

Ms Grainne Oglesby,  
Administration Officer,  
Office of Climate, Licencing & Resource Use,  
Environmental Protection Agency,  
Headquarters PO Box 3000,  
Johnstown Castle Estate,  
County Wexford.

10<sup>th</sup> November 2017.

Re: Application for Licence Reg No: W0211-02

Dear Ms Oglesby,

I refer to the Agency's letter dated 17<sup>th</sup> October in accordance with Regulation 10(2)(b)(ii) of the EPA (Industrial Emissions) (Licencing) Regulations 2013 under Regulation 9 of the Regulations. On behalf of Eras Eco Ltd, I enclose one original and one hardcopy of the response. Also enclosed are two CD-ROM discs containing files of the application in searchable PDF format. The content of the electronic files is a true copy of the original application form and the supporting attachments.

The Agency's requests are set out in italics followed by the ERAS ECO response.

*1. Please refer to your application for review of licence register number W0211-01. The application contains several mentions of Ormonde Organics in the text. Please clarify.*

The reference to Ormonde Organics is a typographical error, the applicant is Eras Eco Ltd.

*2. The anaerobic digestion process description (literature) is markedly different from the process flow diagram contained in Attachment D, in the literature, references were made to the pasteurisation tanks and production of liquor.*

- a. Please show in the diagram at what stage pasteurisation takes place.*
- b. Please show in the diagram at what stage liquor is derived.*
- c. Please clarify why the 'fibre' is taken-in for 'sludge drying' in the schematic. Where is the sludge from?*

d. Please clarify the process flow for the digestate - why is it going into the on-site WWTP?

The anaerobic digestion (AD) plant will comprise six liquid storage tanks, two pasteuriser tanks and a feed hopper and conveyor located in Building 1, and two digester tanks and a digestate storage tank located in the south of the site. The digesters will be enclosed by an impermeable cover and heated to 37°C and will be continuously stirred and fed with sludge. This process will produce a biogas and a digestate.

The biogas will contain approximately 65% methane, which will then be treated and either used as a fuel in the new CHP plant, or exported to the national gas grid. Where the feed stock includes animal by-products, the digestate will be pasteurised to facilitate its use as a fertiliser. The pasteurisation process will comply with the Animal By-Product Approval issued by the Department of Agriculture, Food and Marine

The digestate has a significant nutrient and soil enhancement value and is typically applied to agricultural lands, either as whole digestate, or as a separated fibre. While it is intended to continue the land application of the digestate, it is proposed to provide the capability to dewater it in a new centrifuge that will be located in Building 1. The centrifuge will not be continuously operated, but will be used at times when there is pressure on digestate storage capacity over the period when land application is not allowed.

The centrifuge will produce a fibre (typically 20% dry solids) and a separated liquor. The fibre will be a semi-solid “cake” and will be stored in a trailer inside Building 1. When full, the trailer will be sent to the land application bank. The fibre is also suitable for composting and this option will be used in the periods when land application is restricted.

The liquor will be recirculated in the AD process; however following the commissioning of new Irish Water wastewater treatment plant serving Youghal, approval will be sought to discharge some liquor to the Irish Water foul sewer.

A revised process flow diagram is in Attachment A.

3. *It is stated in your response that the odour complaints received in 2016 were traced to opening doors of buildings to receive materials. During my site visit on 15 October 2017, I was informed that materials discharging from trucks may take up to 30 minutes to complete. Provide detailed measures to be taken (including provision for negative pressure) to isolate and prevent odour from these (door) sources during the receipt of materials.*

There is a negative air and odour control system in Building 1. As part of the installation of the AD plant the existing door will be replaced with a rapid closing door that will have a maximum opening time of 10 seconds, typical time is expected to be 6 seconds. The door will only be opened when the delivery vehicles enter and leave the building, and will be closed while the materials are being discharged from the vehicles. ERAS ECO Ltd will provide training to all staff members on the operation of the door and the importance of ensuring that the door is only opened to allow vehicles to enter and leave the building.

## Air Emissions

We have noted that the cumulative effects of the operation of the CHP plant and the landfill gas flare on the nearby Youghal Landfill (W0068-03) were not addressed in the application.

The landfill closed in 2012 and all waste deposition areas, with the exception of Cell 9, have been covered with a low permeability cap that incorporates a landfill gas collection, abstraction and enclosed flaring system. The flare is a point emission source and the waste deposition areas are a potential source of fugitive emissions

Landfill gas comprises a mixture of primarily methane and carbon dioxide, with a smaller concentration of nitrogen and trace quantities of odorous compounds. The objective of the flare is to combust the methane to produce carbon dioxide and to remove the odorous compounds. Typically enclosed flares have between a 95 and 98% methane combustion efficiency.

At the landfill the flare operates continuously, with the exception of scheduled maintenance down times. The AER for 2016 prepared by Cork County Council states that in 2016 the flare emitted 758,367 kg of carbon dioxide.

The IE licence specifies the following emission limit values for the flare stack to ensure that the emission does not affect an ambient air quality standard.

Carbon monoxide	50mg/m <sup>3</sup>
Nitrogen oxides	150mg/m <sup>3</sup>
Particulates	Not applicable
Total Organic Carbon	10mg/m <sup>3</sup>

The licence requires the Council to conduct annual monitoring to demonstrate that the stack emission complied with emission limits.

Volatile Organic Compound surveys of the surface of the landfill are carried out annually to assess the significance of fugitive emissions.

The CHP plant associated with the AD plan will increase the emissions to air (carbon dioxide, oxide and particulates) in the local area. However the air dispersal monitoring has confirmed these emissions will not result in the exceedance of any air quality standard.

As the landfill closed in 2012 the rate of landfill gas generation and consequently the volume flared and the associated point emissions to air. The installation of the capping layer on Cell 9 will minimise the potential for fugitive emissions.

The landfill is in the Restoration and Aftercare phase and the Industrial Emissions Licence will remain in force until such time as the Agency accepts its surrender, which based on current guidance will be in around 2042.

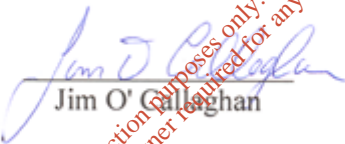
Table E 1.

As there have been a number of amendments to tables relating to the point emissions to air, copies of Tables E 1 (i), E1(ii) and E1(iii) for the point emissions are included in Attachment 2.

*In addition to the above please also provide an updated non-technical summary to reflect the information in your reply.*

An updated non-technical summary is in Attachment 3.

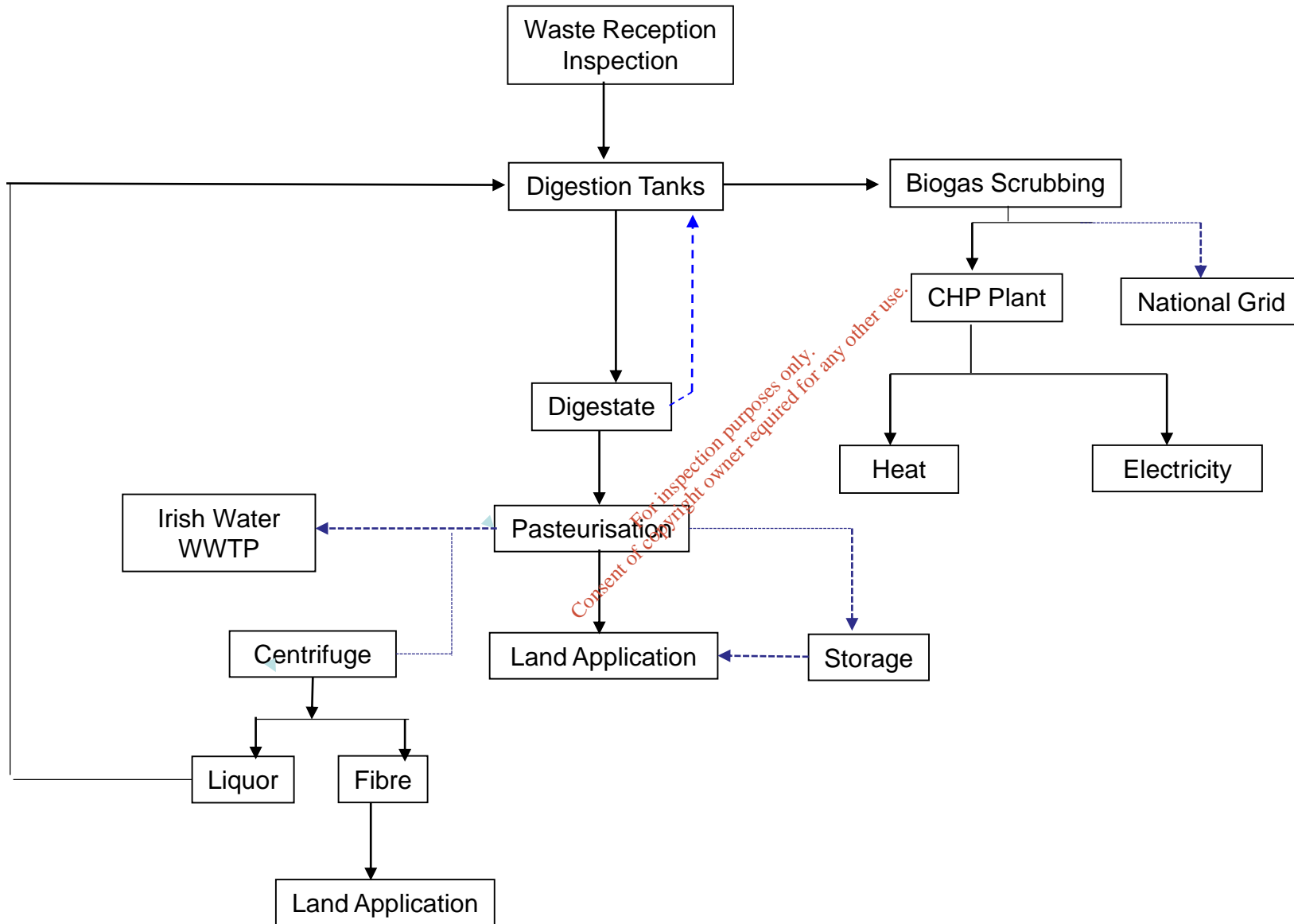
*Yours Sincerely,*

  
Jim O'Callaghan  
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Attachment 1

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# Anaerobic Digestion Process Flow Diagram



Attachment 2

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**Table E.1 (i) BOILER EMISSIONS TO ATMOSPHERE** (1 Page for each emission point)

**Emission Point:**

Emission Point Ref. N°:	A1	
Location:	Sludge Dryer Boiler Stack	
Grid Ref. (12 digit, 6E,6N):	209710E, 079775 N	
<b>Vent Details</b>	Diameter: 0.8 m	Height above Ground(m): 16.5 m
Date of commencement of emission:		

**Characteristics of Emission:**

<b>Boiler rating</b> Steam Output: Thermal Input:			<b>3.5</b> MW
<b>Boiler fuel</b> Type: Maximum rate at which fuel is burned % sulphur content:	<b>Wood and backed up with low sulphur diesel fuel.</b> kg/hr		
NOx			<b>250</b> mg/Nm <sup>3</sup> 0°C, 3% O <sub>2</sub> (Liquid or Gas), 6% O <sub>2</sub> (Solid Fuel)
Maximum volume* of emission			<b>11,600</b> m <sup>3</sup> /hr 0°C, 3 % O <sub>2</sub> (liquid or gas), 6 % O <sub>2</sub> (solid fuel)
Minimum efflux velocity			<b>12</b> m.sec <sup>-1</sup>
Temperature	<b>250</b> °C(max)	<b>180</b> °C(min)	<b>230</b> °C(avg)

\* Volume flow limits for emissions to atmosphere shall be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa), dry gas; 3% oxygen for liquid and gas fuels; 6% oxygen for solid fuels.

(i) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up/shutdown to be included*):

Periods of Emission (avg)	<b>60</b> min/hr	<b>24</b> hr/day	<b>351</b> day/yr
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**TABLE E.1(ii) MAIN EMISSIONS TO ATMOSPHERE** (1 Page for each emission point)

Emission Point Ref. N <sup>o</sup> :	A2
Source of Emission:	Biofilter
Location:	WWTP Area
Grid Ref. (12 digit, 6E,6N):	209708E, 079819N
Vent Details	
Diameter:	0.22 m
Height above Ground(m):	2.75 m
Date of commencement:	2007

**Characteristics of Emission:**

(i) Volume to be emitted:			
Average/day	Nm <sup>3</sup> /d	Maximum/day	<b>36,000</b> Nm <sup>3</sup> /d
Maximum rate/hour	<b>2,000</b> Nm <sup>3</sup> /h	Min efflux velocity	m.sec <sup>-1</sup>
(ii) Other factors			
Temperature	°C(max)	°C(min)	°C(avg)
For Combustion Sources: Volume terms expressed as : <input type="checkbox"/> wet. <input type="checkbox"/> dry.    _____ %O <sub>2</sub>			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	<b>Continuous</b> _____ min/hr    _____ hr/day    _____ day/yr
---------------------------	--

Emission Point Ref. Nº:	A3
Source of Emission:	Odour Control Unit
Location:	Materials Recovery Building & AD Plant
Grid Ref. (12 digit, 6E,6N):	209652E, 079780N
Vent Details	
Diameter:	0.80 m
Height above Ground(m):	15 m
Date of commencement:	

**Characteristics of Emission:**

(i) Volume to be emitted:			
Average/day	Nm <sup>3</sup> /d	Maximum/day	719,520 Nm <sup>3</sup> /d
Maximum rate/hour	29,890 Nm <sup>3</sup> /h	Min efflux velocity	m.sec <sup>-1</sup>
(ii) Other factors			
Temperature	°C(max)	°C(min)	°C(avg)
For Combustion Sources: Volume terms expressed as : <input type="checkbox"/> wet. <input type="checkbox"/> dry.        _____ %O <sub>2</sub>			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____ min/hr    _____ hr/day    _____ day/yr
---------------------------	--

Emission Point Ref. Nº:	A4
Source of Emission:	CHP Plant
Location:	Adjacent to Digester Tank
Grid Ref. (12 digit, 6E,6N):	209623,79732
Vent Details Diameter:	0.65m
Height above Ground(m):	19m
Date of commencement:	

**Characteristics of Emission:**

(i) Volume to be emitted:			
Average/day	Nm <sup>3</sup> /d	Maximum/day	6,200Nm <sup>3</sup> /d
Maximum rate/hour	Nm <sup>3</sup> /h	Min efflux velocity	18.8m.sec <sup>-1</sup>
(ii) Other factors			
Temperature	°C(max)	°C(min)	723K(avg)
For Combustion Sources: Volume terms expressed as : <input type="checkbox"/> wet. <input type="checkbox"/> dry. _____ %O <sub>2</sub>			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*): **When CHP plant operational**

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr
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**TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission** (1 table per emission point)

**Emission Point Reference Number:**     **A1**    

Parameter	Prior to treatment <sup>(1)</sup>				Brief description of treatment	As discharged <sup>(1)</sup>					
	mg/Nm <sup>3</sup>		kg/h			mg/Nm <sup>3</sup>		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max
Nitrogen Oxides (as NO <sub>2</sub> )		250		4.64	Not Applicable		250		2.9		1,017.9
Carbon Monoxide		150		2.32	Not Applicable		150		1.74		610.74
Particulates		1000		11.6	Bag Filter		20		0.232		81.43

1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

**TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission** (1 table per emission point)

**Emission Point Reference Number:**     **A2**    

Parameter	Prior to treatment <sup>(1)</sup>				Brief description of treatment	As discharged <sup>(1)</sup>					
	mg/Nm <sup>3</sup>		kg/h			mg/Nm <sup>3</sup>		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max
Ammonia					Biofilter						
Organics											
Hydrogen Sulphide											
Mercaptans											
Amines											

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1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

**TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission** (1 table per emission point)

**Emission Point Reference Number:**     **A3**    

Parameter	Prior to treatment <sup>(1)</sup>				Brief description of treatment	As discharged <sup>(1)</sup>					
	mg/Nm <sup>3</sup>		kg/h			mg/Nm <sup>3</sup>		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max
Ammonia					Biofilter						
Organics											
Hydrogen Sulphide											
Mercaptans											
Amines											

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1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

**TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission** (1 table per emission point)

**Emission Point Reference Number:**     **A4**    

Parameter	Prior to treatment <sup>(1)</sup>				Brief description of treatment	As discharged <sup>(1)</sup>					
	mg/Nm <sup>3</sup>		kg/h			mg/Nm <sup>3</sup>		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max
Carbon Monoxide						1400		8.67		76,033	
Oxides of Nitrogen						500		1.80		15,768	
Sulphur Dioxide						500		1.80		15,768	
Total Particulates						140		0.87		7,600	
Hydrogen Chloride						50		0.31		2,712	
Hydrogen Fluoride						5		0.031		271.2	
TOC (Methane)						1000		6.19		54,241	
Total Non Methane (VOC)						75		0.45		3,910	
Hydrogen Sulphide						5		0.031		271.2	

1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

Attachment 3

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## Non-Technical Summary

### 1) Introduction

ERAS ECO Ltd is Cork's leading sludge management company and has been operating its facility at Foxhole, Youghal since 2007. The facility operates under a Waste Licence (W0211-01)(IED) issued by the Environmental Protection Agency (EPA) and treats sewage sludge from local authority sewerage treatment plants and non-hazardous sludges from industrial waste water treatment plants operating mainly in the Cork area. Currently the sludge is dried at the facility, before being shipped to Germany for use as a fuel. Lime stabilisation of the sludge was carried out in the past, but this has stopped

ERAS ECO Ltd has seen an opportunity to introduce a new way of sludge treatment (anaerobic digestion) that will produce electricity and heat, which can either be used on site or sold to the National Grid.

### 2) Planning

A planning application was submitted to Cork County Council on the 27<sup>th</sup> January 2011 (Ref 11/4123). Planning permission was approved on the 27<sup>th</sup> May 2011 but this was subsequently appealed to An Bord Pleanala (Ref. PL04.239166) on the 2<sup>nd</sup> June 2011.

An Bord Pleanala approved permission (27<sup>th</sup> February 2013) for the anaerobic digestion element of the planning application but refused planning for the following development:

*"The upgrading of the existing sludge drying process through the introduction of a second innovative recovery process utilising supercritical water oxidation (Aqua Critox® technology) capable of accepting hazardous wastes and the ancillary plant associated with it including above ground nitrogen storage tank; above ground liquid oxygen storage tank; five number above ground liquid/solvent storage tanks and three number cooling towers."*

As a result of the refusal from An Bord Pleanala for this element of the project, it has not been included in the IE Licence Application.

The EIS which accompanied the original planning application is included with the IE Licence Application along with An Bord Pleanala's decision and Inspectors Report (**Attachment No. B6**).

The site and proposed activities do not come under the EC (Control of Major Accident Hazards involving Dangerous Substances) Regulations, 2006.

### 3) Existing Site

The site occupies almost 1.6 hectares and is approximately 2km from Youghal. There are two main processing buildings (Buildings 1 and 2), offices, weighbridges, a vehicle wash, paved open yards and parking areas (Drawing 10P521-01 – **Attachment No. B2**).

The site operations use electricity supplied by the ESB, water from the Irish Water mains supply as well as harvested rainwater. Sanitary wastewater is treated in an on-site wastewater treatment plant. Process wastewater is treated in a separate on-site wastewater treatment plant.

The sludge treated at the site is produced at sewerage works operated by Irish Water and wastewater treatment plants at industrial sites. The sludge is treated in Building 2. The treatment involves drying the sludge in Building 2 using heat from a wood chip fired boiler.

The steam is collected and condensed and treated in the on-site process wastewater treatment plant. The air inside Building 2 is collected and treated in an odour control plant. The treated sludge is exported to Germany where it is used as a fuel. At present, the site has approval to treat 30,000 tonnes of sludge per year.

ERAS ECO Ltd had offered a solid recyclable wastes (paper, cardboard, plastic, metal etc) service to businesses and industries. The materials were taken in, checked and processed (separated into the different types) in a dedicated building (Building 1) and then sent on to other recovery plants. However, for commercial reasons this and the building is now used to store wood chip for the boiler and low odour sludge awaiting treatment. The change was approved by the OEE following the installation of an odour control unit in 2011.

### Proposed Changes

The new anaerobic digestion plant consists of two above ground digester tanks, which will treat the sludge and produce a gas (methane) that will be used to generate electricity and heat in a new CHP plant. The electricity will be used at the facility instead of the mains supply and the heat may be used in the existing sludge drying process.

The residue from the process, which will be digestate. The digestate will be pasteurised and either be directly land spread or dewatered in an on-site centrifuge, with the solid material that contains the nutrients being land spread. Land spreading can only be carried out at certain times of the year and at times when this outlet is not available, the digestate and liquid from the centrifuge may either be recirculated in the anaerobic digestion plant or discharged to the Irish Water foul sewer. The new system will allow ERAS ECO Ltd to treat an extra 10,000 tonnes of sludge per year.

It is also proposed to accept organic sludge from the food and beverage industry and household and commercial food waste. The wastes will be stored in tanks in Building 1 before being fed into the anaerobic digesters.

At present, the site has approval to take in 110,000 tonnes of waste per year, which includes:

Commercial & Industrial Waste	70,000 tonnes
Non-Hazardous Sludge	30,000 tonnes

Leachate from Landfills 10,000 tonnes

The proposed changes will reduce the overall quantities of waste to 65,000 tonnes/year, which will include:

Commercial & Industrial and Household Waste	20,000 tonnes
Non-Hazardous Sludge	40,000 tonnes
Leachate from Landfills	5,000 tonnes

#### **4) Operating Hours**

*Proposed hours of operation:*

The sludge dryer and anaerobic digestion plant will operate on a 24 hour basis, 7 days a week. There will be shut-down periods for regular maintenance of dryer.

*Proposed hours of construction and development works and timeframes:*

Normal hours of construction (7am to 7pm, Mondays – Saturdays) will be maintained throughout the construction and development works. A construction works programme is currently not available as no contractor has yet been appointed to the project.

*For waste activities, the proposed hours of waste acceptance:*

Deliveries to the site are between 7am and 10pm, Mondays to Fridays, and on Saturdays between 7am and 2pm.

#### **5) Classes of Activity**

<b>Class</b>	<b>Description</b>
11.1	The recovery or disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in this Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under the said Part is or will be required.
	•
11.4 (b)	Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, (other than activities to which the Urban Water Treatment Regulations 2001 (SI No. 254 of 2001) apply):
(i)	<ul style="list-style-type: none"> <li>biological treatment; when the only waste treatment activity carried out is anaerobic digestion, the capacity threshold for this activity shall be 100 tonnes per day</li> </ul>
(ii)	<ul style="list-style-type: none"> <li>Pre-treatment of waste for incineration or co-incineration</li> </ul>

## 6) BAT / Bref Documents

ERAS ECO Ltd carried out a review of the proposed development against the BAT Conclusions and recommendations on best practice in the following guidance documents:

- Reference Document on Best Available Techniques for the Waste Treatments Industries August 2006
- Reference Document on Best Available Techniques for Energy Efficiency February 2009.
- Reference Document on Best Available Techniques from Storage

An assessment of how the facility will comply with the BAT Conclusions on Waste Treatment is included in **Attachment No. 18** along with an analysis of the proposed development against the BAT Conclusions on Energy Management and an assessment against the BAT Conclusions on Storage.

## 7) Waste Management Policies

The proposed changes are consistent with European Union, national and regional waste management policies and plans. The proposed anaerobic digestion system, which will produce electricity and heat, complies with national and regional policy on biological treatment and development of renewable energy sources.

## 8) Raw & Auxiliary Materials and Energy Use

Raw materials and energy that will be used include:-

- Diesel for on-site equipment
- Light fuel oil for boiler start-up operations
- Woodchip
- Hydraulic oil and engine oil for use in on-site equipment
- Electricity
- Water
- Sulphuric Acid, Sodium Hydroxide, Hypochlorite and Aluminium Sulphate used in the process wastewater treatment plant.

## 9) Sources of Emissions

The actual and proposed emissions from the site are:

- Noise from plant and equipment used to process the wastes, delivery/collection vehicles and odour control fans.
- Dust from waste processing and vehicle movements on yards during dry weather.
- Rainwater runoff from the yards and building roofs.
- Treated sanitary effluent.

- Treated process effluent.
- Air emissions from boiler, odour control units and proposed CHP plant
- Odours from the processing of the waste.
- Wastes from the processing of wastes.

## **10) Site Location**

The site is approximately 2km north of Youghal town centre on the western bank of the Blackwater Estuary in a low lying area known as the Youghal Mudlands to the south of the confluence of the Tourig and Blackwater Rivers.

The surrounding area is in low-density industrial / commercial use, with Youghal Landfill to the immediate east of the site, an NCT test centre to the west and an industrial estate / business park to the northwest. The adjacent lands to the south are at present vacant and undeveloped with the area beyond being grassland which has established itself on the reclaimed lands used for recreation, wildlife and amenity purposes, being part of the Slob Banks Walk, alongside the Blackwater Estuary.

## **11) Existing Environment, Potential Environmental Effects and Mitigation Measures**

### ***a) Climate***

The climate in the area is mild and wet, with the prevailing wind from the south west. The proposed changes will not have any impact on the local climate. The reduction in reliance on non-renewable sources of electricity due to on-site generation using the biogas will have a positive impact in reducing the facility's overall carbon footprint.

### ***b) Soils & Geology***

The soils at the site comprise made ground overlying a gravely clay. The underlying bedrock is limestone. The proposed changes will only require minor disturbance of the ground and will not give rise to any new emissions to the ground and therefore there will be no impacts on soil.

### ***c) Water***

Water quality monitoring has found the quality of the rainwater run-off from the site is good. The proposed changes will not affect the quality of the run-off.

Rainwater collected from roofs and open yards is currently harvested in the stormwater attenuation tank and reused in the treatment process. This reduces the amount of run-off from the site and also the volume of water taken from the mains supply, which has a positive impact.

As there will be no direct discharge to groundwater, the impacts on groundwater will be imperceptible.

At present, the water from the sludge drier is collected and treated in the on-site wastewater treatment plant and the treated water is discharged to the estuary. In the long term it is proposed

to connect to the Council's sewer that will be connected to the new Youghal Town sewerage treatment works.

The existing IED Licence defines the quality of the discharge and the flow rate to ensure that it does not affect the water quality or ecology in the estuary. The Licence also requires ERAS ECO Ltd to monitor the quality of the treated water to ensure the treatment plant is working properly.

Changes to the original WWTP have improved the quality of the discharge and made it compliant with the relevant emission limit values. The proposed new developments on-site will not affect the quality of the treated water discharged to the estuary and will have a neutral impact. There are no proposed changes to SE 1, while a continuous TOC monitor is proposed for SW 1 – the discharge from the stormwater attenuation tank.

#### ***d) Ecology***

The site is either paved or covered by buildings. It is not proposed to disturb any ground and the proposed changes will have no impact on the local ecology. The treated effluent from the wastewater treatment plant discharges into the Blackwater River Lower Estuary / Youghal Harbour.

Although there will be no changes to the effluent quality, an Appropriate Assessment was undertaken and a Natura Impact Statement prepared as part of the planning application due to the Blackwater's designation as a Natura 2000 site. The Natura Impact Statement was revised to take into consideration the hazardous waste treatment plant would not be installed.,

Mitigation measures have been identified for both the construction and operational phases of the proposed development.

#### ***e) Air Quality***

The proposed changes will mean a reduction in the level of traffic to and from the facility that is currently approved, with a consequent drop in exhaust emissions and dust. The current dust control measures, which include damping down paved areas in dry weather, have proven to be effective and will continue to be used.

Odours from the sludge treatment process are controlled by an advanced odour control system, installed in 2007, which collects air, treats it in a series of scrubbers and filters and discharges through emission point A2. This control system has proven to be effective. There is also an emission point (A1) associated with the sludge dryer boiler stack. Emission point A2 was originally at the biofilters. In 2015 ducting was installed between the biofilter and the northern elevation of Building 2, where it extends to 1m above the roof ridge height.

Odours from the building (Building 1) which is currently used for the storage of wood chip and low odour sludge and where lime stabilisation and MSW transfer had occurred are controlled by an odour control system comprising an air collection system and specially designed filter (A3).

Methane gas from the anaerobic digesters will be passed through a scrubbing system before entering the CHP plant. The exhaust from the CHP plant (A4) is considered a main emission point.

The existing and proposed discharges from all relevant air emission points on-site have been modelled and the results show that the overall air emissions from the site will have a negligible impact on the surrounding environment.

#### ***f) Noise***

All waste processing is and will continue to be carried out either indoors or in fully enclosed units. Noise surveys carried out to assess the noise from the proposed changes have established that they will not cause an impact at the nearest residence, which is approximately 250m away. The proposed changes will have a neutral impact.

#### ***g) Landscape***

The new storage tanks and digesters will be smaller than the existing buildings and will not be visually obtrusive. The changes will have a neutral impact on the landscape.

#### ***h) Traffic***

The proposed changes, which will result in a reduction in the licensed amount of waste accepted from 110,000 tonnes to 65,000 tonnes/year means that there will be a decrease in the traffic to and from the site. The local road network will not be affected and there will be a positive impact associated with the reduction in traffic.

#### ***i) Cultural Heritage***

There are no known archaeological, heritage or socio-cultural features on the site. The development works will involve limited ground disturbance and therefore will not have an impact on cultural heritage.

#### ***j) Human Beings***

Land use in the surrounding area is a mix of industrial, commercial, residential and agricultural. The nearest house is approximately 250m from the site boundary. There are no hospitals, hotels or holiday accommodation within 1 km of the site. The odour control measures that are and will be provided will ensure that odours from the handling of the household waste and sludge will not cause problems. Any impacts associated with the changes will be negligible.

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No further consent required for any other use.

### ***k) Material Assets***

The site is in an area zoned for industrial and related development, and it does not have a significant leisure or amenity value. The potential for damage to amenities and leisure land use arising from the proposed changes is negligible.

### ***l) Interaction of the Foregoing***

The proposed changes have the potential to impact on human beings. The reduction in traffic volumes and rainwater run-off will have a positive impact on the air quality (dust and exhaust emissions) and usage of the mains water supply.

There is the potential for impacts associated with noise, odour and traffic. The location, design and proposed method of operation have taken these potential impacts into account. Proven effective control measures will be used to ensure that the facility will have an overall neutral impact. These measures will be specified in the revised IE Licence that will be issued by the EPA.

## **12) Proposed Technology and other Techniques to prevent or eliminate, or where this is not practicable, limit, reduce or abate emissions from the installation.**

The design and method of operation of both the existing facility and proposed development are based on the requirements of the European Commission's Reference Document on Best Available Techniques for the Waste Treatment Industries 2006 (BREF), which specifies the Best Available Techniques (BAT) for Waste Management Facilities. An assessment of compliance with the BAT Conclusions in the Reference document on BAT for Energy Efficiency and BAT from the emissions from the storage BAT reference document has been completed.

The current Licence specifies the manner in which the facility must operate so as to ensure that pollution and/or nuisance to neighbours and the general public is prevented. It requires that the site's management team has the appropriate training and qualifications; prescribes the types of wastes and processes that can be carried out; specifies how wastes and raw materials that have the potential to cause pollution are handled and stored; lists the control measures that must be applied to prevent nuisance and requires appropriate emergency response procedures to be in place.

## **13) Measures to Comply with Waste Management Hierarchy**

The existing facility and the planned development is designed to maximize waste recovery including energy recovery, from the incoming waste streams. The proposed changes are consistent with the Waste Hierarchy as the energy recovery from the anaerobic digestion process will gain the maximum value from the waste.



## **14) BAT**

Condition 2 of the current Licence requires ERAS ECO Ltd to develop and implement an Environmental Management System for the facility, which is consistent with the BREF on Waste Treatment.

The Licence requires ERAS ECO Ltd to prepare operational control procedures for all waste activities and ensure that facility staff are provided with the appropriate skills and training to perform their assigned functions.

It also requires the implementation of the control measures specified in the BREF in so far as they apply to biological treatment and the prevention of soil contamination. The conditions also specify the relevant control techniques referenced in the Agency's BAT Guidance.

The proposed changes take into consideration the requirements of the BREF in particular;

- The collection and treatment of odorous air from the waste reception and treatment areas. This is achieved by a combination of building design and construction; provision of a negative air system, and the treatment of the odorous air in appropriately designed and operated treatment plants.

An assessment of compliance with the BAT Conclusions in the Reference document on Best Available Techniques for Energy Efficiency and BAT from the Emissions from storage BAT Reference Document has been completed.

## **15) Abnormal Operating Conditions**

ERAS ECO Ltd has adopted Emergency Response Procedures (ERP). The ERP identifies potential hazards at the site that may cause damage to the environment and also specifies roles, responsibilities and actions required to deal quickly and efficiently with all foreseeable major incidents and to minimise environmental impacts.

## **16) Avoidance of the Risk of Environmental Pollution due to Closure of the Facility**

ERAS ECO Ltd has prepared a Closure Restoration and Aftercare Management Plan (CRAMP) for the installation and this has been submitted to the EPA.

## **17) Environmental Monitoring**

### *Dust*

Dust is and will be monitored annually. It is currently monitored 3 times a year at 3 locations (D1 – D3).

### *Noise*

Noise is and will be monitored annually at the four existing monitoring locations (N1 – N3, and NSR).

### *Odour*

Daily odour patrols around the site perimeter will be carried out as required under current licence conditions.

### *Surface Water*

The surface water discharge from the site will be visually monitored on a daily basis with quarterly monitoring undertaken in accordance with existing licence conditions. As the discharge will be intermittent and linked to rainfall events grab samples will be collected. It is also proposed to install a continuous TOC monitor on the surface water system.

### *Air Emissions*

Air emissions from the biofilters, boiler and CHP engine will be monitored in accordance with licence conditions.

### *Wastewater*

Emissions to the sewer (SE 1) will be monitored in accordance with existing licence conditions.

### *Soil and Groundwater*

A baseline soil and groundwater assessment has been completed

## **18) Measures to Comply with an Environmental Quality Standard**

The emission limit values proposed in the application and those that will be set by the EPA in the new licence are and will be based on achieving compliance with the relevant EQS.

## **19) Measures to comply with Council Directive 80/68/EEC and 2006/118/EC in relation to the protection of groundwater.**

There are no direct discharges to groundwater and the main operational areas of the site are covered by roofs and concrete yards.

## **20) The Main Alternatives to the Proposed Technology, Techniques and Measures**

### **Alternative Sites**

The original EIS involved an extensive survey of industry/enterprise zoned lands in Cork that were potentially suitable for waste activities. The subject site was considered suitable, based

on the site selection criteria applied, which included proximity to waste sources, proximity to a developed transportation network, suitable zoning and compatible surrounding land use, distance from potential sensitive receptors and distance from historic sites and monuments.

The features of the site that render it particularly suitable for the proposed waste activities are:

(a) Proximity to Waste Arising:

The existing facility primarily serves pharmaceuticals industries located in the Cork region, which are the primary sources of the hazardous solvent wastes. Its location in east Cork is well positioned for this purpose.

(b) Access :

- Proximity to national road network – the facility is approximately 1.5 kilometres from the N25.
- Good site access – all vehicles delivering waste to the facility approach via the Rincrew roundabout and take the R634 towards Youghal. There is no need for waste vehicles to enter the town of Youghal. A newly reconstructed approach road off the R634 to the facility, NCT Centre and Youghal Landfill was completed in 2009.

(c) Layout:

- The site is relatively large (1.6 hectares) and the existing buildings have the capacity to accommodate the waste solvent treatment process.
- Existing services and infrastructure which will be retained – the site already has adequate electricity and water supply for the proposed developments.

(d) Location:

- Good separation distance from residential areas (approximately 250 m);
- Site does not interfere or encroach on any areas of scientific archaeological value

As the site is already an authorised waste activity the proposal will increase the range of waste recovery activities carried out.

### *Conclusion*

The site is suitable for its current use, which is compatible with the proposals to increase the volumes of non-hazardous sludge and organic waste that will be treated

## **Alternative Processes**

### *Anaerobic Digestion*

The digester will comprise a solids feeder and digestion tank, which will be enclosed by an impermeable cover and heated to 37°C. The tank will be continuously stirred and fed with sludges. This process will produce a biogas containing approximately 65 % methane, which

will then be treated and used as a fuel in the CHP plant. As the proposed system is tried and tested, and is particularly suited to the treatment of sludges and the generation of biogas, an alternative was not considered.

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**Table E.1 (i) BOILER EMISSIONS TO ATMOSPHERE** (1 Page for each emission point)

**Emission Point:**

Emission Point Ref. N°:	A1	
Location:	Sludge Dryer Boiler Stack	
Grid Ref. (12 digit, 6E,6N):	209710E, 079775 N	
<b>Vent Details</b>	Diameter: 0.8 m	Height above Ground(m): 16.5 m
Date of commencement of emission:		

**Characteristics of Emission:**

<b>Boiler rating</b> Steam Output: Thermal Input:			<b>3.5</b> MW
<b>Boiler fuel</b> Type: Maximum rate at which fuel is burned % sulphur content:	<b>Wood and backed up with low sulphur diesel fuel.</b> kg/hr		
NOx			<b>250</b> mg/Nm <sup>3</sup> 0°C, 3% O <sub>2</sub> (Liquid or Gas), 6% O <sub>2</sub> (Solid Fuel)
Maximum volume* of emission			<b>11,600</b> m <sup>3</sup> /hr 0°C, 3 % O <sub>2</sub> (liquid or gas), 6 % O <sub>2</sub> (solid fuel)
Minimum efflux velocity			<b>12</b> m.sec <sup>-1</sup>
Temperature	<b>250</b> °C(max)	<b>180</b> °C(min)	<b>230</b> °C(avg)

\* Volume flow limits for emissions to atmosphere shall be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa), dry gas; 3% oxygen for liquid and gas fuels; 6% oxygen for solid fuels.

(i) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up/shutdown to be included*):

Periods of Emission (avg)	<b>60</b> min/hr	<b>24</b> hr/day	<b>351</b> day/yr
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**TABLE E.1(ii) MAIN EMISSIONS TO ATMOSPHERE** (1 Page for each emission point)

Emission Point Ref. N <sup>o</sup> :	A2
Source of Emission:	Biofilter
Location:	WWTP Area
Grid Ref. (12 digit, 6E,6N):	209708E, 079819N
Vent Details	
Diameter:	0.22 m
Height above Ground(m):	2.75 m
Date of commencement:	2007

**Characteristics of Emission:**

(i) Volume to be emitted:			
Average/day	Nm <sup>3</sup> /d	Maximum/day	<b>36,000</b> Nm <sup>3</sup> /d
Maximum rate/hour	<b>2,000</b> Nm <sup>3</sup> /h	Min efflux velocity	m.sec <sup>-1</sup>
(ii) Other factors			
Temperature	°C(max)	°C(min)	°C(avg)
For Combustion Sources: Volume terms expressed as : <input type="checkbox"/> wet. <input type="checkbox"/> dry.    _____ %O <sub>2</sub>			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	<b>Continuous</b> _____ min/hr    _____ hr/day    _____ day/yr
---------------------------	--

Emission Point Ref. Nº:	A3
Source of Emission:	Odour Control Unit
Location:	Materials Recovery Building & AD Plant
Grid Ref. (12 digit, 6E,6N):	209652E, 079780N
Vent Details	
Diameter:	0.80 m
Height above Ground(m):	15 m
Date of commencement:	

**Characteristics of Emission:**

(i) Volume to be emitted:			
Average/day	Nm <sup>3</sup> /d	Maximum/day	719,520 Nm <sup>3</sup> /d
Maximum rate/hour	29,890 Nm <sup>3</sup> /h	Min efflux velocity	m.sec <sup>-1</sup>
(ii) Other factors			
Temperature	°C(max)	°C(min)	°C(avg)
For Combustion Sources: Volume terms expressed as : <input type="checkbox"/> wet. <input type="checkbox"/> dry.        _____ %O <sub>2</sub>			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____ min/hr    _____ hr/day    _____ day/yr
---------------------------	--

Emission Point Ref. Nº:	A4
Source of Emission:	CHP Plant
Location:	Adjacent to Digester Tank
Grid Ref. (12 digit, 6E,6N):	209623,79732
Vent Details Diameter:	0.65m
Height above Ground(m):	19m
Date of commencement:	

**Characteristics of Emission:**

(i) Volume to be emitted:			
Average/day	Nm <sup>3</sup> /d	Maximum/day	6,200Nm <sup>3</sup> /d
Maximum rate/hour	Nm <sup>3</sup> /h	Min efflux velocity	18.8m.sec <sup>-1</sup>
(ii) Other factors			
Temperature	°C(max)	°C(min)	723K(avg)
For Combustion Sources: Volume terms expressed as : <input type="checkbox"/> wet. <input type="checkbox"/> dry.        _____ %O <sub>2</sub>			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*): **When CHP plant operational**

Periods of Emission (avg)	_____min/hr    _____hr/day    _____day/yr
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**TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission** (1 table per emission point)

**Emission Point Reference Number:**     **A1**    

Parameter	Prior to treatment <sup>(1)</sup>				Brief description of treatment	As discharged <sup>(1)</sup>					
	mg/Nm <sup>3</sup>		kg/h			mg/Nm <sup>3</sup>		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max
Nitrogen Oxides (as NO <sub>2</sub> )		250		4.64	Not Applicable		250		2.9		1,017.9
Carbon Monoxide		150		2.32	Not Applicable		150		1.74		610.74
Particulates		1000		11.6	Bag Filter		20		0.232		81.43

1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

**TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission** (1 table per emission point)

**Emission Point Reference Number:**     **A2**    

Parameter	Prior to treatment <sup>(1)</sup>				Brief description of treatment	As discharged <sup>(1)</sup>					
	mg/Nm <sup>3</sup>		kg/h			mg/Nm <sup>3</sup>		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max
Ammonia					Biofilter						
Organics											
Hydrogen Sulphide											
Mercaptans											
Amines											

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1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

**TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission** (1 table per emission point)

**Emission Point Reference Number:**     **A3**    

Parameter	Prior to treatment <sup>(1)</sup>				Brief description of treatment	As discharged <sup>(1)</sup>					
	mg/Nm <sup>3</sup>		kg/h			mg/Nm <sup>3</sup>		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max
Ammonia					Biofilter						
Organics											
Hydrogen Sulphide											
Mercaptans											
Amines											

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1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

**TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission** (1 table per emission point)

**Emission Point Reference Number:**     **A4**    

Parameter	Prior to treatment <sup>(1)</sup>				Brief description of treatment	As discharged <sup>(1)</sup>					
	mg/Nm <sup>3</sup>		kg/h			mg/Nm <sup>3</sup>		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max
Carbon Monoxide						1400		8.67		76,033	
Oxides of Nitrogen						500		1.80		15,768	
Sulphur Dioxide						500		1.80		15,768	
Total Particulates						140		0.87		7,600	
Hydrogen Chloride						50		0.31		2,712	
Hydrogen Fluoride						5		0.031		271.2	
TOC (Methane)						1000		6.19		54,241	
Total Non Methane (VOC)						75		0.45		3,910	
Hydrogen Sulphide						5		0.031		271.2	

1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

## Non-Technical Summary

### 1) Introduction

ERAS ECO Ltd is Cork's leading sludge management company and has been operating its facility at Foxhole, Youghal since 2007. The facility operates under a Waste Licence (W0211-01)(IED) issued by the Environmental Protection Agency (EPA) and treats sewage sludge from local authority sewerage treatment plants and non-hazardous sludges from industrial waste water treatment plants operating mainly in the Cork area. Currently the sludge is dried at the facility, before being shipped to Germany for use as a fuel. Lime stabilisation of the sludge was carried out in the past, but this has stopped

ERAS ECO Ltd has seen an opportunity to introduce a new way of sludge treatment (anaerobic digestion) that will produce electricity and heat, which can either be used on site or sold to the National Grid.

### 2) Planning

A planning application was submitted to Cork County Council on the 27<sup>th</sup> January 2011 (Ref 11/4123). Planning permission was approved on the 27<sup>th</sup> May 2011 but this was subsequently appealed to An Bord Pleanala (Ref. PL04.239166) on the 2<sup>nd</sup> June 2011.

An Bord Pleanala approved permission (27<sup>th</sup> February 2013) for the anaerobic digestion element of the planning application but refused planning for the following development:

*"The upgrading of the existing sludge drying process through the introduction of a second innovative recovery process utilising supercritical water oxidation (Aqua Critox® technology) capable of accepting hazardous wastes and the ancillary plant associated with it including above ground nitrogen storage tank; above ground liquid oxygen storage tank; five number above ground liquid/solvent storage tanks and three number cooling towers."*

As a result of the refusal from An Bord Pleanala for this element of the project, it has not been included in the IE Licence Application.

The EIS which accompanied the original planning application is included with the IE Licence Application along with An Bord Pleanala's decision and Inspectors Report (**Attachment No. B6**).

The site and proposed activities do not come under the EC (Control of Major Accident Hazards involving Dangerous Substances) Regulations, 2006.

### 3) Existing Site

The site occupies almost 1.6 hectares and is approximately 2km from Youghal. There are two main processing buildings (Buildings 1 and 2), offices, weighbridges, a vehicle wash, paved open yards and parking areas (Drawing 10P521-01 – **Attachment No. B2**).

The site operations use electricity supplied by the ESB, water from the Irish Water mains supply as well as harvested rainwater. Sanitary wastewater is treated in an on-site wastewater treatment plant. Process wastewater is treated in a separate on-site wastewater treatment plant.

The sludge treated at the site is produced at sewerage works operated by Irish Water and wastewater treatment plants at industrial sites. The sludge is treated in Building 2. The treatment involves drying the sludge in Building 2 using heat from a wood chip fired boiler.

The steam is collected and condensed and treated in the on-site process wastewater treatment plant. The air inside Building 2 is collected and treated in an odour control plant. The treated sludge is exported to Germany where it is used as a fuel. At present, the site has approval to treat 30,000 tonnes of sludge per year.

ERAS ECO Ltd had offered a solid recyclable wastes (paper, cardboard, plastic, metal etc) service to businesses and industries. The materials were taken in, checked and processed (separated into the different types) in a dedicated building (Building 1) and then sent on to other recovery plants. However, for commercial reasons this and the building is now used to store wood chip for the boiler and low odour sludge awaiting treatment. The change was approved by the OEE following the installation of an odour control unit in 2011.

### Proposed Changes

The new anaerobic digestion plant consists of two above ground digester tanks, which will treat the sludge and produce a gas (methane) that will be used to generate electricity and heat in a new CHP plant. The electricity will be used at the facility instead of the mains supply and the heat may be used in the existing sludge drying process.

The residue from the process, which will be digestate. The digestate will be pasteurised and either be directly land spread or dewatered in an on-site centrifuge, with the solid material that contains the nutrients being land spread. Land spreading can only be carried out at certain times of the year and at times when this outlet is not available, the digestate and liquid from the centrifuge may either be recirculated in the anaerobic digestion plant or discharged to the Irish Water foul sewer. The new system will allow ERAS ECO Ltd to treat an extra 10,000 tonnes of sludge per year.

It is also proposed to accept organic sludge from the food and beverage industry and household and commercial food waste. The wastes will be stored in tanks in Building 1 before being fed into the anaerobic digesters.

At present, the site has approval to take in 110,000 tonnes of waste per year, which includes:

Commercial & Industrial Waste	70,000 tonnes
Non-Hazardous Sludge	30,000 tonnes

Leachate from Landfills 10,000 tonnes

The proposed changes will reduce the overall quantities of waste to 65,000 tonnes/year, which will include:

Commercial & Industrial and Household Waste	20,000 tonnes
Non-Hazardous Sludge	40,000 tonnes
Leachate from Landfills	5,000 tonnes

#### **4) Operating Hours**

*Proposed hours of operation:*

The sludge dryer and anaerobic digestion plant will operate on a 24 hour basis, 7 days a week. There will be shut-down periods for regular maintenance of dryer.

*Proposed hours of construction and development works and timeframes:*

Normal hours of construction (7am to 7pm, Mondays – Saturdays) will be maintained throughout the construction and development works. A construction works programme is currently not available as no contractor has yet been appointed to the project.

*For waste activities, the proposed hours of waste acceptance:*

Deliveries to the site are between 7am and 10pm, Mondays to Fridays, and on Saturdays between 7am and 2pm.

#### **5) Classes of Activity**

<b>Class</b>	<b>Description</b>
11.1	The recovery or disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in this Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under the said Part is or will be required.
	•
11.4 (b)	Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, (other than activities to which the Urban Water Treatment Regulations 2001 (SI No. 254 of 2001) apply):
(i)	<ul style="list-style-type: none"> <li>biological treatment; when the only waste treatment activity carried out is anaerobic digestion, the capacity threshold for this activity shall be 100 tonnes per day</li> </ul>
(ii)	<ul style="list-style-type: none"> <li>Pre-treatment of waste for incineration or co-incineration</li> </ul>

## 6) BAT / Bref Documents

ERAS ECO Ltd carried out a review of the proposed development against the BAT Conclusions and recommendations on best practice in the following guidance documents:

- Reference Document on Best Available Techniques for the Waste Treatments Industries August 2006
- Reference Document on Best Available Techniques for Energy Efficiency February 2009.
- Reference Document on Best Available Techniques from Storage

An assessment of how the facility will comply with the BAT Conclusions on Waste Treatment is included in **Attachment No. 18** along with an analysis of the proposed development against the BAT Conclusions on Energy Management and an assessment against the BAT Conclusions on Storage.

## 7) Waste Management Policies

The proposed changes are consistent with European Union, national and regional waste management policies and plans. The proposed anaerobic digestion system, which will produce electricity and heat, complies with national and regional policy on biological treatment and development of renewable energy sources.

## 8) Raw & Auxiliary Materials and Energy Use

Raw materials and energy that will be used include:-

- Diesel for on-site equipment
- Light fuel oil for boiler start-up operations
- Woodchip
- Hydraulic oil and engine oil for use in on-site equipment
- Electricity
- Water
- Sulphuric Acid, Sodium Hydroxide, Hypochlorite and Aluminium Sulphate used in the process wastewater treatment plant.

## 9) Sources of Emissions

The actual and proposed emissions from the site are:

- Noise from plant and equipment used to process the wastes, delivery/collection vehicles and odour control fans.
- Dust from waste processing and vehicle movements on yards during dry weather.
- Rainwater runoff from the yards and building roofs.
- Treated sanitary effluent.



- Treated process effluent.
- Air emissions from boiler, odour control units and proposed CHP plant
- Odours from the processing of the waste.
- Wastes from the processing of wastes.

## **10) Site Location**

The site is approximately 2km north of Youghal town centre on the western bank of the Blackwater Estuary in a low lying area known as the Youghal Mudlands to the south of the confluence of the Tourig and Blackwater Rivers.

The surrounding area is in low-density industrial / commercial use, with Youghal Landfill to the immediate east of the site, an NCT test centre to the west and an industrial estate / business park to the northwest. The adjacent lands to the south are at present vacant and undeveloped with the area beyond being grassland which has established itself on the reclaimed lands used for recreation, wildlife and amenity purposes, being part of the Slob Banks Walk, alongside the Blackwater Estuary.

## **11) Existing Environment, Potential Environmental Effects and Mitigation Measures**

### ***a) Climate***

The climate in the area is mild and wet, with the prevailing wind from the south west. The proposed changes will not have any impact on the local climate. The reduction in reliance on non-renewable sources of electricity due to on-site generation using the biogas will have a positive impact in reducing the facility's overall carbon footprint.

### ***b) Soils & Geology***

The soils at the site comprise made ground overlying a gravely clay. The underlying bedrock is limestone. The proposed changes will only require minor disturbance of the ground and will not give rise to any new emissions to the ground and therefore there will be no impacts on soil.

### ***c) Water***

Water quality monitoring has found the quality of the rainwater run-off from the site is good. The proposed changes will not affect the quality of the run-off.

Rainwater collected from roofs and open yards is currently harvested in the stormwater attenuation tank and reused in the treatment process. This reduces the amount of run-off from the site and also the volume of water taken from the mains supply, which has a positive impact.

As there will be no direct discharge to groundwater, the impacts on groundwater will be imperceptible.

At present, the water from the sludge drier is collected and treated in the on-site wastewater treatment plant and the treated water is discharged to the estuary. In the long term it is proposed

to connect to the Council's sewer that will be connected to the new Youghal Town sewerage treatment works.

The existing IED Licence defines the quality of the discharge and the flow rate to ensure that it does not affect the water quality or ecology in the estuary. The Licence also requires ERAS ECO Ltd to monitor the quality of the treated water to ensure the treatment plant is working properly.

Changes to the original WWTP have improved the quality of the discharge and made it compliant with the relevant emission limit values. The proposed new developments on-site will not affect the quality of the treated water discharged to the estuary and will have a neutral impact. There are no proposed changes to SE 1, while a continuous TOC monitor is proposed for SW 1 – the discharge from the stormwater attenuation tank.

#### ***d) Ecology***

The site is either paved or covered by buildings. It is not proposed to disturb any ground and the proposed changes will have no impact on the local ecology. The treated effluent from the wastewater treatment plant discharges into the Blackwater River Lower Estuary / Youghal Harbour.

Although there will be no changes to the effluent quality, an Appropriate Assessment was undertaken and a Natura Impact Statement prepared as part of the planning application due to the Blackwater's designation as a Natura 2000 site. The Natura Impact Statement was revised to take into consideration the hazardous waste treatment plant would not be installed.,

Mitigation measures have been identified for both the construction and operational phases of the proposed development.

#### ***e) Air Quality***

The proposed changes will mean a reduction in the level of traffic to and from the facility that is currently approved, with a consequent drop in exhaust emissions and dust. The current dust control measures, which include damping down paved areas in dry weather, have proven to be effective and will continue to be used.

Odours from the sludge treatment process are controlled by an advanced odour control system, installed in 2007, which collects air, treats it in a series of scrubbers and filters and discharges through emission point A2. This control system has proven to be effective. There is also an emission point (A1) associated with the sludge dryer boiler stack. Emission point A2 was originally at the biofilters. In 2015 ducting was installed between the biofilter and the northern elevation of Building 2, where it extends to 1m above the roof ridge height.

Odours from the building (Building 1) which is currently used for the storage of wood chip and low odour sludge and where lime stabilisation and MSW transfer had occurred are controlled by an odour control system comprising an air collection system and specially designed filter (A3).

Methane gas from the anaerobic digesters will be passed through a scrubbing system before entering the CHP plant. The exhaust from the CHP plant (A4) is considered a main emission point.

The existing and proposed discharges from all relevant air emission points on-site have been modelled and the results show that the overall air emissions from the site will have a negligible impact on the surrounding environment.

#### ***f) Noise***

All waste processing is and will continue to be carried out either indoors or in fully enclosed units. Noise surveys carried out to assess the noise from the proposed changes have established that they will not cause an impact at the nearest residence, which is approximately 250m away. The proposed changes will have a neutral impact.

#### ***g) Landscape***

The new storage tanks and digesters will be smaller than the existing buildings and will not be visually obtrusive. The changes will have a neutral impact on the landscape.

#### ***h) Traffic***

The proposed changes, which will result in a reduction in the licensed amount of waste accepted from 110,000 tonnes to 65,000 tonnes/year means that there will be a decrease in the traffic to and from the site. The local road network will not be affected and there will be a positive impact associated with the reduction in traffic.

#### ***i) Cultural Heritage***

There are no known archaeological, heritage or socio-cultural features on the site. The development works will involve limited ground disturbance and therefore will not have an impact on cultural heritage.

#### ***j) Human Beings***

Land use in the surrounding area is a mix of industrial, commercial, residential and agricultural. The nearest house is approximately 250m from the site boundary. There are no hospitals, hotels or holiday accommodation within 1 km of the site. The odour control measures that are and will be provided will ensure that odours from the handling of the household waste and sludge will not cause problems. Any impacts associated with the changes will be negligible.

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### ***k) Material Assets***

The site is in an area zoned for industrial and related development, and it does not have a significant leisure or amenity value. The potential for damage to amenities and leisure land use arising from the proposed changes is negligible.

### ***l) Interaction of the Foregoing***

The proposed changes have the potential to impact on human beings. The reduction in traffic volumes and rainwater run-off will have a positive impact on the air quality (dust and exhaust emissions) and usage of the mains water supply.

There is the potential for impacts associated with noise, odour and traffic. The location, design and proposed method of operation have taken these potential impacts into account. Proven effective control measures will be used to ensure that the facility will have an overall neutral impact. These measures will be specified in the revised IE Licence that will be issued by the EPA.

## **12) Proposed Technology and other Techniques to prevent or eliminate, or where this is not practicable, limit, reduce or abate emissions from the installation.**

The design and method of operation of both the existing facility and proposed development are based on the requirements of the European Commission's Reference Document on Best Available Techniques for the Waste Treatment Industries 2006 (BREF), which specifies the Best Available Techniques (BAT) for Waste Management Facilities. An assessment of compliance with the BAT Conclusions in the Reference document on BAT for Energy Efficiency and BAT from the emissions from the storage BAT reference document has been completed.

The current Licence specifies the manner in which the facility must operate so as to ensure that pollution and/or nuisance to neighbours and the general public is prevented. It requires that the site's management team has the appropriate training and qualifications; prescribes the types of wastes and processes that can be carried out; specifies how wastes and raw materials that have the potential to cause pollution are handled and stored; lists the control measures that must be applied to prevent nuisance and requires appropriate emergency response procedures to be in place.

## **13) Measures to Comply with Waste Management Hierarchy**

The existing facility and the planned development is designed to maximize waste recovery including energy recovery, from the incoming waste streams. The proposed changes are consistent with the Waste Hierarchy as the energy recovery from the anaerobic digestion process will gain the maximum value from the waste.

## **14) BAT**

Condition 2 of the current Licence requires ERAS ECO Ltd to develop and implement an Environmental Management System for the facility, which is consistent with the BREF on Waste Treatment.

The Licence requires ERAS ECO Ltd to prepare operational control procedures for all waste activities and ensure that facility staff are provided with the appropriate skills and training to perform their assigned functions.

It also requires the implementation of the control measures specified in the BREF in so far as they apply to biological treatment and the prevention of soil contamination. The conditions also specify the relevant control techniques referenced in the Agency's BAT Guidance.

The proposed changes take into consideration the requirements of the BREF in particular;

- The collection and treatment of odorous air from the waste reception and treatment areas. This is achieved by a combination of building design and construction; provision of a negative air system, and the treatment of the odorous air in appropriately designed and operated treatment plants.

An assessment of compliance with the BAT Conclusions in the Reference document on Best Available Techniques for Energy Efficiency and BAT from the Emissions from storage BAT Reference Document has been completed.

## **15) Abnormal Operating Conditions**

ERAS ECO Ltd has adopted Emergency Response Procedures (ERP). The ERP identifies potential hazards at the site that may cause damage to the environment and also specifies roles, responsibilities and actions required to deal quickly and efficiently with all foreseeable major incidents and to minimise environmental impacts.

## **16) Avoidance of the Risk of Environmental Pollution due to Closure of the Facility**

ERAS ECO Ltd has prepared a Closure Restoration and Aftercare Management Plan (CRAMP) for the installation and this has been submitted to the EPA.

## **17) Environmental Monitoring**

### *Dust*

Dust is and will be monitored annually. It is currently monitored 3 times a year at 3 locations (D1 – D3).

### *Noise*

Noise is and will be monitored annually at the four existing monitoring locations (N1 – N3, and NSR).

### *Odour*

Daily odour patrols around the site perimeter will be carried out as required under current licence conditions.

### *Surface Water*

The surface water discharge from the site will be visually monitored on a daily basis with quarterly monitoring undertaken in accordance with existing licence conditions. As the discharge will be intermittent and linked to rainfall events grab samples will be collected. It is also proposed to install a continuous TOC monitor on the surface water system.

### *Air Emissions*

Air emissions from the biofilters, boiler and CHP engine will be monitored in accordance with licence conditions.

### *Wastewater*

Emissions to the sewer (SE 1) will be monitored in accordance with existing licence conditions.

### *Soil and Groundwater*

A baseline soil and groundwater assessment has been completed

## **18) Measures to Comply with an Environmental Quality Standard**

The emission limit values proposed in the application and those that will be set by the EPA in the new licence are and will be based on achieving compliance with the relevant EQS.

## **19) Measures to comply with Council Directive 80/68/EEC and 2006/118/EC in relation to the protection of groundwater.**

There are no direct discharges to groundwater and the main operational areas of the site are covered by roofs and concrete yards.

## **20) The Main Alternatives to the Proposed Technology, Techniques and Measures**

### **Alternative Sites**

The original EIS involved an extensive survey of industry/enterprise zoned lands in Cork that were potentially suitable for waste activities. The subject site was considered suitable, based

on the site selection criteria applied, which included proximity to waste sources, proximity to a developed transportation network, suitable zoning and compatible surrounding land use, distance from potential sensitive receptors and distance from historic sites and monuments.

The features of the site that render it particularly suitable for the proposed waste activities are:

(a) Proximity to Waste Arising:

The existing facility primarily serves pharmaceuticals industries located in the Cork region, which are the primary sources of the hazardous solvent wastes. Its location in east Cork is well positioned for this purpose.

(b) Access :

- Proximity to national road network – the facility is approximately 1.5 kilometres from the N25.
- Good site access – all vehicles delivering waste to the facility approach via the Rincrew roundabout and take the R634 towards Youghal. There is no need for waste vehicles to enter the town of Youghal. A newly reconstructed approach road off the R634 to the facility, NCT Centre and Youghal Landfill was completed in 2009.

(c) Layout:

- The site is relatively large (1.6 hectares) and the existing buildings have the capacity to accommodate the waste solvent treatment process.
- Existing services and infrastructure which will be retained – the site already has adequate electricity and water supply for the proposed developments.

(d) Location:

- Good separation distance from residential areas (approximately 250 m);
- Site does not interfere or encroach on any areas of scientific archaeological value

As the site is already an authorised waste activity the proposal will increase the range of waste recovery activities carried out.

### *Conclusion*

The site is suitable for its current use, which is compatible with the proposals to increase the volumes of non-hazardous sludge and organic waste that will be treated

## **Alternative Processes**

### *Anaerobic Digestion*

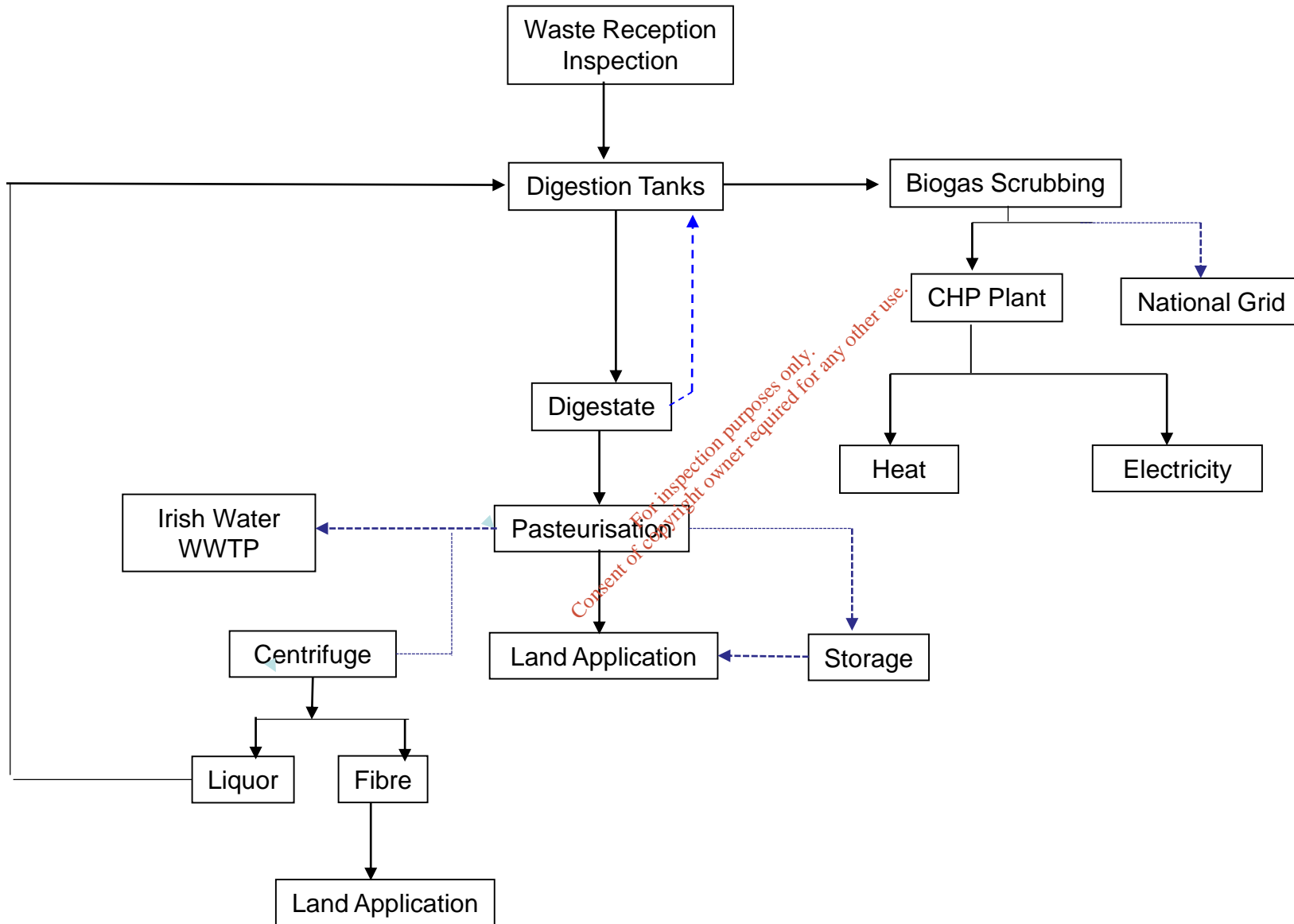
The digester will comprise a solids feeder and digestion tank, which will be enclosed by an impermeable cover and heated to 37°C. The tank will be continuously stirred and fed with sludges. This process will produce a biogas containing approximately 65 % methane, which

will then be treated and used as a fuel in the CHP plant. As the proposed system is tried and tested, and is particularly suited to the treatment of sludges and the generation of biogas, an alternative was not considered.

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# Anaerobic Digestion Process Flow Diagram



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Emission Point Ref. Nº:	A4
Source of Emission:	CHP Plant
Location:	Adjacent to Digester Tank
Grid Ref. (12 digit, 6E,6N):	209623,79732
Vent Details Diameter:	0.65m
Height above Ground(m):	19m
Date of commencement:	

**Characteristics of Emission:**

(i) Volume to be emitted:			
Average/day	Nm <sup>3</sup> /d	Maximum/day	6,200Nm <sup>3</sup> /d
Maximum rate/hour	Nm <sup>3</sup> /h	Min efflux velocity	18.8m.sec <sup>-1</sup>
(ii) Other factors			
Temperature	°C(max)	°C(min)	723K(avg)
For Combustion Sources: Volume terms expressed as : <input type="checkbox"/> wet. <input type="checkbox"/> dry. _____ %O <sub>2</sub>			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*): **When CHP plant operational**

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr
---------------------------	-------------------------------------

Emission Point Ref. Nº:	A3
Source of Emission:	Odour Control Unit
Location:	Materials Recovery Building & AD Plant
Grid Ref. (12 digit, 6E,6N):	209652E, 079780N
Vent Details	
Diameter:	0.80 m
Height above Ground(m):	15 m
Date of commencement:	

**Characteristics of Emission:**

(i) Volume to be emitted:			
Average/day	Nm <sup>3</sup> /d	Maximum/day	719,520 Nm <sup>3</sup> /d
Maximum rate/hour	29,890 Nm <sup>3</sup> /h	Min efflux velocity	m.sec <sup>-1</sup>
(ii) Other factors			
Temperature	°C(max)	°C(min)	°C(avg)
For Combustion Sources: Volume terms expressed as : <input type="checkbox"/> wet. <input type="checkbox"/> dry.        _____ %O <sub>2</sub>			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____ min/hr    _____ hr/day    _____ day/yr
---------------------------	--

**TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission** (1 table per emission point)

**Emission Point Reference Number:**     **A4**    

Parameter	Prior to treatment <sup>(1)</sup>				Brief description of treatment	As discharged <sup>(1)</sup>					
	mg/Nm <sup>3</sup>		kg/h			mg/Nm <sup>3</sup>		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max
Carbon Monoxide						1400		8.67		76,033	
Oxides of Nitrogen						500		1.80		15,768	
Sulphur Dioxide						500		1.80		15,768	
Total Particulates						140		0.87		7,600	
Hydrogen Chloride						50		0.31		2,712	
Hydrogen Fluoride						5		0.031		271.2	
TOC (Methane)						1000		6.19		54,241	
Total Non Methane (VOC)						75		0.45		3,910	
Hydrogen Sulphide						5		0.031		271.2	

1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.