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

21st July 2017.

Re: Application for Licence Reg No: W0211-02

Dear Ms Oglesby,

I refer the Agency's letter dated 02nd June in accordance with Regulation 10(2)(b)(ii) of the EPA (Industrial Emissions) (Licensing) Regulations 2013 under Regulation 9 of the Regulations. ERAS ECO did not receive the letter and only became aware of it on the 13th July when checking the status of the application on the Agency's website.

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

Discharge and emission to surface water

1. Please refer to "Attachment 1: Monitoring results effluent emissions 2014 and 2015 " It shows relatively high levels of TSS at SE1 in 2015 when compared to its levels in 2014 and 2016. There was no explanation given for these spikes. Please provide an explanation for the spikes and measures taken to avoid a reoccurrence.

OCM understands that following receipt of the test results Eras ECO carried out an investigation into the possible cause of the elevated TSS and that these did not identify any incident at the installation that could have been the source(s) of the elevated levels.

2 The response to point 10 of EPA's correspondences of 6/12/2017 is not to the satisfaction of the Agency. Provide a comprehensive environmental assessment of impact resulting from the discharge of treated effluent (discharged via SEI) on water quality in the receiving water (at the point of its discharge to the receiving water). The assessment should consider the discharge of the treated effluent alone and cumulatively in combination with other relevant wastewaters discharged into the same water body.

The requested information is in Attachment 1.

Air dispersion model report

3. Update tables 3.1 to 3.4 contained in the odour and air quality impact• assessment report with their correct headings and re-submit the tables only.

The amended Tables are in Attachment 2.

4. In response to point 15 of EPA's correspondences of 6/12/2017, you stated that modelling of SO_2 is not required. This is not to the satisfaction of the Agency. Please revise the air dispersion modelling to take into consideration SO_2 emissions at Al (sludge dryer boiler stack).

ERAS ECO's understanding that modelling of the SO_2 emissions is not required is based on the following:

- The proposed AD plant will not result in any changes to either the fuel type or method of operation of the current sludge dryer and will not give rise to any change in the emissions. The fuel used in the dryer is woodchip (woody biomass).

- Article 6 (2) of the Medium Combustion Plant Directive states that from 1 January 2030, emissions into the air of SO_2, NOx and dust from an existing medium combustion plant with a rated thermal input of less than or equal to 5 MW shall not exceed the emission limit values set out in Tables 1 and 3 of Part 1 of Annex II. Table 1 applies to existing combustion plant with a thermal rating of <5MW. Note 1 of the table states that the emission value does not apply in the case of plants firing exclusively woody solid biomass.

Air dispersion modelling (MAPMOS) carried out at the time of the original licence application included SO_2. A copy of the Air Quality & Modelling Report is in Attachment 3. At the time two boiler fuel options were under consideration, the first being woodchip and the second light

fuel oil. As is the position today, SO_2 emission limit values were not specified for the woodchip option. Emission limit values were specified for the light fuel option.

The predicted ground level concentration for SO_2 emission from the light fuel option was 0.724 mg/Nm^3, which is orders of magnitude below the one hour mean (350 μg m^{-3}) the 24 hour mean (125 μg m^{-3}) and the annual mean 20 μg m^{-3} ambient limits that currently apply.

As there will be no change to the method of operation of the sludge dryer the findings are still relevant. The Agency was not satisfied that the dispersion model provided by the applicant (MAPMOS) was one approved by a regulatory body. Therefore the Agency ran a Screen 2 model of the predicted emissions. The results were generally higher maximum 1-hour ground level concentrations predicted by MAPMOS, but were well below the relevant air quality standards.

5. Provide technical details to demonstrate that the stated extraction rate of 30,000Nm^3/hr in relation to the odour control unit is feasible (response no. 22b).

As referred to the response to point 22a of EPA's correspondences of 6/12/20 17, the existing odour control unit in Building 1 was installed at the request of the OEE to facilitate the lime stabilisation of sludge, storage of sludge prior to treatment and acceptance and transfer of mixed municipal solid waste (MSW). This was confirmed by the OEE in correspondence included in Attachment B13 of the application. The response to 22b should have clarified that the odour control unit was already operational and not proposed and our apologies for the confusion.

6 Provide further clarification with relevant calculations, in relation to the number of air changes per hour to be provided by the design extraction rate of (<15,000Nm^3/hr) for Building 2 (response no. 22f).

Building 2 is used for sludge drying and the air is extracted from the building for treatment in the existing biofilter authorised by the current licence. The biofilter has a design capacity of 1,500m^3/hour, as referenced in Table E1(ii) A2 of the application.

There are two existing extraction point within Building 2, comprising 350m^3 of non-condensables from the cooling tower and 100m^3/hour from the wet sludge storage bin. A further extraction of 727m^3/hour is taken from the wastewater treatment plant. The proposed AD plan will not result in any changes to either the extraction points or emission rates.

7. It is stated in your response to point 23 that odour complaints received in 2016 were traced to opening doors of buildings to receive materials. Provide detailed measures taken to isolate and prevent odour nuisance or its reoccurrence from these (door) sources during the receipt of materials.

All site staff have been advised on the need to minimise the duration of door openings.

8 The response to point 27 of EPA's correspondences of 6/12/2017 is not to the satisfaction of the Agency. The correlation between tonnes and cubic metres was not evident. Provide clear and detailed response for EACH building and / or treatment process in relation to storage and treatment capacity.

The requested information is in Attachment 4.

Appropriate Assessment

9 Your response to point 39 is not to the satisfaction of the Agency. Provide a revised Natura Impact Statement (NIS). The revised MS should consider the implications and impact of discharges from the installation without the AquaCritox process on the adjacent SAC and SPA

The NIS is being revised and will be submitted to the Agency by the 4th August 2017.

Baseline Report

10 It is noted that soil quality investigations used in the preparation of the Baseline Report did not include the chemical analysis of the soil samples collected during the investigation. A chemical analysis of soil samples from the installation site should be analysed for the following parameters as a minimum: Total Poly Aromatic Hydrocarbons (PAH); Extractable Petroleum Hydrocarbons (EPH); Mineral Oil; Gasoline Range Organics (GRO); Benzene, Toluene, Ethylbenzene, Xylene (BTEX); Pesticides; Polychlorinated Biphenyls (PCB); Total Phenols; Natural Moisture Content; Chloride; Sulphide; Chromium VI; heavy metals; pH; Total Cyanide; Free Cyanide; and Thiocyanate. Results should be compared to standards outlined in the EPA publication Towards Setting Environmental Quality Objectives for Soil Developing a Soil Protection Strategy for Ireland, A Discussion Document, 2000 and any other appropriate standards.

Soil samples collected in the site investigations were not subject to chemical analysis.

11. *Please provide a revised Baseline Report that reflects the results obtained from the chemical analysis of the soil samples.*

Soil samples were collected on the 13th July and submitted to the laboratory for testing for the range of parameters specified by the Agency. The revised Baseline Report will be submitted to the Agency by the 4th August.

12. *The Baseline Report submitted contains in Appendix 1, a DRAFT of a "Report on site investigation...Report No. 11303". Please submit a final version of this report with the updated Baseline Report.*

ERAS ECO does not have a copy of the final version of the report.

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

An updated non-technical summary is in Attachment 5.

ATTACHMENT 1

Background

The treated process and sanitary wastewater effluents discharge to the Irish Water combined sewer that also conveys wastewater from the Youghal Agglomeration. The emission limit value (ELVs) in the current licence were specified by Cork County Council, which was the sanitary authority at the time of the original licence application. The ELVs are designed to protect the integrity of the sewer and to ensure that emissions from the installation that comply with the values will not cause pollution.

Since the licence was issued there has been no change to the nature of the process wastewater generated; however the on-site process waste water treatment plant has been upgraded. It is the intention to divert the discharges from the estuary to the new Irish Water municipal wastewater treatment plant that will serve the Youghal Agglomeration when this becomes operational.

Treated Effluent Alone

In the application for the current licence that was lodged in October 2004 the applicant, due to the complex factors of tidal ebb and flow, carried out mathematical modelling to predict the dispersal characteristics of effluent discharges in the estuarine system.

The impact of the proposed discharge on the receiving estuary was assessed using a two dimensional model, DIVAST, to predict solute transportation. This simulated the spread and fate of chemicals and nutrients throughout the study area, during the course of a spring-neap tidal cycle. The specific water quality parameters chosen for the modelling were: phosphate, Kjeldahl nitrogen, ammonia, volatile organic compounds (VOC) and temperature.

The Agency considered the analysis of the output plumes showed that in general higher solute concentrations occur during the neap tidal cycle due to a smaller volume of water entering or leaving the bay[1]. However, the highest solute concentrations occur at low water on the spring tide. This was due to the reduced water depth and associated low current velocity, which inhibit rapid dilution of the effluent.

The maximum model predictions were compared with relevant environmental quality standards (EQS). At the time, in the absence of defined standards for estuarine waters, comparable standards from freshwaters were used.

[1] EPA Inspectors Report on a Licence Application 08/09/2016

The ELVs specified in the licence are significantly less than the modelled concentrations for orthophosphate, VOCs, Kjeldhal nitrogen and ammonia. Therefore the impact of the discharge will be less than that predicted by modelling. The thermal effect of discharging treated effluent at 25°C is negligible. The mixing zone identified during the study extends to 25m about the discharge pipe, which is considered to be a small mixing zone.

Cumulatively In Combination With Other Wastewaters

In 2011 Cork County Council completed an assessment of the impacts of the discharge of untreated wastewaters from the Youghal Agglomeration to the Blackwater Estuary as part of its application for a Waste Water Discharge Authorisation (D0139-01) for the proposed new municipal wastewater treatment plant. The assessment included separate evaluations of the domestic, commercial and industrial, and trade effluent discharges. The latter included the ERAS ECO installation which was operating under the current licence.

The assessment conclusions were as follows:

Domestic

Based on the number of occupied residential delivery points from An Post GeoDirectory 2010 (4,007) and an average occupancy rates of 2.02 (average of 2002 and 2006 populations for Youghal divided by 2002 and 2006 residential delivery points from An Post GeoDirectory), the current Domestic Population Equivalent was approximately 8,100. The Council anticipated that within the lifetime of the authorisation, this figure could be increased to 9,300.

Commercial Industrial

Using averaged daily data from Non-Domestic Water Metering for 2009 (at the BOD figures included in the EPA Guidance Treatment Systems for Small Communities, Business, Leisure Centres and Hotels) within the area served by the existing and proposed collection networks the Commercial Population Equivalent is calculated as 3,910. This was broken down (in accordance with the guidance manual) as follows:

Industrial:	970
Schools:	250
Hotels:	114
Pubs & clubs:	1,221
Amenity Sites:	1,177
Hospitals:	178

The Council anticipated that within the lifetime of the authorisation, this figure could be increased to 4,500 PE.

Trade Effluent ERAS ECO (Waste Licence - W0211-01).

The current Trade Population Equivalent of the discharge was calculated as 11.5, based on 2009 Annual Environmental Report, average flow rates and BOD). The licence allows a discharge of 57 PE.

The Council anticipated that within the lifetime of the authorisation, the Trade Population Equivalent figure for the catchment served by the new municipal wastewater treatment plant could be increased to 500 PE.

Surface Water Regulations 2009

The Council also assessed the impact of the discharge of untreated wastewater from the Youghal Agglomeration to the estuary in the context of the Surface Water Regulations 2009. The primary discharge had an average BOD content of 423 mg/l and the secondary discharge had an average BOD concentration of 212 mg/l. The most recent monitoring results from the Blackwater available at the time demonstrated that the ambient BOD concentration in the estuary downstream of the discharges was 1.325 mg/l, which was substantially below the 2009 standard of 4.0 mg/l for a transitional water body.

The Council concluded that, based on sampling of the effluent from Youghal being discharged to the estuary, the concentrations of substances specified in the Regulations Tables 10, 11 and 12 are substantially below the Environmental Quality Standard (EQS) for the estuary and were not expected to have a measurable impact on water quality.

Water Quality in the Estuary

The current licence does not require ERAS ECO to monitor water quality in the estuary, but monitoring is carried out by Irish Water, which is now the responsible regulatory authority for the combined sewer into which the treated effluent from ERAS ECO discharges. As referred to above the discharge is regulated by a Waste Water |Discharge Authorisation (D0139-01).

The results of the ambient monitoring carried out by Irish Water in the estuary up and downstream of the current discharge point in 2016[2] confirmed:

- The receiving waters met the EQS for Bathing Waters
- A deterioration in water quality has been identified however it is not known if it is or is not caused by the discharge

[2] Derived from the 2016 Annual Environmental Report for D0139-01

- The discharge doesn't have an observable negative impact on the Water Framework Directive status.

The 2016 Annual Environmental Report prepared by Irish Water states that the construction of the new Youghal Main Drainage Scheme including a proposed WWTP for 16,000 population equivalent is underway and is expected to be completed by end of 2017.

ATTACHMENT 2

Table 3.1. Volume flow rates, flue gas concentrations and mass emission rates of pollutants for emission point AEP1 - Boiler.

Source identity – AEP1 - boiler	Units	Value	Mass emission rate (g/s)
Carbon monoxide	mg/Nm^3	<1,000	3.22
Oxides of nitrogen	mg/Nm^3	<250	0.806
Sulphur dioxide	mg/Nm^3	<100	0.322
Total particulates	mg/Nm^3	<20	0.064
Odour	Ou_E/m^3	<1,000	3,576 Ou_E/s
Hydrogen sulphide	mg/Nm^3	<5.0	0.016
Volume flow rate	Nm^3/hr	11,600	--
Temperature	Kelvin	449	--

Notes: [1] denotes that EPA requested that SO_2 be assessed on this emission point in accordance with Medium Combustion Directive. Medium Combustion Directive stated that SO_2 limits do not apply for combustion source using biomass. AEP1 burns biomass.

Table 3.2. Volume flow rates, flue gas concentrations and mass emission rates of pollutants for emission point AEP2 – Biofilter.

Source identity – AEP2 – biofilter	Units	Value	Mass emission rate (g/s)
Odour	Ou_E/m^3	<1,500	833Ou_E/s
Hydrogen sulphide	mg/Nm^3	<5.0	0.0027
Volume flow rate	Nm^3/hr	2,000	--
Temperature	Kelvin	303	--

Table 3.3. Volume flow rates, flue gas concentrations and mass emission rates of pollutants for emission point AEP3 – Materials Recovery Building Odour control unit.

Source identity – AEP3 – MRB OCU	Units	Value	Mass emission rate (g/s)
Odour	Ou_E/m^3	<1,000	8,300Ou_E/s
Volume flow rate	Nm^3/hr	29,980	--
Temperature	Kelvin	303	--

Table 3.4. Volume flow rates, flue gas concentrations and mass emission rates of pollutants for emission point AEP4 – AD CHP plant.

Source identity – AEP4 – AD CHP Plant	Units	Value	Mass emission rate (g/s)
Carbon monoxide	mg/Nm^3	<1,400	2.411
Oxides of nitrogen	mg/Nm^3	<500	0.861
Sulphur dioxide	mg/Nm^3	<500	0.861
Total particulates	mg/Nm^3	<140	0.241
Hydrogen chloride	mg/Nm^3	<50	0.086
Hydrogen fluoride	mg/Nm^3	<5.0	0.0086
Total Organic Carbon (Methane)	mgC/Nm^3	<1,000	1.722
Total non methane VOC's	mg/Nm^3	<75	0.124
Hydrogen sulphide	mg/Nm^3	<5.0	0.00861
Volume flow rate	Nm^3/hr	6,200	--
Temperature	Kelvin	723	--

ATTACHMENT 3

AVR – Environmental Solutions Ltd.

AIR QUALITY & MODELLING

SWS ENVIRONMENTAL SERVICES
SHINAGH HOUSE
BANDON
CO. CORK

SWS Environmental Services
MEMBER OF
SWS Group

APPENDIX 5

AIR QUALITY DATA & MODELLING

Document Control Sheet

Client: AVR Environmental Services Ltd	
Document Brief	
Report type (draft or final)	Air Quality Monitoring and Emission Modelling
Report from:	Declan Waugh Environmental Manager SWS Group
Report Issue Date	20 Sept 2004
SWS Environmental Report Brief Ref.	2004_121

Revision Number	Prepared by:	Checked by:	Approved by:	Date	No Copies
0	C.T	DW	DW	27/09/04	1

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1.0 INTRODUCTION

This Air Quality Assessment has been prepared by South Western Environmental Services on behalf of AVR – Environmental Solutions Limited. The scope of this report involves the assessment of the existing air quality and the impacts of the proposed development at Foxhole, Youghal Co. Cork.

A baseline survey was conducted by conducted by SWS Environmental Services between the dates of the 11th to 19th May 2004 at one chosen location on site. Emission data was obtained for two separate proposed systems for the new development and air dispersion modelling was conducted on both.

2.0 METHODOLOGY

It is proposed that the facility will have one emission point discharging fuel combustion gases and treated process gaseous emissions. An option for the proposed development is that a stand alone thermal oxidiser will be utilised to treat all gaseous emissions from the sludge drying process and water treatment plant. Where this option is developed than there will be two emission emissions points from the facility. Emission point one will release boiler fuel gaseous emissions, emission point two will release process and water treatment atmospheric emissions to the atmosphere.

The impact of these discharges was assessed by carrying out air dispersion modelling to evaluate the impact of stack emissions in terms of maximum predicted ground level concentrations. Modelling was undertaken on a worst case scenario with a single point discharge from the facility. Results were compared with applicable air quality standards (AQS's) in order to determine if the development could have any impacts on human health and the environment. In the absence of any legislative standards, WHO Guidelines and Occupational Exposure Limit (OEL) values were used in the assessment procedures.

2.1. Baseline Survey

A baseline survey was conducted to examine the existing air quality at the site of the proposed development. Nitrogen oxides, Sulphur Dioxide and Benzene were each sampled using passive diffusion tubes with subsequent analysis by UV Spectrophotometry, Ion Chromatography and Gas Chromatography respectively. Particulates and metals were collected by filtration using a TCR Tecora Bravo H2 High Volume Air Sampling System with

subsequent analysis by gravimetry and ICP-AES respectively. Sampling and analytical methods are summarised in Table 1.

Table 1 Sampling and Analysis Methodology

Parameter	Sampling Methodology	Method of Analysis	Standard Referenced
NO_x	Passive tube diffusion	U.V. Spectrophotometry	BS 1747: Part 7 1983 NIOSH 6014[1]
SO_2	Passive tube diffusion	Ion Chromatography	BS 1747: Part 7 1983 NIOSH 6004[1]
Benzene	Passive tube diffusion	GC-MS	EPA: TO-1[2]
Particulates	Filtration	Gravimetry	BS3405
Heavy Metals	Filtration	ICP-AES	BS3405

Note[1]: NIOSH Manual of Analytical Methods (NMAM), Fourth Edition.
Note[2]: US EPA, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air – Second Edition

2.2 Dispersion Modelling

Dispersion modelling was conducted by using (MAPMOS) the Advanced Gaussian Plume Model. The purpose of the dispersion model is to provide a means of calculating air pollution concentrations given information about the pollutant emissions and the nature of the atmosphere. Numerical data from the model were incorporated into a Geographic information system to produce air quality maps. The concentrations of pollutants at ground level are determined in order to calculate compliance with air quality standards. Maximum expected emission concentrations for the air emission point were utilised in the model. Since air quality objectives are expressed in a variety of averaging periods, it is important that dispersion models also calculate air pollutant concentrations in the same manner. Hourly average, daily average and annual average concentrations were calculated. Percentiles of hourly and daily averages were also calculated. Contour plots of maximum ground level concentrations occurring were plotted.

In this exercise, modelling for ground level concentrations for NOx, Dust, Carbon, CO and So2 from the Boiler Stack was undertaken for the following parameters:

- NOX annual mean concentrations
- NOX hourly averaged concentrations.
- PM10 annual mean concentrations.
- PM10 daily averaged concentrations.
- PM10 hourly averaged concentrations.
- Carbon annual mean concentrations.
- Carbon daily averaged concentrations.
- Carbon hourly averaged concentrations.
- SO2 daily averaged concentrations.
- SO2 hourly averaged concentrations.
- CO maximum 8 hour-averaged concentrations.

Two proposed boiler fuel options were examined;

- Part1. A boiler fuelled by light diesel oil;
- Part 2. Untreated wood as the boiler fuel source.

Both options were modeled separately using the MAPMOS model. Raster grids and overlaid contour plots (from ArcGIS) of the predicted pollutants ground level concentration are shown in Part 2 of at the back of this report. Figures 2 to 12 give results for the Light Fuel Oil Option and Figures 13 to 22 for the Woodchip Option.

3.0 THE EXISTING ENVIRONMENT

3.1 The Site and its Surroundings

The site of the proposed development is currently an undeveloped field situated in a Commercial and Industrial/Enterprise zone approximately 2 km north of Youghal town. Other activities in the area include the neighbouring landfill/civic amenity site, a coal yard, NCT Centre, and various units in the nearby Foxhole Industrial estate and Foxhole Business Park.

The nearest residence is located at a distance of approximately 185m from the site boundary. A further 14 houses were noted within a 1km radius and no hospitals, hostels, holiday accommodation, schools or rehabilitation workshops are within 1 km of the site. The E30 Euroroute, the main Cork to Waterford road, passes through the centre of Youghal and is visible to the northern of the site within a distance of 1km.

3.2 Summary of Data

Baseline survey results are summarized in Table 2 below. Concentrations are expressed in mg/m^3, reported relative to standard conditions of Temperature 293.15 K and Pressure of 101.3 kPa.

Table 2 Baseline Survey Results

Parameter	Concentration µg/m³
NO_x (as NO_2)	4.11
SO_2	2.58
Benzene	1.19
Total Suspended Particulate	31.1
Pb	0.04

Much of the information on ambient air quality in Ireland has been compiled from continuous monitoring stations operated by local authorities and the EPA as provided for under the terms of existing and previous legislation. Air Quality Standard Regulations 2002 (S.I. No 271 of 2002), encompasses the requirements of the Air Quality Framework Directive (1996/62/EC) whereby EU states must divide their territory into zones for the purposes of assessment and management of air quality. Four zones, A, B, C and D are defined in the Air Quality Standard Regulations 2002; zones A, B and C include the major cities and large towns, Youghal would be categorised under Zone D, Rural Ireland.

Dust

Dust deposition rates from monitoring conducted at the neighbouring Youghal Landfill site on three separate occasions in 2002 yielded dust deposition rates between 33 mg/m2/day to 251 mg/m2/day for a number of locations around the site. Results from the baseline survey conducted by SWS on site yielded a total suspended particulate baseline concentration of 31.1 µg/m3.

Total suspended particulates (TSP) range in size from 0.001 to 500 µm in diameter and thus include both inhalable and non-inhalable dusts. The former annual Total Suspended Particulate (TSP) guideline was 60 µg/m3, current standards nowadays relate to PM10 (particulate matter in which 50% of the particles have an aerodynamic diameter of less than 10 µm), the particular fraction identified as posing health risks from inhalation. TSP

concentrations are primarily important from a nuisance perspective but also give a good indication of overall air quality.

Particulate matter (or in particular PM10) is predominantly a traffic derived pollutant and concentrations are greater for diesel engines. Monitoring data available from the Phoenix Park in Dublin provides the most comprehensive information on background levels of PM10 in Ireland with daily means of 18 µg/m3 and 15 µg/m3 for 2001 and 2002 respectively.

Odour

Existing odour conditions in the vicinity of the site will be influenced by the adjacent Youghal Landfill site and other industrial activities in the nearby Foxhole Industrial Estate and Business Park. Odour data in Europe has been largely limited to subjective judgements for each individual case and has been legislated for in terms of its "nuisance potential" under existing and previous legislation.

Gaseous Emissions

Combustion processes are the principal sources of classic primary air pollutants such as NOx, SO2, particulate matter and CO. Emissions from road traffic continues to have the most significant influence on air quality in Ireland in recent years.

Nitrogen oxides (NOx) are emitted from all combustion processes (such as a gas/oil fired boiler or a car engine). Monitoring stations at Glasboy in Co. Cork and at Kilkitt, Co. Monaghan provide information for rural areas in the Irish monitoring network. The rural concentrations were well below the limit for ecosystem protection with annual mean NOx concentrations of 5 µg/m3 and 10 µg/m3 recorded at Kilkitt and Glashaboy respectively. Site specific monitoring conducted by SWS Environmental indicates a baseline concentration of 4.1 µg/m3 as presented in Table 2.

Monitoring data in Ireland shows that SO2 levels in urban areas have stabilised in recent years due to the control on sulphur content in fuels and increase the requirement for domestic smokeless fuels. Currently 98-percentile concentrations are typically about 5 µg/m3 in major urban areas of Dublin and Cork. Annual mean concentrations recorded in rural areas such as Kilkitt and Askeaton indicate that levels are less than 10 µg/m3 and site specific monitoring indicates that SO2 concentrations are in the range of 2.58 µg/m3.

Carbon Monoxide (CO) and Benzene are derived from the burning of carbon based fuels (petrol, diesel, coal, natural gas). Monitoring results throughout Ireland indicate background

levels of less than 5 µg/m3 for CO and typically less than 2 µg/m3 for benzene. Monitoring results on site show that benzene concentrations of 1.19 µg/m3 are within typical levels.

3.3 Relevant Legislation

All ambient air results were compared with relevant Air Quality Standards and Guidelines and discussed in terms of these guidelines and standards. These are as follows:

- Air Quality Standards Regulations, 2002
- WHO Guidelines for the Protection of Human Health
- Occupational Exposure Limits (OEL)
- TA Luft 2002.

Air Quality Standards Regulations, 2002

Air quality control and assessment in Ireland is provided for under the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002). These transpose Council Directive 96/62/EC and the first two daughter directives (Council Directives 1999/30/EC and 2000/69/EC) into Irish Law. A third daughter directive relating to Ozone (Council Directive 2002/3/EC) was transposed into Irish law by S.I. No. 53 of 2004. The fourth daughter directive relating to polyaromatic hydrocarbons, arsenic, nickel cadmium and mercury is yet to be finalised.

The Air Quality Standards Regulations, 2002 established new air quality standards for SO2, NO2 and NOX, lead, PM10, CO and benzene coincident with those in the daughter directives. The new legislation encompasses limits provided for under Council Directive 96/62/EC relating to sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air and those specified under Council Directive 2000/69/EC relating to benzene and carbon monoxide.

Assessment thresholds (upper and lower) are defined for the assessment and management of air quality in zones, limit values together with margins of tolerance specified with target limit values to be achieved over a defined timeframe. Hourly, daily and annual limits are specified for many of the parameters for the protection of human health, vegetation and ecosystems.

The legislation also specifies:

- Alert thresholds for SO2 and NO2 to be applied as the basis for informing the public in the event of pollution episodes;
- Temporary margins of tolerance which will apply in the case of some of the prescribed limits;
- The upper and lower assessment thresholds in respect of the four pollutants concerned as required for the implementation of the Framework Directive;
- Criteria for determining the minimum number of fixed measurement stations for each pollutant;
- Data quality objectives;
- The reference methods of measurement

Table 3 Limit Values from Air Quality Standards Regulations, 2002

Pollutant	Limit Value Objective	Averaging Period	Limit Value µg/m3	Basis of Application of the limit Value	Limit Value Attainment Date
SO_2	Protection of human health	1 hour	350	Not to be exceeded more than 24 times in a calendar year.	1/1/2005
SO_2	Protection of human health	24 hours	125	Not to be exceeded more than 3 times in a calendar year.	1/1 /2005
SO_2	Protection of ecosystems	Calendar year	20	Annual mean.	19/7/2001
SO_2	Protection of ecosystems	1 Oct to 31 Mar	20	Winter mean.	19/7/2001
NO_2	Protection of human health	1 hour	200	Not to be exceeded more than 18 times in a calendar year.	1/1/2010
NO_2	Protection of human health	Calendar year	40	Annual mean.	1/1/2010
NO + NO_2	Protection of vegetation	Calendar year	30	Annual mean.	19/7/2001
PM_{10} stage 1	Protection of human health	24 hours	50	Not to be exceeded more than 35 times in a calendar year.	1/1/2005
PM_{10} stage 1	Protection of human health	Calendar year	40	Annual mean.	1/1/2005
PM_{10} stage 2	Protection of human health	24 — hours	50	Not to be exceeded more than 7 times in a calendar year.	1/1/2010
PM_{10} stage 2	Protection of human health	Calendar year	20	Annual mean.	1/1/2010
Lead	Protection of human health	Calendar year	0.5	Annual mean.	1/1/2005
CO	Protection of human health	8 hours	10,000	8-hourly mean	1/1/2005
Benzene	Protection of human health	Calendar year	5	Annual mean.	1/1/2010

T.A. Luft emission values

Where appropriate, the predicted concentrations will also be compared to the T.A. Luft emission values. The T.A. Luft emission values are defined as "air pollutants affecting humans, as well as animals, plants and ecosystems.

WHO Guidelines

World Health Organisation (WHO) Air Quality Standards and Guidelines are developed based on the effect various air pollutants can have on human health. The guidelines are designed to protect the most sensitive part of the population providing a margin of protection for asthmatics and people with respiratory and heart problems.

Occupational Exposure Limit Values:

Occupational Exposure Limits (OELs) are concentrations of airborne substances averaged over a reference period, below which most of the working population could be exposed on a regular basis with a low risk to health.

4.0 IMPACTS OF THE PROPOSED DEVELOPMENT

Potential impacts associated with the proposed development are assessed with respect to both the construction and operational phases of the development.

4.1 Construction Phase

The construction phase will impact on the existing environment during the initial preparation of the site and installation of the plant. It is expected that the construction phase will last a total of approximately 1 year and due to the scale of the development and short duration, any impact on air quality as a result will be minimal.

The major potential impact on air quality during the construction of the development will be dust, particularly in drier weather conditions. Airborne dust will be generated from the initial excavation and earth moving activities, construction vehicles and plant have the potential to release particulate matter by generating windborne dust on unfinished surfaces and also from petrol and diesel emissions to the atmosphere. Impacts due to dust will be deemed minimal if working practices and mitigation measures are followed, these will include:

- Good housekeeping measures such as proper storage of spoil/loose material on site
- Proper containment of loose materials transported on or off site
- The use of bowsers during periods of dry weather to dampen potentially flyaway material
- Sealing of stockpiles by rolling and damping down if necessary
- Pre wet soil to be excavated during construction if necessary
- Installation of windbreaks on the windward side of construction areas prior to soil disturbance if required

Gaseous emissions will include exhaust fumes from construction vehicles and plant (including generators, compressors etc.). Due to the size of the site (3.54 acres) and the short-term construction phase, the impacts are deemed minimal. No significant adverse odour impacts are anticipated during the construction phase

4.2 Operation Phase

4.2.1 Waste Recovery

Dust

The Waste Recovery/Transfer Facility has the potential to generate dusts in the loading and handling of waste materials. Due to the fact that operations will be conducted indoors, dust generation will be prevented at source and thus adverse impacts are considered minimal.

Odour

The Waste Recovery/Transfer Facility will be accepting only dry recyclable waste from commercial and industrial sources. The absence of putrescible organic waste will ensure that adverse odour impacts will be avoided.

Gaseous Emissions

Vehicles and plant associated with materials handling and the incoming waste material provide the only source of gaseous emissions at The Waste Recovery/Transfer Facility.

4.2.2 Sludge Drying

Dust

Incoming sludge will be brought on site in closed tankers and pumped directly into the sludge receiving station. Controls in the design and operation stage will ensure that adverse impacts are minimal. During the drying process, dusts are minimised due to the low operating temperatures and slow movement of the dried sludge through the system. A dust free granulate product is obtained and collected through enclosed silos/containers. The emission stream produced from the drying process is sent through a pollution abatement system which includes a scrubber condenser which will capture entrained particulate matter and transfer it to the wastewater treatment plant. The sludge drying system is sealed to prevent any fugitive emissions.

Odour

Odourous air pollutants are important primarily for their nuisance value and the number of complaints they generate rather than associated adverse health effects. The factors that influence odour complaints are the frequency of occurrence, intensity, duration of exposure, offensiveness and location of the odour.

The operation of The Sludge Drying Facility has the potential to generate odours through process emissions which are vented through a stack, or fugitive emissions which escape during various process operations. Sludges accepted at the facility will be from commercial and industrial sources and typically are products of secondary treatment processes. Sludges of this type (as opposed to primary sludges) have much of the odour potential already removed.

Organic compounds in the off gas are the main constituents of interest in terms of their odour potential. The treatment facility will involve indirect drying of the sludge via heated paddles, collection and conditioning of the evaporate, subsequent treatment of the off-gas in the wastewater treatment plant and final air treatment in a thermal oxidiser or biofilter. The sludge drying system is enclosed thus preventing fugitive emissions.

The dried granulated sludge product will be stored in sealed silos/containers. It is stable inert material with a low odour emission rate even when exposed. With the high solids content (circa 90-95%), the sludge can be stored on site for relatively long periods of time without causing adverse odour problems.

Gaseous Emissions

Gaseous emissions including Volatile Organic Compounds (VOCs) which may be present in the waste stream will be removed in the scrubber condenser. The liquefied fraction will be transferred the wastewater treatment and all onward gaseous streams will ultimately be treated in the thermal oxidiser or biofilter.

4.2.3 Ancillary Facilities

Dust

Vehicles movements to and from the site have the potential to generate dust. Particles less than 10µm in diameter PM_{10} are the fraction identified with ill health affects and are generally produced in combustion processes. Particulate emissions from the facility have been modelled using Gaussian plume dispersion modeling with the complete report presented in the Appendix to this report. Results indicate that no significant adverse impacts are anticipated.

Odour

The overall assessment of the odour impacts from a facility of this type can either be based on dispersion modelling results or past experience with similar activities elsewhere with similar control specifications. Dispersion modelling for odour is not deemed necessary for this development due the control methods in place and also, modelling is only appropriate to situations where the odour rate can be measured and where the odour emissions are reasonably constant.

The wastewater treatment plant and mobile sludge dewatering unit have the potential to create odour problems. The wastewater treatment plant will be covered with the waste gas collected and treated to eliminate odourous compounds. Fuels stored on site have the potential to release volatile components to the environment; these will be stored in sealed containers in a covered bunded area thus eliminating fugitive emissions.

The control measures in place will ensure that all odour sources are controlled and contained at source as a priority and final odour treatment using a thermal oxidiser or biofilter will ensure that stringent odour treatment requirements are met.

Gaseous Emissions

Combustion of the primary fuels will result in the generation of combustion related air pollutants. These will be subject to air pollution control techniques and the remaining flue gases will be released through the stack. The combustion process will be prescribed for Integrated Pollution Control (IPC) under the Environmental Protection Act. The plant will emit products of combustion from a single stack of 16m height.

Potential emissions of NOX, SO2, CO and also Carbon and Particulates (treated as aerosols) were modelled to investigate the impacts on the surrounding environment. The complete air pollution modelling report is contained in the Appendix at the back of this report.

The major emission points will be the from the boiler which provides steam to the drying process and the pollution abatement technology which will treat all collected waste gas streams from the facility. Vehicular movements and the backup generator will also contribute to gaseous emissions.

All plant will be operated in accordance with Best Available Technology (BAT) principles and provided that correct operation, control and monitoring procedures are followed, the emissions are not expected to have any significant adverse impact on the local air quality.

Combustion of the primary fuels will result in the generation of combustion related air pollutants. These will be subject to air pollution control techniques and the remaining flue gases will be released through the stack. All limit values for emission concentrations are expressed as being at the reference conditions of temperature of 273K, pressure of 101.3kPa

The maximum emission concentrations from the plant are outlined in Table 4. Emission values are based on those from a single stack for two proposed boiler types (Light Fuel Oil Option and Woodchip Option).

Table 4 Predicted Stack Emissions

Parameter	Concentration, mg/Nm³	
	LIGHT FUEL OIL OPTION	WOODCHIP OPTION
NO_X	200	200 (400) *
SO_2	100	N.S.**
CO	100	250
Dust	10	20
Total Organic Carbon	20	10

Notes:

* Two NOX emission concentrations were modeled for investigation; 200 mg/Nm3 is the expected average concentration but 400 mg/Nm3 is examined to account for a worse case scenario during startup or shutdown.

** N.S. = not specified, SO2 data is not required where untreated wood is used as a fuel source in this case.

4.3 Air Quality Standards and Predicted Impacts

Details of existing air quality are outlined in Table 5 Comparisons are made between measured data from site specific monitoring and referenced data to include that from the EPA monitoring network throughout Ireland and WHO data.

Predicted ground level concentrations (GLCs) obtained from the results of dispersion modeling are presented in Table 6 for a number of parameters. The full range of parameters over various averaging periods are available in the Appendix to this report.

Assessment is made with regard to Air Quality Standards Regulations 2002 which are available in more detail. For all pollutants the maximum GLC's are significantly below the Irish and EU Air Quality Limit values and also well below the World Health Organisations guidelines.

Table 5 Comparison of Measurement and Reference Data

Parameter	Concentration			
	Existing [1]	Typical Rural [2]	WHO data [3]	Annual Mean Limit Value [4]
SO_2, µg/m^3	2.6	< 9	3-20	20 (for the protection of ecosystems)
NO_x, µg/m^3	4.1	< 10	0.4 – 9.4	40 (NO_2 for protection of human health) 30 (NO & NO_2 for protection of vegetation)
a) PM_{10}, µg/m^3 b) T.S.P.*, µg/m^3	a) – b) 31.1	a) 15 - 18 b) < 60	a) < 50 b) N/A	a) 40 (20) *** b) N/A
Benzene, µg/m^3	1.19	< 2	1.5 **	5
Lead, µg/m^3	0.04	< 0.05	–	0.5

NOTES

[1] SWS baseline survey data.

[2] EPA Air Quality Monitoring, Annual Reports 2002 and SoE Irelands Environment 2004 Summary Report.

[3] Report data for rural areas, World Health Organisation (WHO) Air Quality Guidelines for Europe, 2nd Edition, 2000.

[4] Air Quality Standards Regulations 2002 (S.I. No. 271).

* T.S.P. = Total Suspended Particulates. Reference data refers to the former guideline level in the WHO Air Quality Guidelines 1987.

** Daily median rural air concentrations in the USA.

*** Limit values for PM_{10}: Stage 1 annual mean limit of 40 µg/m^3 is to be achieved by 1st January 2005; Stage 2 annual mean limit of 20 µg/m^3 is to be achieved by 1st January 2010.

Table 6 Predicted Maximum GLCs

Emission	Basis of Application	SI 271, 2002 ($\mu g/m^3$)	Predicted Max GLC Concentrations ($\mu g/m^3$)	
			LIGHT FUEL OIL OPTION	WOODCHIP OPTION
NO_2	Annual Average	40 (30) *	0.445	1.32 (2.64)***
SO_2	24 hour Average	125	0.724	****
CO	8 hr Rolling Average	10,000	4.614	34.81
PM_{10}	Annual Average	40 (20)**	0.022	0.433

Notes:

*For NO_2, 40 refers to annual limit for protection of human health; 30 refers to annual limit for protection of ecosystems.

** For PM_{10},40 $\mu g/m^3$ refers to Stage 1 limit applied to 2005, 20 $\mu g/m^3$ refers to the Stage 2 limit to be reached by January 1st 2010.

*** The second value (2.64$\mu g/m^3$ represents a worse case scenario during startup/shutdown)

**** No SO_2 requirements are specified for a boiler of this type using untreated wood as fuel (TA luft guidelines).

5.0 CONCLUSION

Extensive dispersion modelling has been undertaken, monitoring of existing background air quality concentrations and predicted increases as a result of the proposed development indicate the emissions will have an insignificant impact on air quality.

Based on these results and in conjunction with the emission abatement technologies which will be installed in the plant, the impact from the development on ambient air quality is not anticipated to be significant and will comply with all relevant guidelines and standards.

APPENDIX DISPERSION MODELLING

INTRODUCTION

Dispersion modelling was conducted by using (MAPMOS) the Advanced Gaussian Plume Model. The purpose of the dispersion model is to provide a means of calculating air pollution concentrations given information about the pollutant emissions and the nature of the atmosphere. Numerical data from the model were incorporated into a Geographic information system to produce air quality maps. This allows for analysis of results directly or in combination with other forms of spatial data. The model was initially run in long term mode using a 20 – 20 km grid with grid spacing 38m centred on the source in order to identify the locations of the highest modelled concentrations (annual mean and percentile). The grid used consisted of 40,000 receptor points spaced at 38m intervals. The model was then used in short term mode to calculate hourly concentrations at each of these receptors.

The concentrations of pollutants at ground level are determined in order to calculate compliance with air quality standards. Maximum expected emission concentrations for the air emission point was utilised in the model. Since air quality objectives are expressed in a variety of averaging periods, it is important that dispersion models also calculate air pollutant concentrations in the same manner. Hourly average, daily average and annual average concentrations were calculated. Percentiles of hourly and daily averages were also calculated. Contour plots of maximum ground level concentrations occurring were plotted.

In this exercise, modelling for ground level concentrations for NOx, Dust, Carbon, CO and So2 from the Boiler Stack was undertaken for the following parameters:

- NOX annual mean concentrations
- NOX hourly averaged concentrations.
- PM10 annual mean concentrations.
- PM10 daily averaged concentrations.
- PM10 hourly averaged concentrations.
- Carbon annual mean concentrations.
- Carbon daily averaged concentrations.
- Carbon hourly averaged concentrations.
- SO2 daily averaged concentrations.
- SO2 hourly averaged concentrations.
- CO maximum 8 hour-averaged concentrations.

ATTACHMENT 4

The current licence authorises the acceptance of 110,000 tonnes of solid and sludge waste annually, including 70,000 tonnes of C&I waste, 30,000 tonnes of sludge and 10,000 tonnes of leachate, which is 45,000 tonnes more than the proposed amount (65,000 tonnes). Table 1 lists the site infrastructure, the activities carried out in each area and the maximum storage capacity of the existing and proposed tanks.

Table 1: Site Infrastructure

Infrastructure	Details
Administration Building	Two storey (106 m^2) building, houses reception, offices, canteen, toilet & changing rooms, laboratory, public information room
Weighbridges	Precia molen 16M weighbridge located at entrance to access gate.
Building 1	Sludge storage area, biomass/woodchip storage area, workshop
Building 2	Sludge reception area, sludge drying and storage area
WWTP	Balance tank, culligan filters, carbon, filters, hypochlorite mixing tanks, other tanks: treated water, wash water, sludge.
Anaerobic Digesters	2 No. each 2,208m^3
Liquid Waste Storage	6.No. each 100m^3 and located inside Building 1
Pasteuriser Tanks	2 No. each 25m^3 and located inside Building 1
Transformer Building	Houses transformer
Water Storage Tanks	Above ground firewater storage tank, underground stormwater retention tank
Oil Storage Tank	Diesel – capacity 2,600 litres, double skinned tank.

The maximum amount of waste and materials on site is given in Table 2, which is an extract from the Decommissioning Management Plan submitted with the application

Table 2 Waste and Materials Inventory

Wastes/Products	Quantity Stored	Location
Untreated Sludge for Drying	250 tonnes	Building 1
Untreated Liquid Waste	600 tonnes	Storage Tank Building 1
Contents of Digesters	4,496 tonnes	Digesters
Digestate	500 tonnes	Digestate Tank
Landfill Leachate (for WWTP)	25 tonnes	Road Tanker
Quarantine Waste	1 tonne	Building 1
Woodchip (for Boiler)	20 tonnes	Building 1
Diesel (for Boiler)	2,600 litres	Tank
Hydraulic Oil	205 litres	
Engine Oil	100 litres	
Liquid Alum (for WWTP)	1 tonne	Chemstore
Flopam FO 4107 (for WWTP)	0.8 tonnes	Chemstore
Sulphuric Acid (for WWTP)	1 tonne	Chemstore
Soda Ash (for WWTP)	1 tonne	Chemstore
Sodium Hydroxide Solution (for WWTP)	1 tonne	Chemstore
D-10 (Detergent/Disinfectant)	60 litres	Chemstore

ATTACHMENT 5

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 27th January 2011 (Ref 11/4123). Planning permission was approved on the 27th May 2011 but this was subsequently appealed to An Bord Pleanala (Ref. PL04.239166) on the 22nd June 2011.

An Bord Pleanala approved permission (27th 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 either be directly land spread or dewatered in an on-site centrifuge, with the solid material that contains the nutrients being land spread. The liquid will 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 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

Class	Description
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) (i) (ii)	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): • 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 • Pre-treatment of waste for incineration or co-incineration

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. I8** 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 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.

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.