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OPERATIONAL REPORT

ERAS ECO LTD

FOXHOLE

YOUGHAL

COUNTY CORK

Prepared For -

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Foxhole,
Youghal,
Co. Cork

Prepared By: -

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Project		Operational Report		
Client		ERAS ECO Ltd.		
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1. INTRODUCTION

ERAS ECO Ltd (ERAS ECO) operates its Youghal facility under an Industrial Emissions (IE) Licence (Reg No. W0211-02) granted by the Environmental Protection Agency (EPA) and an Approval under the Animal By-Products Regulation issued by the Department of Agriculture, Food and the Marine.

The total authorised annual waste intake is 65,000 tonnes made up of 45,000 tonnes of organic waste and 20,000 tonnes of mixed dry recyclables. The licence authorises the anaerobic digestion (AD) of organic wastes; the treatment (thermal drying) of wastewater treatment plant sludge in Building 2; and the processing and transfer of mixed dry recyclables.

The AD plant comprises a waste intake, feed stock storage and digestate pasteurisation in Building 1, with external digesters and a digestate storage tank. The thermal drying was carried out in Building 2 and included a solid fuel boiler, dryer and associated wastewater treatment plants and odour control units.

ERAS ECO Ltd stopped accepting mixed dry recyclables in 2013 and in 2018 ceased the thermal drying and does not intend to either restart either activity. The thermal drying plant and associated process wastewater treatment plant and odour control systems have been decommissioned and removed from the site.

This Operational Report has been prepared in support of a licence review application to reflect the changes to site operations. It describes the site layout, plant and equipment, processes, abatement, recovery and treatment systems, and operating procedures.

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2. ENVIRONMENTAL SETTING

2.1 Site Location

The installation is approximately 2km from Youghal, adjacent to the former Youghal Landfill. The site and the surrounding area are situated on low lying land reclaimed from the Blackwater Estuary which is known locally as Youghal Mudlands. The northern and western boundaries of the site are defined by a public access road and an adjacent development respectively. The lands to the south and west are undeveloped.

2.2 Surrounding Land Use

The Youghal Landfill is to the east and a National Car Test (NCT) Centre adjoins the south-western boundary. To the north and north-west are commercial units. The nearest dwelling is at the junction of the site access road (T12) and the R634. The Blackwater River and Estuary to the east of the site is designated a Special Protected Area (SPA) (Code 004028), a proposed National Heritage Area (pNHA) (Code 000072) and a Special Area of Conservation (SAC) (Code 002170).

2.3 Hydrology

The site is located on reclaimed land to the west of the estuary of the Blackwater River. The Tourig River enters the Blackwater to the north of the site. A drainage ditch, which runs adjacent to the access road to the north-west of the site, receives run-off from the access road and from reclaimed land to the north-west. There are a number of other drains to the east and south-east of the site, all of which enter the estuary.

2.4 Geology & Hydrogeology.

The soils comprise up to 3m of made ground, comprising gravelly clay soils with fragments of plastic (4-5%), wood (1%), glass (2%) and ceramics (2-3%). It is underlain by a stiff gravelly clay that is more than 14m thick. The bedrock underlying the site is Waulsortian Limestone, which consists of massive, unbedded mounds of calcareous deposits in the form of mudstones, wackestones and packstones.

The Geological Survey of Ireland (GSI) has classified the bedrock that underlies the site as a Locally Important Karstified Aquifer. A search of the GSI well database identified one well used for water supply located approximately 5km west of the site (i.e. up-gradient) and has a reported yield of 979m³/d.

The aquifer vulnerability rating shown on the GSI Vulnerability Map is "High"; however, a site investigation completed in 2007 encountered up to 14m of gravelly clays beneath the site, giving a site specific vulnerability rating of Moderate. The groundwater flow direction is to the south-east towards the estuary at low tide, but the direction could vary during high tide.

2.5 Designated Sites

The Blackwater River and estuary is designated a Special Protected Area (SPA) and a Special Area of Conservation (SAC). The installation is located outside the designated areas; however, surface water run-off discharges to the estuary.

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3. SITE OPERATIONS

3.1 Site Layout

The site layout is shown on Drawing No. 21-193-01 Rev C and details of the infrastructure are presented in Table 1.1.

Table 1.1 Site Infrastructure

Ref	Infrastructure	Details
1	Building 1 - Anaerobic Digestion Feed Area	Area 2,162m ² . Steel portal frame with 300mm reinforced concrete floor slabs. Central floor drain leading to underground feed hopper (130m ³). Below ground access chamber for hopper maintenance (180m ³). Odour abatement system comprising air extraction fan, wet scrubber and activated carbon filter.
2	Building 2 – Former Sludge Drying)	Area 1,323m ² . Steel portal frame with 300mm reinforced concrete floor slabs.
3	Site Office	Area. 460m ² Used for administrative offices, canteen and changing rooms, washing machines, with Puraflo sanitary waste water treatment system.
4	Transformer Building	Area. 46m ² .
5	Anaerobic Digesters 2 No.	Each has 2,500 tonnes storage capacity
6	Digestate Storage Tank	1,000 tonnes storage capacity
7	Combined Heat & Power Units and Transformers	2 No. Combined generating capacity 1.2MW 2 No. Transformers
8	Gas Flare	Back-up to control gas pressure in digesters when CHP units shut down for maintenance
9	Above Ground Diesel Tanks	1 No. 2,600 litre
10	Water Storage Tanks	Firewater Storage Tank (475m ³), Storm Water Retention Tank (120m ³).
11	Electrical Substation	Controlled by utility company and not accessible by ERAS ECO.
12	Open Yards	10,597m ²
13	Weighbridges	1 No.

3.2 Operational Hours

Unless otherwise approved by the Agency, wastes are only accepted and digestate dispatched between 07.00 and 19.00 Monday to Saturday inclusive. Except for the biological treatment processes, which operate continuously, the permitted operational hours are 07.00 and 19.00 Monday to Saturday inclusive.

3.3 Security

There is a concrete block and panel wall around the entire site. The site is accessed via two electric security gate. There is a burglar alarm in the office and outside of operational hours this is monitored by a security company.



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CLIENT
 ERAS ECO Ltd

Drawing No.
 21-193-01

TITLE
 Site Layout

SCALE
 1:250

REV.
 A

This drawing is the property of O'Callaghan Moran & Associates and shall not be used, reproduced or disclosed to anyone without the prior written permission of O'Callaghan Moran & Associates and shall be returned upon request.

3.4 Fire Safety

A fire risk assessment has been completed as required by Condition 9.5 of the current licence. The office and Building 1 are provided with smoke detectors that are linked to a centralised alarm system, with wall mounted sirens in all of the buildings. Outside of operational hours the fire alarm system is monitored by a security company that alerts ERAS ECO staff that the alarm has been activated. Fire extinguishers are positioned at strategic locations in the buildings. There are three on-site hydrants.

3.5 Services

3.5.1 Foul Water

Process wastewater is not generated and sanitary wastewater from the offices is treated in a proprietary treatment system (Puraflo ©) adjacent to the northern site boundary, before being discharged to the Irish Water foul sewer that connects to the municipal wastewater treatment plant in Youghal.

The foul sewers that originally served Building 1 have been sealed at the inspection chambers outside the building, severing the connection to the foul sewer system serving the office and the remainder of the site.

3.5.2 Surface Water

Stormwater run-off will continue to discharge to the drainage that runs through the former sludge drying area. This includes two silt/oil interceptors (Class 1) and a storm water retention tank. The outlet valve from the tank is normally closed and only opened to release water to the estuary via a non-return valve after an inspection confirms that water quality is satisfactory.

3.6 Installation Management

Staff include a Facility Manager, Deputy Manager, general operatives and office staff. The facility management and staff have the requisite qualifications and experience. ERAS ECO has prepared a documented Environmental Management System that serves as a guidance document for facility staff and describes operational control and management practices. All operatives are provided with the appropriate training to complete their assigned tasks.

3.7 Waste Types & Quantities

The licence authorises the acceptance of 65,000 tonnes of waste annually, comprising 40,000 tonnes of sludge and food wastes, 5,000 tonnes of liquid waste conducive to treatment by anaerobic digestion and 20,000 tonnes of mixed dry recyclables. Mixed dry recyclables will not be accepted and it is proposed to increase the amount of organic wastes accepted to 65,000 tonnes. It is not proposed to change the total annual intake, which will remain at 65,000 tonnes.

The majority of the wastes accepted are either solid, semi-solid or liquid organic wastes. The wastes are stored in designated bays inside Building 1 in accordance with the current Waste Storage Plan required by Condition 8.6 of the current licence. The Plan is a dynamic document that is subject to regular revision. A copy of the current Plan is maintained on site for inspection by the OEE. The

maximum amount of waste on-site at any one time is 6,630 tonnes, comprising approximately 6,530 tonnes of liquid and semi-solid organic wastes and 100 tonnes of other materials.

3.8 Waste Acceptance Procedures

ERAS ECO has prepared a documented waste acceptance procedure to ensure only suitable wastes are accepted. The incoming wastes are weighed at the weighbridge and the accompanying documentation is checked. Any waste not deemed suitable is not accepted and the vehicle driver is instructed to return the waste to the producer. The following information is recorded:

- Description of the waste including waste types (e.g. industrial wastewater treatment sludge), and relevant List of Waste Codes (LoW) codes¹;
- The origin of the waste, including all customer details;
- Haulier details;
- Vehicle Registration,
- Weight of the waste load.

3.9 Waste Processes

The current licence authorises a) sludge drying, b) anaerobic digestion and c) general waste handling and transfer of mixed dry recyclable wastes. The handling of mixed dry recyclables ceased in 2013 and sludge drying ended in 2018.

The AD plant comprises four liquid storage tanks, a feed hopper and conveyor, two pasteuriser tanks and a quarantine tank located in Building 1 and two digester tanks and a digestate storage tank located in the south of the site. The digesters have a combined annual processing capacity of 65,000 tonnes.

The licence authorises the pre-treatment of waste for anaerobic digestion and it is proposed to install a liquid and solid foodstuff depackaging plant in Building 1. This will require the installation of a new odour control unit comprising a carbon filter to replace the decommissioned unit.

The digesters are fully enclosed, heated to 37°C and are continuously agitated and fed with organic wastes. The process produces a biogas and a digestate. The biogas is a mix of approximately 65% methane and 35% carbon dioxide with trace levels of other gases including hydrogen sulphide.

Hydrogen sulphide is corrosive and therefore the biogas is scrubbed to remove it before the biogas is used as fuel in the CHP plant to generate electricity that is exported to the national electricity grid. A gas flare is provided as a back-up for periods when the gas engines are being serviced or malfunction. It is envisaged that in the future the gas will be exported directly to the national gas grid and this will require the provision of a gas upgrader to remove the carbon dioxide

Where the feed stock includes animal by-products, the digestate is pasteurised to facilitate its use as a fertiliser. The temperature in the pasteurisers is raised to the required level (71°C) using water heated by the CHP engines. The pasteurised digestate is stored in the quarantine tank pending the results of the confirmatory testing.

The digestate has a significant nutrient and soil enhancement value and after pasteurisation, depending on the time of the year, is either immediately sent off site in road tankers for application to

agricultural lands, or stored on site until the Good Agricultural Practice Regulations allow land application.

3.10 Plant & Equipment

The plant and equipment include:

- Front loading shovels
- Forklifts
- Air compressors
- Air extraction fans and ducting.
- Odour abatement unit (Wet Scrubber and Carbon Filter).
- CHP Plant comprising 2 No. gas engines and back-up flare

3.11 Oil & Chemical Storage

There is one above ground double skinned plastic diesel storage tank (2,600 litre) tank located at the eastern side Building 1. Small quantities of hydraulic and engine oil are stored in spill tray inside Building 1. Waste oils generated during plant maintenance are collected in drums and stored on spill pallets. Gas cylinders used in equipment repair are stored upright in a secured location inside Building 1.

The wet scrubber on the odour control system uses sulphuric acid, sodium hydroxide, ferric solution and hypochlorite and these are stored in Intermediate Bulk Containers (IBC) on spill pallets adjacent to the scrubber. The types and volumes of materials on site at any one time is in Table 3.2.

Table 3.2 – Material Storage

Products	Volume (litres)	Location
Diesel Oil	2,600	Tank at south-eastern side of Building 1
Engine/Hydraulic Oil	2000	2 IBCs on bunded pallets in Building 1
Sulphuric Acid	1,000	Adjacent to scrubber outside Building 1
Sodium Hydroxide	1,000	Adjacent to scrubber outside Building
Hypochlorite	2,000	Adjacent to scrubber outside Building
Ferric Solution	4,000	Adjacent to scrubber outside Building

3.12 Waste Generation

The staff welfare facilities and office generate small amounts of food waste, plastic and paper. These are collected and sent off site for treatment.

3.13 Emissions

There is one (1 No.) authorised emission point to the surface water (SW-1). There is one (1 No.) authorised treated process wastewater emission point to sewer (SE-1), but as described in the Introduction, the wastewater treatment plant associated with the sludge drying operation has been decommissioned and consequently there is no discharge of process wastewater to sewer.

There are four (4 No.) authorised point emissions to air, which are the sludge drier boiler stack (A1), wastewater treatment plant biofilter and carbon filter (A2), the odour control unit in Building 1 (A3), the stack on the CHP plant (A4) and the stack on the stand by gas flare (A5). Sludge drying has ceased and the boiler and wastewater treatment plant have been decommissioned, therefore there are currently no emissions at A1 and A2. A new odour control unit will be provide in Building 2 when the food depackaging plant is installed and emissions from the unit will be via A2.

Site operations are a source of noise and the licence specifies noise emission levels for the nearest noise sensitive locations. Operations are also a potential source of dust emissions and the licence specifies dust deposition limits.

3.14 Emission Controls

3.14.1 Surface Water

Rainwater run-off from the building roofs and impermeable areas discharges from the site via an oil interceptor and flow attenuation tank to the River Blackwater. There is a valve on the outlet from the attenuation tank, which is kept closed and only opened to release the water following an inspection that confirms it is not contaminated. In the event of an incident that has the potential to contaminate rainwater run-off shut off valves on the drainage system can be closed to prevent an emission to the river.

3.14.2 Noise

All waste reception, processing and storage is and will continue to be carried out inside the. Noise monitoring has established that noise levels from the plant and equipment comply with the limits set in the licence and that additional control measures are not required.

3.14.3 Air

Waste processing is and will continue to be located inside Building 1. During extended periods of dry weather the paved yards can be damped down to minimise the risk of dust generation by vehicle movements.

The diesel fuelled heavy goods vehicles based at the facility are fitted with Selective Catalytic Reduction (SCR) systems. A diesel fuel additive (AdBlue) is used in the SCR to reduce the nitrous oxide levels in the exhaust gases. The exhaust gases from the CHP plant must comply with the emission limit values specified in the licence.

3.14.4 Odours

Currently all waste acceptance and processing is carried out inside Building 1. Doors are kept closed and only opened to allow vehicles to enter and leave the buildings. The odour abatement control system serving the building comprises air extraction fans that draw odorous air from inside the AD

building and passes it through a wet scrubber and into a carbon filter. The treated air vents to atmosphere via a stack.

The same odour control measures will be implemented in Building 2 when the acceptance and treatment of expired packaged food stuffs begins.

The vents from the space between the inner and outer membranes on the digester roofs are connected to carbon filters.

3.15 Emission Monitoring

ERAS ECO implements the environmental monitoring programme specified in Condition 6.2 and Schedule C of the licence, which requires stack emission monitoring; dust deposition three times annually; weekly and quarterly surface water emission monitoring; weekly and monthly monitoring of the emission to foul sewer; biannual noise survey and biannual groundwater monitoring.

As thermal drying has stopped and there are no emissions to air from the boiler stack and the biofilter & carbon filter and no emission of treated process wastewater to the Irish Water foul sewer, monitoring of these emission points is no longer required. Groundwater monitoring was originally carried out in three on-site wells (MW1, MW2 and MW3). Construction works required the relocation of MW1, however the well is dry and samples cannot be taken.

3.16 Weather Station

ERAS ECO has installed a weather monitoring station at a location approved by the Agency which records the wind speed and wind direction.

3.17 Safety and Hazard Control

ERAS ECO have adopted an Accident Prevention Policy and prepared a Safety Statement that identifies and evaluates the major on-site potential hazards and describes the control measures in place. All site staff receive the appropriate training for their particular roles.

The biogas produced in the digesters is a mix of flammable methane, carbon dioxide, with smaller levels of hydrogen sulphide and presents a risk of suffocation and the formation of an explosive atmosphere.

An explosive atmosphere means a mixture with air, under atmospheric conditions, of flammable substances in the form of gases, vapours, mists or dusts in which, after ignition has occurred, combustion spreads to the entire unburned mixture. Regulation 169 of the Safety, Health and Welfare at Work (General Application) Regulations 2007- Part 8: Explosive Atmospheres at Places of Work requires that, where an explosive atmosphere is or is likely to be present at or may, from time to time, arise in a workplace, make a suitable and appropriate assessment of the risk arising.

The suppliers of the digestion plant completed an explosion risk assessment and a report is maintained on-site. The assessment identified the areas where there is a risk of biogas emissions. These have been classified as 'Danger Zones' in accordance with ATEX Directive 1999/92/EC based on likelihood and persistence and identified using the appropriate signage (Ex).

The zones are protected from ignition sources through the use of equipment and protective systems that meet the requirements of the ATEX Product Regulations. Employees working in zoned areas are provided with adequate work clothing that does not create an electrostatic risk. The Facility Manager has received training in ATEX procedures and is responsible for implementing the inspection and maintenance measures specified in the explosion risk assessment document.

The following is forbidden inside danger zone:

- Mobile electronic device
- Smoking
- Working with electric or pneumatic tools, and
- Works that produces ignition sources such as sparks, hot surfaces, flames, hot gasses etc.

3.17.1 Personal Protective Equipment

All personnel and visitors are obliged to comply with site guidelines regarding access to and from the facility and on-site traffic movement. All site personnel are provided with and are obliged to wear, personal protective equipment (PPE) appropriate for their particular functions. PPE includes facemasks, gloves, safety glasses, steel-toed footwear, overalls, reflective jackets and helmets.

3.18 Accidents & Emergencies

An emergency is an accident/incident that has the potential to result in environmental pollution and/or harm to human health. The current licence requires ERAS ECO to ensure that an Emergency Response Procedure (ERP) that addresses any emergency/incident that may occur and makes provisions for minimising the effects on the environment, has been prepared and communicated to all staff members.

A firewater retention assessment has been completed at a firewater retention facility has been provided in accordance with Condition 3.18 of the current licence. An Environmental Liability Risk Assessment has been completed in accordance with Condition 12.3 of the current licence.