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BASELINE ASSESSMENT REPORT

ORMONDE ORGANICS

FOXHOLE,

YOUGHAL,

COUNTY CORK

Prepared For: -

Eras Eco Ltd,
Foxhole,
Youghal,
County Cork

Prepared By: -

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Project	Baseline Assessment Report Ormonde Organics Portlaw			
Client	Ormonde Organics			
Report No	Date	Status	Prepared By	Reviewed By
	09/11/2015	Draft	Billy Hamilton MSc	Mr Jim O'Callaghan MSc

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APPENDIX 1

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 an Industrial Emissions Licence (W0211-01)(IED) issued by the Environmental Protection Agency (EPA) and planning permission granted by Cork County Council.

The waste treatment activities carried out by Eras Eco Ltd include the drying and stabilisation of non-hazardous industrial sludge and sewage sludge and the transfer of solid non-hazardous waste. It is intended

An application for an IE licence for an activity that involves the use, production or release of relevant hazardous substances (as defined in Section 3 of the EPA Act 1992 as amended), must be accompanied by a 'Baseline Report' prepared in accordance with section 86B of the EPA Act 1992. The purpose of the report is to determine the status of soil and groundwater conditions at a site. As the existing operations involve the storage and use of diesel, both of which are classified as hazardous substances, a baseline report is required.

Eras Eco Ltd appointed O'Callaghan Moran & Associates (OCM) to prepare the Baseline Report. OCM is an environmental consultancy, established in 1997, which provides environmental services to private and public sectors. OCM has been involved in the completion of environmental risk assessments for a range of Waste and Integrated Pollution Prevention Control licensed facilities since 2001.

1.1 Methodology

OCM's assessment was based on the site history, information in the Environmental Impact Statement prepared as part of a planning application for the development of the AD plant.

2. CURRENT USE

The site occupies almost 1.6 hectares and is approximately 2km from Youghal. 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 southern and western boundaries overlook undeveloped reclaimed land.

2.1 Facility Layout

The existing facility layout is shown on Drawing No 10P521-01. The proposed facility layout is shown on Drawing No 15-193-01. There are two main processing buildings, offices, weighbridges, a vehicle wash, paved open yards and parking areas. The new anaerobic digestion plant will consist 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 combined heat and power plant.

2.2 Installation Activities

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 sludge treated at the site is produced at sewerage works operated by the local authorities and wastewater treatment plants at industrial sites. The sludge is treated in a dedicated building (Building 2). The treatment involves drying the sludge using heat from a wood chip fired boiler and also the addition of lime.

The steam is collected and condensed and treated in an on-site wastewater treatment plant. The air inside the building is also collected and treated in an odour control plant. The dried sludge is exported to Germany where it is used as a fuel. Lime stabilised sludge can be land spread on pre-approved land banks.

For commercial reasons the acceptance of the solid recyclable waste has stopped and the building where these materials had been handled is now used to store wood chip for the boiler and sludge awaiting treatment.

The proposed changes will reduce the overall quantities of waste to 95,000 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

2.3 Surface Water Drainage

There are no natural drainage features within the site boundary. Outside the site boundary, a drainage ditch runs adjacent to the site access road to the northwest of the site. This ditch receives runoff from the access road and from reclaimed land to the northwest of the site. Several other minor drains exist to the east and southeast of the site. All ditches drain into the estuary.

Stormwater from roofs and non-waste storage hardstanding areas is collected in the facility drainage system and discharged into a municipal surface water sewer to the northeast of the site via a non-return valve. The municipal sewer discharges into the estuary to the east of the site. Before discharge from the site, all run-off passes through two silt/ oil interceptors (Class 1 and designed in accordance I.S. EN 858) and a stormwater retention tank.

2.4 Wastewater

Wastewater generated at the site includes sanitary wastewater from the offices and process water from the sludge drying unit. The sanitary wastewater is initially treated in the proprietary treatment system (Puraflo©) before being discharge to waste water treatment plant. The process wastewater is also discharged to the WWTP from which the treated effluent outfalls to the estuary.

2.5 Material Storage

2.5.1 Diesel Fuel Oil Tank Bund –

The unit is a Kingspan Ecosafe ES2600 Double skinned tank measuring 2,585 mm x 1,570 mm x 1,465 mm high. The maximum capacity of the vessel is 2,600 litres. The tank is designed and constructed in accordance with OFS T- 100 (OFCERT No. 0641099913).

2.5.2 Main Chemical Store Area

The main chemical store is a Chemstore Model 41BC-P) which house 4 No. Intermediate Bulk Containers (IBC) containing hydrochloric acid, liquid aluminium sulphate and sodium hydroxide

2.5.3 Spill Trays

There are six mobile spill trays located throughout the site which are used to store materials supplied to the site in either drums or IBC.

2.5.4 Sludge Reception Bin

Reinforced mass concrete tank.

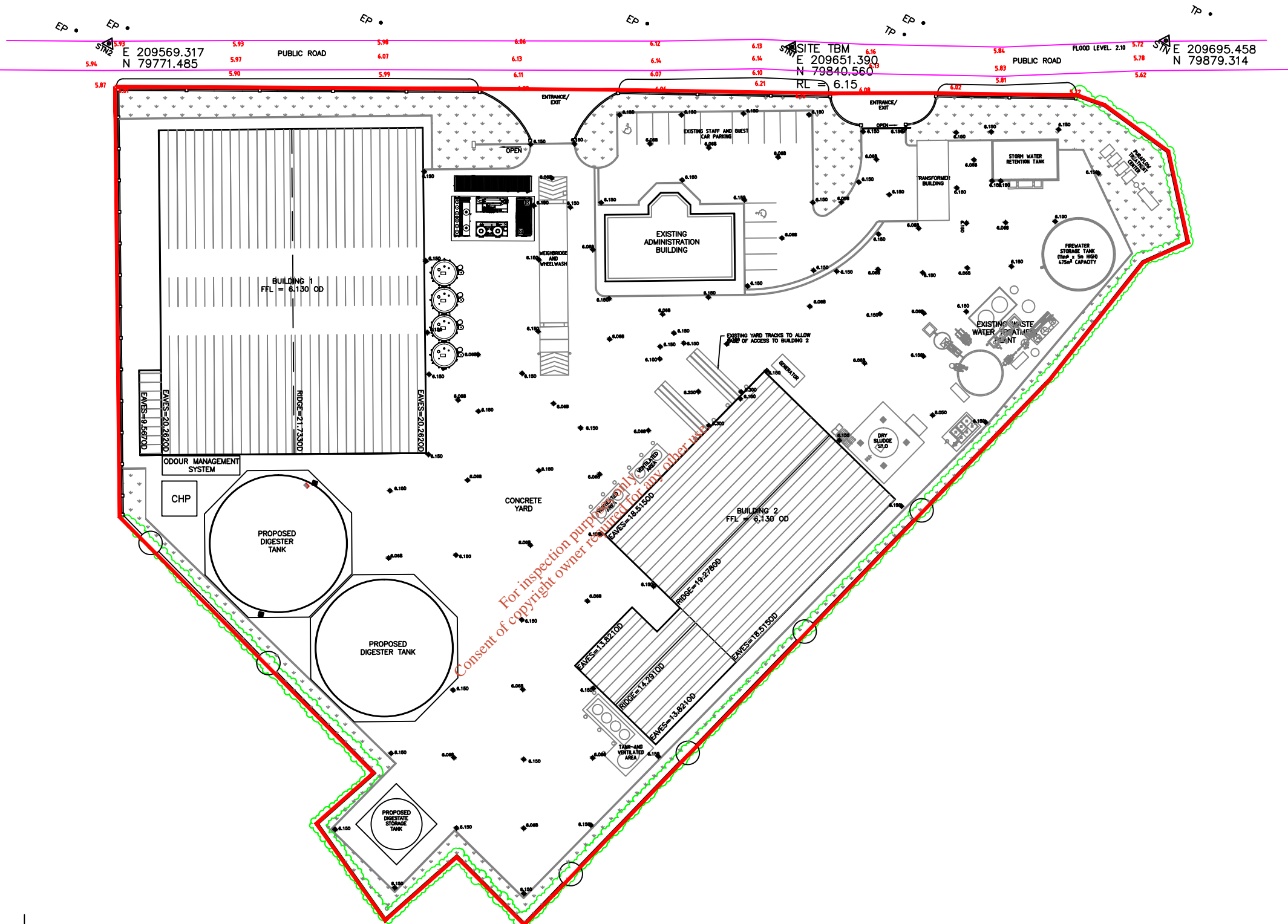
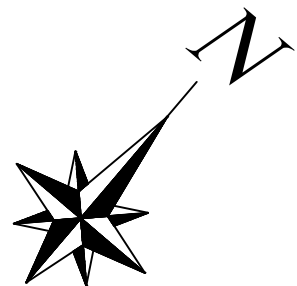
2.5.5 *Quarantine Area*

There is also a concrete bund (Bund Ref. 007) used for the quarantine of unsuitable waste. This was tested in 2013.

2.6 Emergency Response

Eras Eco Ltd has prepared and implemented an Emergency Response Plan (ERP) to minimise the risk of accidents or incidents that could result in adverse environmental impacts. The ERP ensures a rapid response to any incident by trained staff so as to minimise the impact on the environment of any associated emissions.

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 Proposed Site Layout

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3. PAST USE

3.1 Site History

Historical reclamation work in this area has resulted in made ground with a proven thickness of up to 3m. Site investigations identified the made ground to be predominately clay with small portion of construction and demolition waste.

The site was initially used by Youghal Town Council to store diesel for vehicles operating on the adjacent Youghal Landfill. It is understood the tanks were located in the vicinity of the current site entrance.

Youghal Waste Disposal & Recycling Ltd acquired a 35-year lease the landowners Youghal Town Council, before subletting it to AVR Environmental Solutions Ltd. In 2001, planning permission was granted for the construction of a waste transfer station (Ref No. S/00/7093, 30th August 2001) and in 2005 permission was granted for the construction of a sludge treatment facility (Ref No. S/04/7531 04th February 2005).

ERAS ECO Ltd was established to compensate for the lack of recovery facilities within Ireland. In particular, its focus was the treatment of wastewater treatment plant (WWTP) sludges and the recovery of Commercial and Industrial (C&I) wastes. Eras Eco Ltd acquired the plant in 2006. The Waste Licence was granted in November 2006 and the facility was constructed and commissioned in 2007.

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4. ENVIRONMENTAL SETTING

Information on the local and regional geology and hydrogeology was derived from the Environmental Impact Statement prepared in 2010 as part of the application for planning permission to develop the AD plant.

4.1 Geology

4.1.1 Soils and Subsoil

Soils mapped in the vicinity of the site include deep mineral (AminDW) and marine which are associated with the estuary of the Blackwater River (Estuary) to the east of the site. The published subsoils map of the area shows the site underlain by made ground. This is consistent with the historical background of the area which involved reclamation of land within the area known locally as the Youghal Mudlands. Natural mapped subsoils in this area include marine sands in the vicinity of the estuary and sandstone tills further west of the site.

Site specific information on the superficial geology of the site was initially obtained during a 2004 site investigation. A summary of the stratum encountered is shown in Table 4.1.

Table: 4.1 Summary of Strata Encountered (Geotech Ltd, 2004)

Stratum Encountered	Proven Thickness (m)
MADE GROUND – Gravelly sandy clay with building and household rubbish	0.3 – 2.3
GLACIAL TILL – Stiff gravelly clay with occasional cobbles	≤ 11.6
FLUVIO-GLACIAL DEPOSITS – Loose clayey slightly gravelly SAND	≤1.8

A summary of stratum encountered during the installation of groundwater monitoring wells (MW1, MW2 & MW3) in April, 2007 is shown in Table 4.2. The made ground was reported to comprise predominately gravelly clay with fragments of plastic (4-5%), wood (1%), glass (2%) and ceramics (2-3%). The underlying natural subsoils generally consisted of stiff grey/brown CLAY or red/brown gravelly CLAY with cobbles which were underlain by loose clayey sandy GRAVEL. No bedrock was encountered at a maximum depth of 14m bgl.

Table 4.2: Summary of Strata Encountered (Minerex Ltd, 2004)

Stratum Encountered	Proven Thickness (m)
Concrete	
MADE GROUND – clay with plastic, Wood, metals & ceramics	0 – 3.0
Firm-stiff red/brown gravelly CLAY with cobbles	2 – 10.6
Loose clayey sandy GRAVEL	0.3 – 2.0

4.1.2 *Bedrock*

The bedrock underlying the site consists mainly of the Waulsortian Limestones, which consists of massive, unbedded mounds of calcareous deposits in the form of mudstones, wackestones and packstones. Devonian rocks, which are situated to the north and south of the site include the Ballysteen and Gyleen Formations, part of which is referred to as the Old Red Sandstone. Synclinal folding associated with the Variscan orogeny means that these limestones are surrounded on all sides by progressively older rocks.

4.2 **Hydrogeology**

4.2.1 *Aquifer Classification*

The GS) has classified the bedrock that underlies the site as a Locally Important Karstified Aquifer. A search of the GSI karst database indicates that there are no karst features within the area of the site. A search of the GSI well database identified one well used for water supply within the aquifer. A yield was reported for this source. This well is located approximately 5km west of the site (i.e. up-gradient) and has a reported yield of 979m³/d .

4.2.2 *Aquifer Vulnerability*

The vulnerability of the aquifer underlying the site is rated as predominately “High” by the GSI (www.gsi.ie). However, investigations at the site encountered up to 11.8m of stiff glacial CLAY till beneath the site. Therefore, based on GSI criteria the groundwater vulnerability at the site can be rated as Moderate to Low.

4.2.3 *Groundwater Flow Direction*

Groundwater level monitoring indicates that the groundwater flow direction is in the southeast beneath the site towards the estuary. A steep gradient (i.e. difference in water levels from up-gradient to down-gradient wells) may also indicate a perched water table within the superficial deposits.

4.3 **Hydrology**

The existing site is located on reclaimed estuarine land to the west of the Blackwater River which enters the sea at Youghal Harbour approximately 4km southeast of the site. The Blackwater River and estuary is designated a Special Protected Area (SPA), a proposed National Heritage Area (pNHA) and a Special Area of Conservation (SAC). The site itself is located outside the designated zone. However, discharge from the facility does enter the Blackwater estuary.

5. GROUNDWATER & SOIL QUALITY

5.1 Groundwater Quality

In accordance with condition 6.18.1 and Schedule C.6 of the existing waste licence groundwater monitoring is carried out at the site biannually. The results of the monitoring undertaken in 2007 after the monitoring wells were installed are shown in Table 5.1. As this was the first time groundwater quality monitoring was carried out the results are considered to represent baseline groundwater conditions

Based on the measured groundwater levels at the site MW2 and MW3 are located up-gradient within the site and MW1 is located down-gradient.

Table 5.1: Groundwater Monitoring Results for 2007.

Parameter	Unit	MW1- P1 ¹	MW2- P1	MW3 -P1	MW1- P2 ²	MW2- P2	MW3 - P2
Mineral Oil							
Diesel Range Organics	µg/l						
Petrol Range Organics C5-C9	µg/l						
Petrol Range Organics C10-C12	µg/l						
Benzene	µg/l						
Toluene	µg/l						
Ethylbenzene	ug/l						
Total Xylene	ug/l						
VOC	µg/l						
SVOC	ug/l						
Cd	ug/l						
Co	ug/l						
Iron	mg/l						
Mn	ug/l						
Arsenic	ug/l						
Chloride	mg/l						
Nitrate (as NO ₃)	mg/l						
Conductivity (at 25 ⁰ C)	ug/l						
pH	pH units						
Ammonia (as N)	mg/l						
COD	mg/l						

Phosphate	mg/l						
Sulphate	mg/l						
Sodium	mg/l						
Fluoride	ug/l						

5.2 Soil Quality

The site is on reclaimed land and site investigations carried out in 2004 and 2007 established that the made ground comprised predominantly gravelly clay with fragments of plastic, wood glass and ceramics.

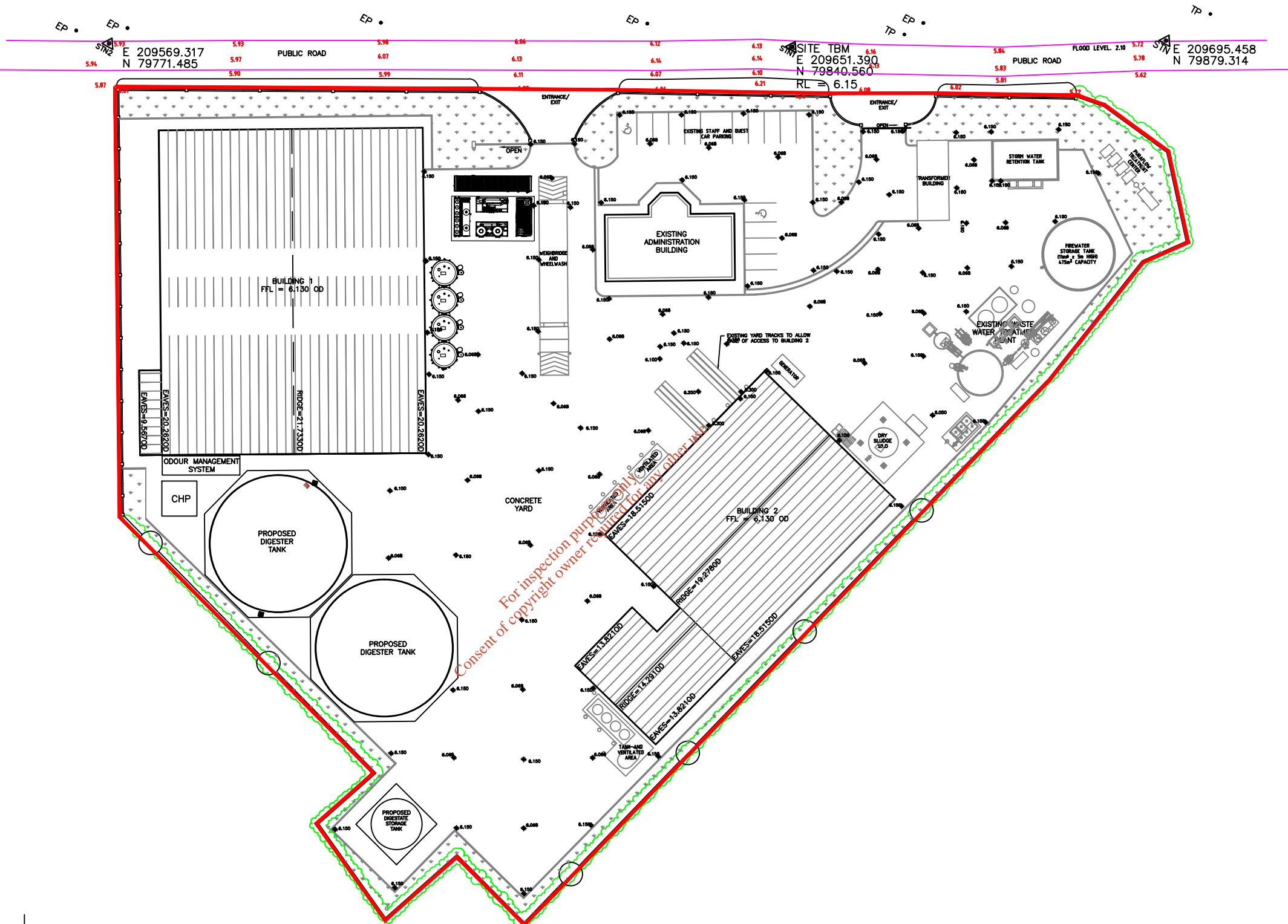
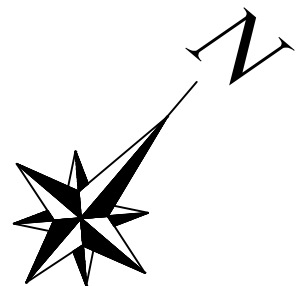
It is understood that the report on the 2007 investigation was submitted to the Agency, but Eras Eco Ltd does not have a copy. As discussed in Appendix 3 of the EIS that accompanies the IE licence application. It is understood that the investigation focused on the location of the former diesel storage tanks associated with the operation of the Youghal Landfill

The area measured approximately 7m x 6.5m. Photoionization Detector field readings for the samples taken were 0ppm and no hydrocarbon odour was detected. The laboratory analysis did not detect any hydrocarbons. It was concluded that Diesel Range Organics (DROs) were likely to be present in very minute concentrations above background levels.

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