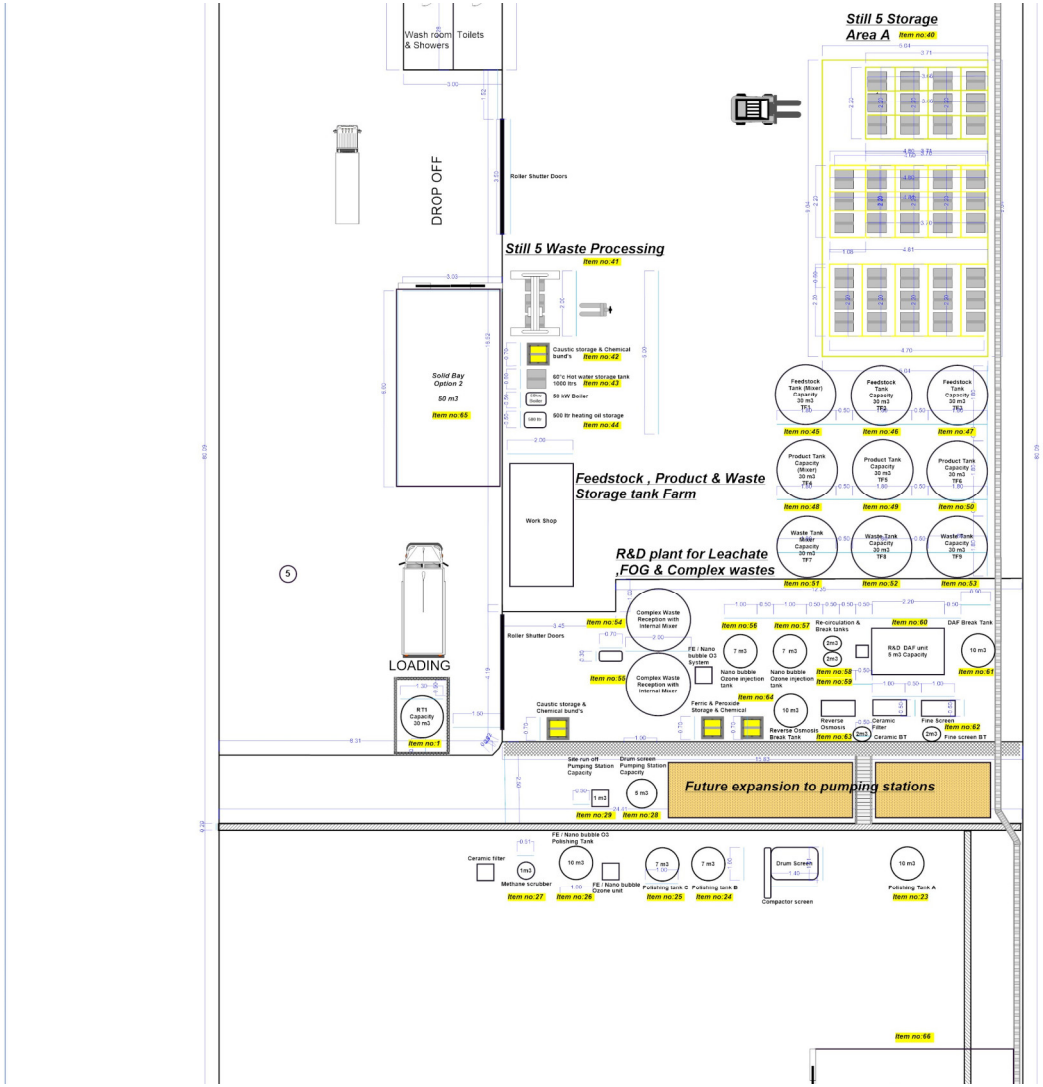
Waste4Generation ltd Corby Facility Layout and Capacity Diagram



Site Capacity		
Current		
Item no	Description	Capacity in m3 Comments
1	Reception tank 1	30 RT1
2	Reception tank 2	70 RT2
3	Reactor 1	60 Nano Bubble aeration
4	Reactor 2	60 Anaerobic Digestion
5	Reactor 3	60 Anaerobic Digestion
6	Reactor 4	60 Anaerobic Digestion
7	Reactor 5	60 Anaerobic Digestion
8	Reactor 6	60 Feedstock tank
9	Main break tank	30 AD recirculation
10	AMP tank	90 site A3 feedstock
11	MB tank	90 Site A3 feedstock
12	Silver product tank	20 Product storage
13	DAF Unit	5 Solid removal
14	DAF Sludge tank	30 Feedstock
15	DAF break tank	5 Solid removed influent to ABP/MB tanks
16	80°c HW tank	25 CHP/Boiler heated water
17	30 c HW tank	2 Process heat
18	Kerosene tank	2
19	FE DAF	10
20	FE DAF break tank	3
21	Rotary screen BT	2
22	Rotary screen overflow tank	1
23	Polishing tank A	10
24	Polishing tank B	7
25	Polishing tank C	7
26	FE / Nano bubble O3 polishing tank	10
27	Methane scrubber	1
28	Drum screen PS	5 (PS) Pumping station
29	Onsite PS	(PS) Pumping station
30	Chemical storage tank	15 Caustic storage tank (Double bunded)
31	FE DAF sludge tank	5
32	White FS tank	40
33	Solid FS tank	50
34	Silver FS tank	50
35	Caustic IBC	
36		
37		
38		839
Research & Development & Expansion (Permit Amendment)		
40	Still 5 storage	45 Storage area for 45 IBC's
41	Still 5 processing	3 Bunded area for 3 IBC's
42	Caustic	1 Bunded caustic IBC
43	80°c HW tank	1 Process hot water
44	Kerosene tank	1
45	Feedstock storage tank	90
46	Feedstock storage tank	30
47	Feedstock storage tank	30
48	Product feedstock tank	30
49	Product feedstock tank	30
50	Product feedstock tank	30
51	Waste feedstock tank	30
52	Waste feedstock tank	30
53	Waste feedstock tank	30
54	Complex Waste Reception with Intern	30
55	Complex Waste Reception with Intern	30
56	Nano bubble ozone injection tank	30
57	Nano bubble ozone injection tank	30
58	R&D break tanks	2
59	R&D break tanks	2
60	R&D DAF unit	5
61	R&D DAF Break Tank	10
62	Fine screen BT	2
63	Ceramic BT	2
64	Reverse Osmosis break tank	10
65	Solids bay 1	50 Option 1
66		
67		
68		
		524
		1363



Site Capacity			
	Current		
Item no	Description	Capacity in m3	Comments
1	Reception tank 1	30	RT1
2	Reception tank 2	70	RT2
3	Reactor 1	60	Nano Bubble aeration
4	Reactor 2	60	Anaerobic Digestion
5	Reactor 3	60	Anaerobic Digestion
6	Reactor 4	60	Anaerobic Digestion
7	Reactor 5	60	Anaerobic Digestion
8	Reactor 6	60	Feedstock tank
9	Main break tank	10	AD recirculation
10	ABP tank	50	Site AD feedstock
11	MB tank	50	Site AD feedstock
12	Silver product tank	20	Product storage
13	DAF Unit	5	Solid removal
14	DAF Sludge tank	8	Feedstock
15	DAF break tank	3	Solid removed influent to ABP/MB tanks
16	80°c HW tank	2	CHP/Boiler heated water
17	50°c HW tank	2	Process heat
18	Kerosene tank	2	
19	FE DAF	10	
20	FE DAF break tank	3	
21	Rotary screen BT	2	
22	Rotary screen overflow tank	1	
23	Polishing tank A	10	
24	Polishing tank B	7	
25	Polishing tank C	7	
26	FE / Nano bubble O3 polishing tank	10	
27	Methane scrubber	1	
28	Drum screen PS	5	(PS) Pumping station
29	Onsite PS		(PS) Pumping station
30	Chemical storage tank	15	Caustic storage tank (Double bunded)
31	FE DAF sludge tank	5	
32	White FS tank	40	
33	Gold FS tank	50	
34	Silver FS tank	50	
35	Caustic IBC		
36			
37			
38		**828**	
	Research & Development & Expansion (Permit Amendment)		
40	Still 5 storage	45	Storage area for 45 IBC's
41	Still 5 processing	3	Bunded area for 3 IBC's
42	Caustic	1	Bunded caustic IBC
43	60°c HW tank	1	Process hot water
44	Kerosene tank	1	
45	Feedstock storage tank	30	
46	Feedstock storage tank	30	
47	Feedstock storage tank	30	
48	Product feedstock tank	30	
49	Product feedstock tank	30	
50	Product feedstock tank	30	
51	Waste feedstock tank	30	
52	Waste feedstock tank	30	
53	Waste feedstock tank	30	
54	Complex Waste Reception with Interr	30	
55	Complex Waste Reception with Interr	30	
56	Nano bubble ozone injection tank	30	
57	Nano bubble ozone injection tank	30	
58	R&D break tanks	2	
59	R&D break tanks	2	
60	R&D DAF unit	5	
61	R&D DAF Break Tank	10	
62	Fine screen BT	2	
63	Ceramic BT	2	
64	Reverse Osmosis break tank	10	
65	Solids bay 1	50	Option 1
66			
67			
68			
		524	
		1352	



59	R&D break tanks	2	
60	R&D DAF unit	5	
61	R&D DAF Break Tank	10	
62	Fine screen BT	2	
63	Ceramic BT	2	
64	Reverse Osmosis break tank	10	
65	Solids bay 1	50	Option 1
66			
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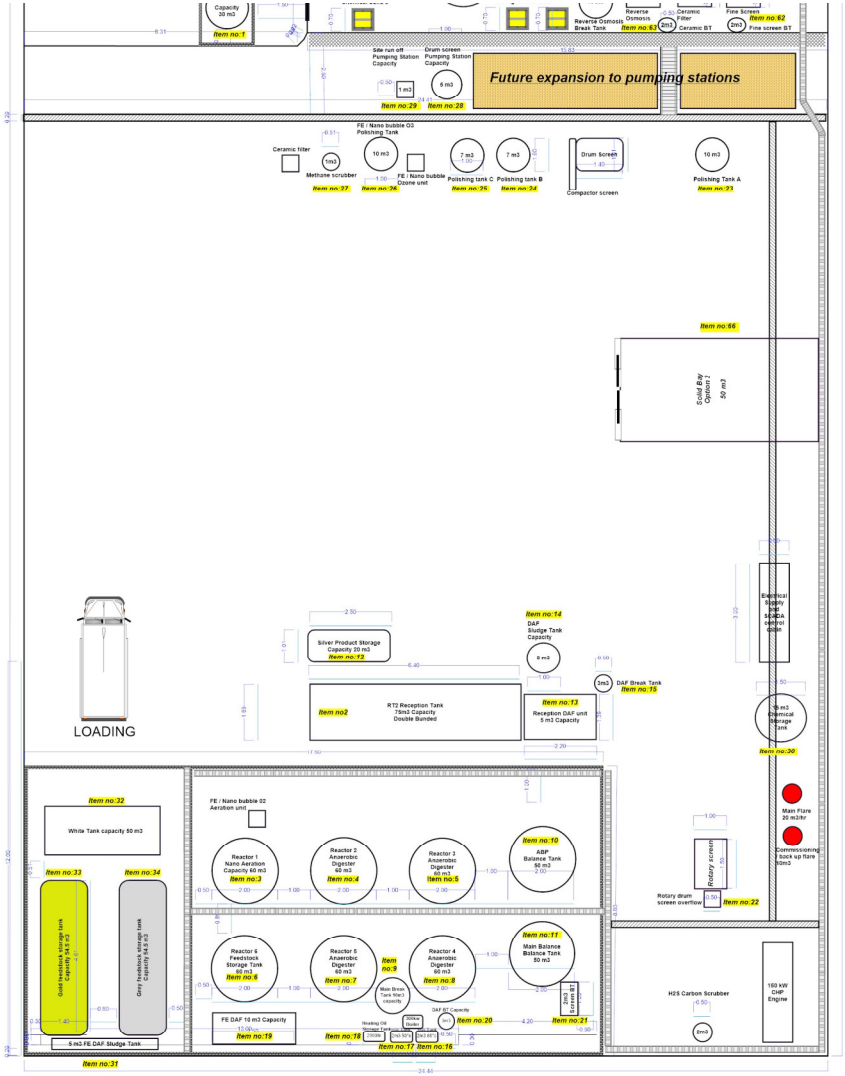
68			
		524	
		1352	


Future expansion to pumping stations
LOADING
Item no:1
Item no:2
Item no:3
Item no:4
Item no:5
Item no:6
Item no:7
Item no:8
Item no:9
Item no:10
Item no:11
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Item no:29
Item no:31
Item no:32
Item no:33
Item no:34
Item no:62
Item no:66
Item no:67
Item no:73
Reactor 1 Nano Aeration Capacity 60 m3
Reactor 2 Anaerobic Digester 60 m3
Reactor 3 Anaerobic Digester 60 m3
Reactor 4 Anaerobic Digester 60 m3
Reactor 5 Anaerobic Digester 60 m3
Reactor 6 Feedstock Storage Tank 60 m3
ABP Balance Tank 50 m3
Main Balance Balance Tank 50 m3
RT2 Reception Tank 75m3 Capacity Double Bunded
Reception DAF unit 5 m3 Capacity
DAF Sludge Tank Capacity
DAF Break Tank
Silver Product Storage Capacity 20 m3
White Tank capacity 50 m3
Gold feedstock storage tank Capacity 54.5 m3
Grey feedstock storage tank Capacity 54.5 m3
6 m3 FE DAF Sludge Tank
FE DAF 10 m3 Capacity
FE / Nano bubble 02 Aeration unit
FE / Nano bubble O3 Polishing Tank
Polishing Tank A
Polishing tank B
Polishing tank C
Drum Screen
Compactor screen
Rotary drum screen overflow
Rotary screen
Ceramic filter
Methane scrubber
FE / Nano bubble Ozone unit
Reverse Osmosis Break Tank
Ceramic Filter Ceramic BT
Fine Screen Fine screen BT
Solid Bay Option 2 50 m3
Electrical Supply and SCADA control room
10 m3 Chemical Storage Tank
Main Flare 20 m3/hr
Commissioning back up flare 10m3
H2S Carbon Scrubber
160 kW CHP Engine
Main Biogas Tank Max's capacity
Heating Oil Storage Tank
DAF BC Capacity
Site run off Pumping Station Capacity
Drum screen Pumping Station Capacity