

2 DESCRIPTION OF EXISTING SITE AND PROPOSED DEVELOPMENT

This section of the EIS describes the existing site and the proposed development.

The design, construction and operation of the proposed MBT Facility is outlined and a detailed description of the difference between the processes involved in both MBT Scenarios, Configuration A (an MBT Facility with Composting) and Configuration B (an MBT Facility with Dry Anaerobic Digestion and Composting), is included in this section.

2.1 EXISTING SITE

2.1.1 Site Location

The Bord na Móna property, as outlined in blue on Figure 1.1, is located within the County Kildare townlands of Drehid, Ballynamullagh, Kilmurry, Mulgeeth, Mucklon, Timahoe East, Timahoe West, Coolcarrigan, Corduff, Coolearagh West, Allenwood North, Killinagh Upper, Killinagh Lower, Ballynakill Upper, Ballynakill Lower, Drummond, Kilkeaskin, Loughnacush, and Parsonstown.

The site boundary or the activity boundary outlined by the red line on Figure 1.1, which is defined as the area in which all activities associated with the Drehid MBT Facility will occur, is confined to the townlands of Coolcarrigan and Drummond. It should be noted that the activities associated with the Drehid MBT Facility will be confined to a landbank of approximately 29ha.

Access has been provided into the previously permitted Drehid Waste Management Facility from the R403 regional road via a dedicated site entrance and a 4.8km access road. This entrance and road will also provide access from the R403 regional road to the MBT Facility.

The village of Derrinturn is located approximately 3km north west of the closest edge of the site activity boundary and Timahoe crossroads is located approximately 2.5km east of the closest edge of the site activity boundary.

The MBT Facility site is located within a segment of land within the Bord na Móna landholding, which is located to the east of the existing access road and approximately 1km south of the existing Drehid Waste Management Facility. The topographic landform within the site boundary consists of flat lying to gently undulating topography of cut away peatland.

Figure 1.1, an extract from the *Discovery Series Map No 49*, shows the site location relative to a number of adjacent villages including Derrinturn, Timahoe, Coill Dubh

and Allenwood at a scale of 1:100,000. The location of the site boundary relative to the R402 and R403 regional roads is also shown on Figure 1.1.

For the purposes of clarification, Table 2-1 below indicates the area of the overall Bord na Móna landholding and the extent of the site activity boundary for the Drehid MBT Facility, together with the area within the activity boundary that will be reserved for landscaping. These are also shown on Figure 1.1 and Figure 2.2. An aerial photograph of the site is shown on Figure 2.3.

Table 2-1 Outline of Site Areas

Item	Area hectares (ha)
Bord na Móna Ownership Boundary ('Blue Line Boundary') (South Bog – 1,745 ha and North Bog – 799 ha)	2,544ha
Drehid MBT Facility Site/Activity Boundary ('Red Line Boundary')	29ha
Area within the Activity Boundary reserved for landscaping and maintaining buffers	14.5ha

2.1.2 Proximity of Housing and Centres of Population

Housing in the immediate area of the proposed site comprises predominantly single dwellings with adjacent farmyards and new bungalows. Figure 2.1 shows the outline of the Drehid MBT Facility footprint, the facility activity boundary, a 500m and a 1,000m radius from the footprint.

As shown, the immediate area is reasonably sparsely populated. The nearest residential dwelling is located approximately 1km to the west of the proposed activity boundary. The largest concentration of houses close to the proposed facility is to the north west of the site in the village of Derrinturn.

2.1.3 Land Use

The existing Bord na Móna operated Drehid Waste Management Facility is located approximately 1km north of the location of the proposed MBT Facility within the Bord na Móna landholding. Land use on and adjacent to the MBT Facility site is primarily disused cutaway bogland used up to approximately twenty two years ago for production of sod peat for energy generation. Immediately adjacent to the MBT Facility site there are areas of land where turbary, commercial forestry and agricultural usage are evident.

2.1.4 Infrastructure

As part of the background information necessary to comply with the requirements of the EIS, an assessment of the existing traffic and infrastructure was undertaken and the findings of the study are outlined herein.

2.1.4.1 Location of the Drehid MBT Facility (traffic and access)

The Drehid MBT Facility will be located within the confines of the Bord na Móna landholding in the townlands of Coolcarrigan and Drummond, Carbury, Co. Kildare.

Access has been provided into the previously permitted Drehid Waste Management Facility from the R403 regional road via a dedicated site entrance and a 4.8km access road. This entrance and road will also provide access from the R403 regional road to the MBT Facility.

Given that access to the proposed MBT Facility will be by means of the already permitted and existing site entrance at the R403 regional road, it will be ultimately accessible via a network of regional routes which in turn link with the National Motorway network. The R403 lies south, and southwest and west of the site. The R403 joins the R402 at Carbury to the northwest of the site. The R402 connects to the M4 while the R403 connects to central and south County Kildare. The M4 (Dublin to Sligo/Galway) motorway is located approximately 9km to the north of the proposed MBT Facility location, while the M7 (Dublin to Limerick/Cork) motorway is located approximately 17km to the south of the proposed MBT Facility location.

The speed limit along the R403 regional road, in approaching this site access, is 80km/h. The R403 has an approximate carriageway width of 6.0m in the vicinity of the site access, which is an adequate width for two Heavy Goods Vehicles (HGVs) to pass one another with 1.0m clearance. A ghost island right turn lane junction has been provided at the site access and includes road markings. Through lanes have been constructed in each direction 3.0m wide and a right turning lane 3.0m wide has also been provided. Visibility of 4.5m x 160m is available at the site access junction.

Figure 11.1 in Chapter 11 of this EIS shows the proposed Drehid MBT Facility in relation to the adjoining road network, including the national primary roads, regional and county roads and also the main towns and villages in the area.

2.1.4.2 Existing Traffic Flows on the Adjoining Road Network

A series of traffic counts were carried out in the area in 2012, along the haul routes proposed to be used by vehicles associated with the MBT Facility. The locations of these counts are shown on Figure 11.1.

The estimated AADT on the R403 was 8,291 at location ATC9, 6,236 at location ATC7, 4,171 at location ATC4, 4,378 at the Bord na Móna landholding site entrance and 5,017 at location ATC3. The HGV content at these locations ranged between

2.9% and 9.5% with the HGV content at the existing site entrance was approximately 10%.

The estimated AADT on the R402 was 3,354 at location ATC1 and 5,595 at location ATC2 with a HGV content of approximately 4.4% and 3.5% at these locations respectively. The estimated AADT on the R407 was 12,404 at location ATC10 with a HGV content of 3.9%. The estimated AADT on the R409 was 3,298 at location ATC8 with a HGV content of 4.3%. The estimated AADT on the R415 was 3,217 at location ATC6 with a HGV content of 4%.

2.1.4.3 Drehid Waste Management Facility

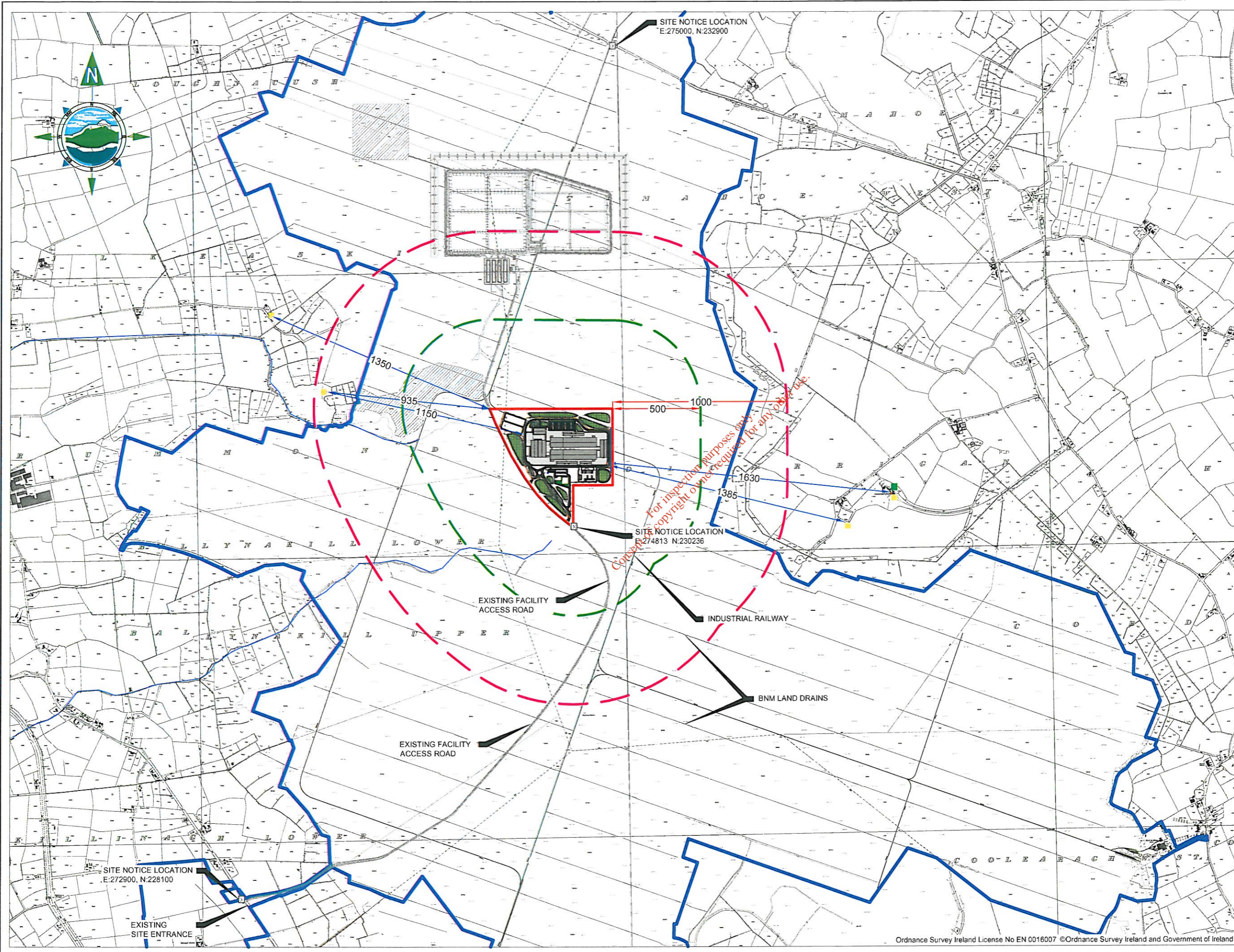
As detailed in Chapter 1, the permitted and operational Bord na Móna Drehid Waste Management Facility is located approximately 1km north of the proposed MBT Facility site within the confines of the Bord na Móna landholding. This waste management facility includes a permitted landfill, composting facility, administration area, car park, access roads, weighbridge, settlement lagoons and ancillary infrastructure. The potential impacts arising from the operation of the proposed Drehid MBT Facility and the existing Drehid Waste Management Facility are assessed cumulatively where relevant within this EIS.

2.1.5 Topography

A detailed topographical survey was carried out at the site in February 2012 by ORS Ltd. The final output of this survey of the proposed site is presented as a topographic contour map on Figure 2.4.

The proposed site is situated in low-lying cutaway bogland with levels ranging from 83m to 86mOD. Whilst the topography throughout the overall landholding is relatively flat at 80 to 90mOD, screening of the site operations from the adjoining roads will be provided by existing hedgerows and tree lines, which will be augmented by additional planting surrounding the MBT Facility. The remote nature of the location of the facility footprint, lying approximately 2km south of county road L5025, 2.4km from county road L1910 and 2.8km from regional road R403, provides considerable separation distances between the proposed MBT facility and adjacent roads.

These separation distances are enhanced by the growth of bog willow tree stands over several parts of the cutaway bogland and by dense hedge lines and commercial forestry to the east, south and west of the site.



- GENERAL LEGEND**
- OWNERSHIP BOUNDARY (Blue solid line)
 - ACTIVITY BOUNDARY (Red solid line)
 - 500m BUFFER ZONE (Green dashed line)
 - 1000m BUFFER ZONE (Red dashed line)
- BUILDINGS LEGEND**
- FARM BUILDINGS AND SHEDS (Grey rectangle)
 - DWELLING HOUSE (Green square)
 - (Yellow square)

- NOTES**
- FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 - ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 - ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
 - ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Clkd
A	27 06 12	ISSUED FOR WASTE LICENSE	MN	ST

Client:

BORD NA MÓNA

Project:

DREHID MECHANICAL BIOLOGICAL TREATMENT (MBT) FACILITY

Title:

SITE LOCATION MAP

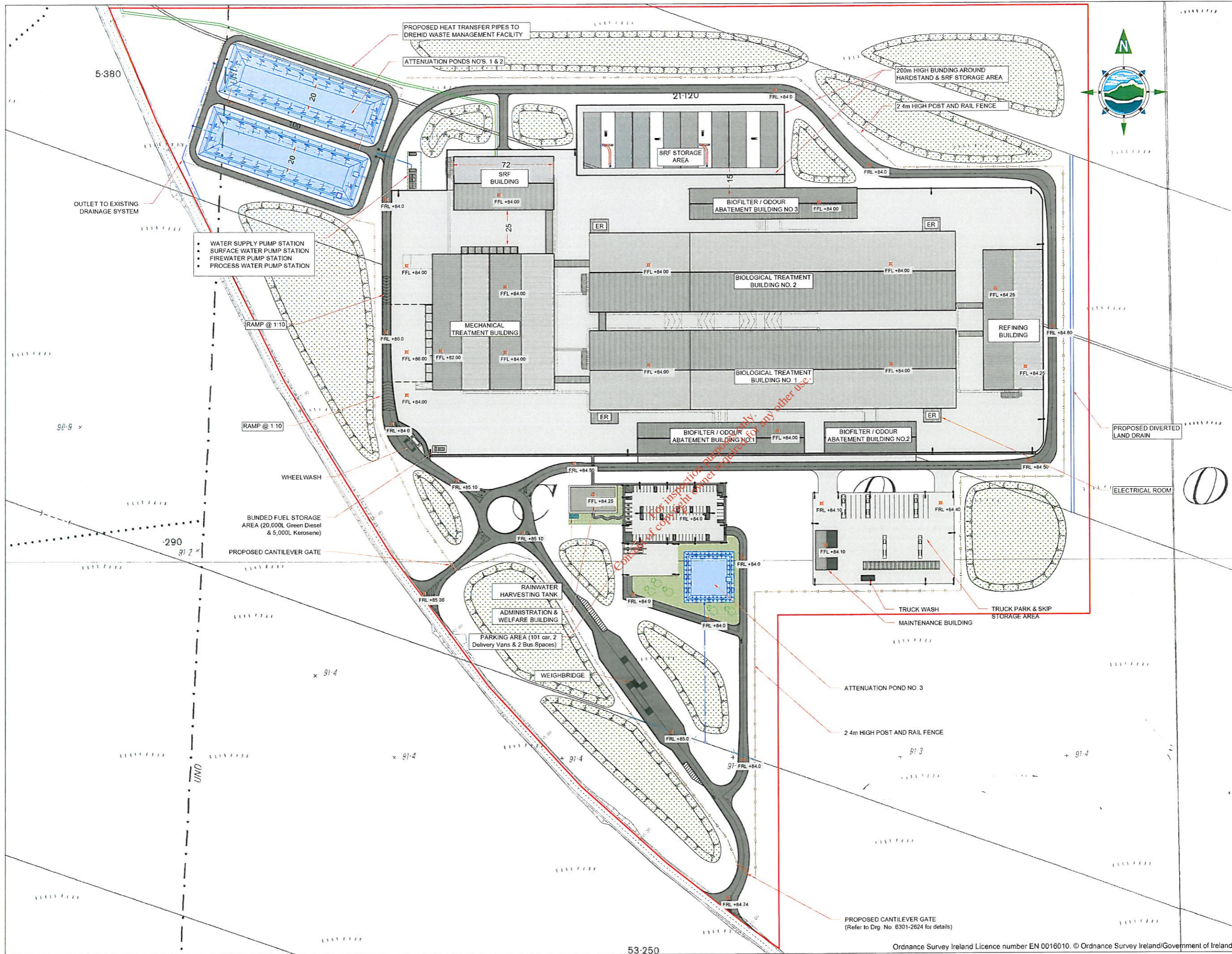
Scale @ A3: 1:15,000

Prepared by: M. Nolan Checked: S. Tinnelly Date: February 2012

Project Director: D. Grehan

TOBIN
Patrick J. Tobin & Co Ltd
Consulting, Civil and Structural Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15, Ireland
tel: +353-(0)1-8030406
fax: +353-(0)1-8030409
e-mail: info@tobin.ie
www.tobin.ie

Drawing No. **FIGURE 2.1** A



GENERAL LEGEND

ACTIVITY BOUNDARY	
PROPOSED CHAINLINK FENCE	
PROPOSED ROAD	
PROPOSED HARDSTAND	
PROPOSED ATTENUATION POND	
PROPOSED GREEN AREA	
PROPOSED BUILDINGS	
FINISHED ROAD LEVEL	FRL +159.5
FINISHED FLOOR LEVEL	FFL +149.85
PROPOSED LANDSCAPED SCREENING BERM	

- NOTES:**
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 - THE CONTRACTOR SHALL UNDERTAKE A THOROUGH CHECK FOR THE ACTUAL LOCATION OF ALL SERVICES/UTILITIES, ABOVE AND BELOW GROUND, BEFORE ANY WORK COMMENCES
 - ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	CHK'd
A	27.06.12	ISSUED FOR WASTE LICENCE	M N	D C

Client:
BORD NA MÓNA

Project:
DREHID MECHANICAL BIOLOGICAL TREATMENT (MBT) FACILITY

Title:
SITE LAYOUT PLAN

Scale @ A3:	1:2,500	
Prepared by:	Checked:	Date:
M. Nolan	D. Conneran	May 2012
Project Director:	D. Grehan	

TOBIN
 Patrick J. Tobin & Co. Ltd
 Consulting, Civil and Structural Engineers,
 Block 10-4, Blanchardstown Corporate Park,
 Dublin 15, Ireland
 Tel: +353-(0)1-8030406
 Fax: +353-(0)1-8030409
 e-mail: info@tobin.ie
 www.tobin.ie

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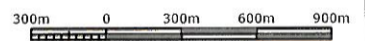
Drawing No.: **Figure 2.2** **A**

GENERAL LEGEND
 BORD NA MÓNA OWNERSHIP BOUNDARY SITE ACTIVITY BOUNDARY



NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD
5. 6" OS SHEET NO'S: KILDARE 3, 4, 8, 9 & 13



Issue	Date	Description	By	Chkd
A	27.06.12	ISSUED FOR WASTE LICENCE	MN	ST

Client:

BORD NA MÓNA

Project:

DREHID
MECHANICAL BIOLOGICAL
TREATMENT (MBT) FACILITY

Title:

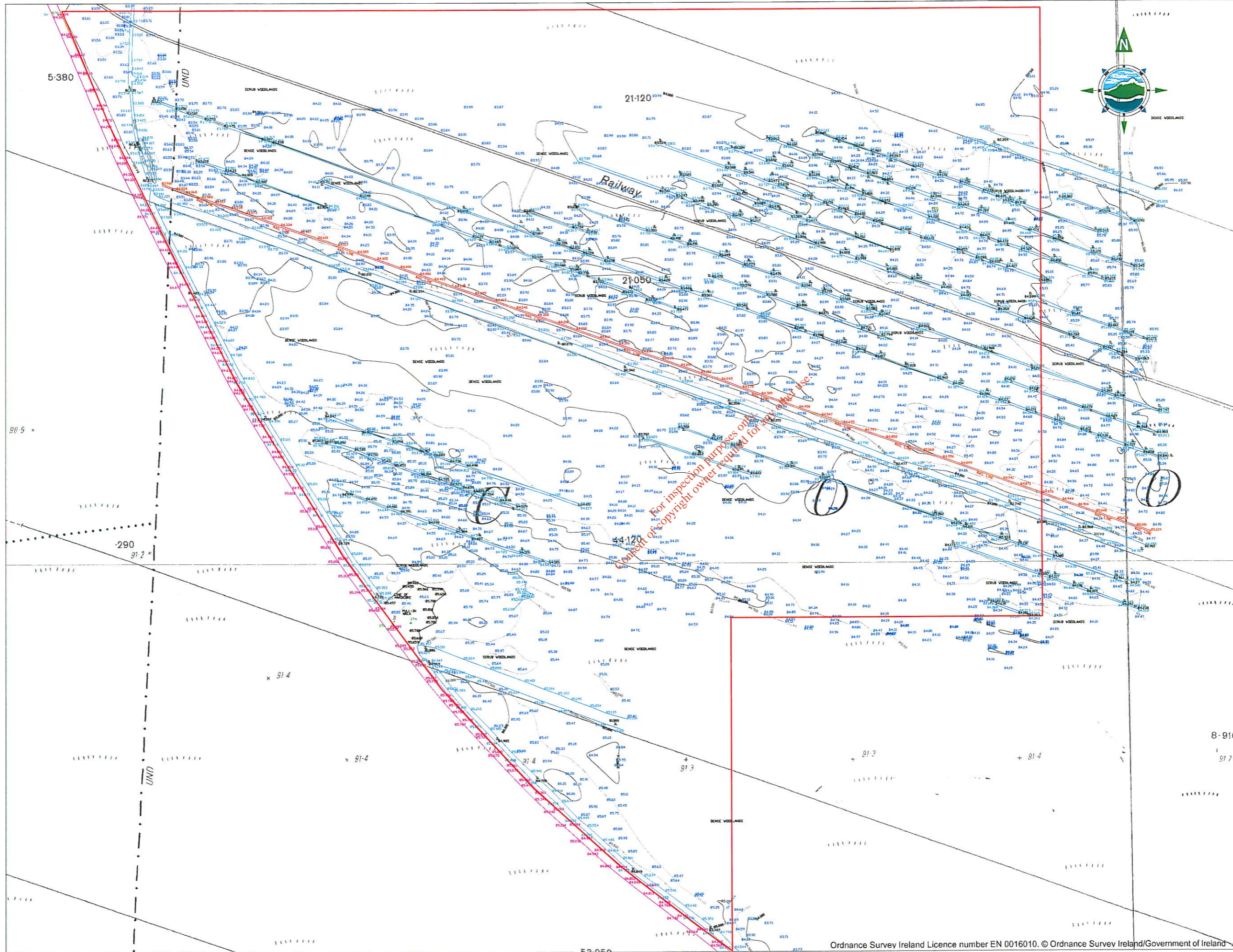
AERIAL PHOTOGRAPH

Scale @ A3 1:25,000

Prepared by: M. Nolan
 Checked: S. Tinnelly
 Date: May 2012
 Project Director: D. Grehan

TOBIN
 Patrick J. Tobin & Co. Ltd.
 Consulting, Civil and Structural Engineers,
 Block 10-4, Blanchardstown Corporate Park,
 Dublin 15, Ireland
 tel: +353-(0)1-8030406
 fax: +353-(0)1-8030409
 e-mail: info@tobin.ie
 www.tobin.ie

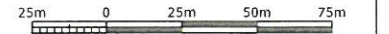
Drawing No: **Figure 2.3** Issue: **A**



GENERAL LEGEND

ACTIVITY BOUNDARY	EXISTING MAJOR CONTOUR	EXISTING MINOR CONTOUR
EXISTING ROAD	EXISTING DRAIN	
EXISTING RAIL LINE	INVERT LEVEL	
EX. ROAD LEVEL	RAIL LINE LEVEL	
TOP OF BANK LEVEL	SPOT LEVEL	

- NOTES:**
- FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
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Issue	Date	Description	By	Chkd
A	27/06/12	ISSUED FOR WASTE LICENCE	MN	D.C.

Client:

BORD NA MÓNA

Project:

DREHID
MECHANICAL BIOLOGICAL
TREATMENT (MBT) FACILITY

Title:

EXISTING
SITE TOPOGRAPHY

Scale @ A3:	1:2,500	
Prepared by:	Checked:	Date:
M. Nolan	D. Conneran	March 2012
Project Director:	D. Grehan	

TOBIN
Patrick J. Tobin & Co. Ltd
Consulting, Civil and Structural Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15, Ireland.
Tel: +353-(0)1-8030406
Fax: +353-(0)1-8030409
e-mail: info@tobin.ie
www.tobin.ie

Drawing No:	Figure 2.4	Issue:	A
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2.2 DETAIL OF THE PROPOSED DEVELOPMENT

As outlined in Chapter 1, Bord Na Móna proposes to develop a Mechanical Biological Treatment (MBT) facility within its landholding located within the townlands of Coolcarrigan and Drummond, Carbury, Co. Kildare. No modifications to already permitted facilities, including the entrance from the R403 regional road, are envisaged.

The proposed Drehid MBT Facility will primarily accept and process municipal solid waste and will provide for an overall capacity of 250,000 tonnes per annum (TPA).

Mechanical Biological Treatment through a combination of mechanical processing and biological treatment (such as composting and anaerobic digestion) reduces the volume of waste which requires treatment by disposal in landfill or incineration. By virtue of the biological process in an MBT facility, biodegradable municipal waste can be biostabilised thereby eliminating its potential to generate methane (a harmful greenhouse gas) and leachate, thus contributing to the fulfilment of Ireland's targets under the Landfill Directive (1999/31/EC). It should be noted that biostabilised waste is not considered biodegradable municipal waste if it meets the AT₄ requirements of the EPA.⁵⁸

In deciding on the configuration of the biological process, and in particular the inclusion of Anaerobic Digestion, consideration was had of the fiscal incentives for the development of Anaerobic Digestion – namely the Renewable Energy Feed In Tariff (REFIT). Regrettably, the current fiscal incentives in the Republic of Ireland make it difficult to create a compelling or indeed viable, economic argument for the development of Anaerobic Digestion. The REFIT for Anaerobic Digestion in the Republic of Ireland is significantly inferior to its equivalents in Northern Ireland and Italy (for example).

Therefore, Bord na Móna proposes the preparation of the Planning Application and Waste Licence Application for the proposed Drehid MBT Facility such that it provides for the development of an optional Dry Anaerobic Digestion step as part of the biological treatment stage. This approach has been subject to detailed pre-application discussions with both An Bord Pleanála and the EPA.

The biological treatment stage will include a composting step in any event. The Planning Application and Waste Licence Application includes for both scenarios (Configuration A (MBT with Composting), as illustrated in Flow Diagram No. 1 in

⁵⁸ The AT₄ is a static respiration index (SRI) test used to calculate the oxygen consumption of a sample over a period of time. The index determines the biological stability of compost or other organic materials.

section 2.3 below and Configuration B (MBT with Dry Anaerobic Digestion and Composting) as illustrated in Flow Diagram No. 2 in section 2.3 below). The potential impacts and mitigation measures for both configurations are also considered within the EIS.

The design of the MBT Facility is such that there are no significant external differences between Configuration A (MBT with Composting) and Configuration B (MBT with Dry Anaerobic Digestion and Composting). It is proposed that the AD plant and ancillary plant will be located within the enclosure of the biological treatment buildings. The main physical difference between the two Configurations will be that Configuration B will have a standby gas flare compound and a stack associated with the CHP plant. In addition, Configuration B will require physical infrastructure (i.e. overhead power line) to facilitate the export of electricity to the electricity network. Any required planning consents to facilitate this infrastructure will be arranged in due course by ESB Networks. Bord na Móna owned switch gear and transformers associated with the export of electricity will be located in the Electrical Room.

2.2.1 Proposed Site Infrastructure

This section details the site infrastructure that is proposed for the MBT Facility. Figure 2.2 includes the site layout plan for the development.

2.2.1.1 Site Access

Access to the MBT Facility will be via the permitted and existing site entrance, located on the R403 regional road. A permitted 4.8km access road links this entrance to the permitted Bord na Móna operated Drehid Waste Management Facility. This entrance and access road will also be used by vehicles travelling to and from the Drehid MBT Facility. A dedicated access junction and site road is proposed from the existing access road to the Drehid MBT Facility as shown on Figure 2.2. Appropriate signage will direct employees and visitors to the designated car parking areas and waste vehicles to the incoming weighbridge.

2.2.1.2 Site Security

Site security arrangements to prevent unauthorised access at the Drehid MBT Facility include the following:

- The existing main entrance from the R403 regional road has secure fencing, stonewalls and pillars (2.4m high fencing and a 7m wide electric drive cantilever security gate that is closed outside normal operating times). This gate is located as shown on Figure 2.1.
- Fencing around the entire boundary of the Drehid MBT Facility footprint, with the exception of the MBT Facility site entrance, will comprise of post and chain link fencing. The fencing layout is shown on Figure 2.2, with fencing details presented in Drawing 6301-2317 (Volume 3 of this EIS).

- Palisade type anti-intruder security fencing, 2.4m in height, will be erected at the MBT Facility site entrance.
- A CCTV system monitors the existing access from the R403 regional road and the infrastructure associated with the existing Drehid Waste Management Facility. A CCTV system will also monitor the entrance to the Drehid MBT Facility.
- Anti-intruder alarms will be located in all lockable MBT Facility buildings.

In addition to the above, site signage relating to the Drehid Waste Management Facility indicating opening times and contact details is currently maintained at the main site entrance. Additional signage will be provided, at the entrance from the R403 regional road, for the proposed MBT Facility. The site security infrastructure will be checked daily and any damage will be immediately temporarily repaired with any additional permanent repair executed within 48 hours of discovery.

2.2.1.3 Administration and Welfare Building

An Administration and Welfare Building is proposed to form part of the proposed MBT Facility and will be comprised of two floors. The building will provide all necessary welfare facilities for the personnel required for the operation and maintenance of the MBT Facility. It is envisaged that this will be a steel framed building, incorporating precast concrete floors and an insulated cladding system including a high quality insulated window system.

It is envisaged that the MBT Administration and Welfare Building will comprise of a ground floor and a first floor, and will include the following areas as shown on Drawing 6301-2322 (Volume 3 of this EIS):

- Canteen (Operational and maintenance personnel)
- Canteen (Supervisory and office personnel)
- Changing room
- Washing/Drying Room (washing and drying of clothing)
- Toilets and showers (Operational and maintenance personnel)
- Toilets and showers (Supervisory and office personnel)
- 2 No. Meeting Rooms (to accommodate the seating of 8 personnel)
- Plant Manager's office
- 2 No. Plant Supervisor offices
- 2 No. offices (to facilitate a person and the storage of files)
- Open plan office (to accommodate 10 No. people)
- Server Room
- SCADA Room
- Records Room
- Laboratory
- Educational/training room

The design of the MBT Administration and Welfare Building includes all necessary provisions required for the operation and maintenance of the MBT Facility in accordance with safety, health and welfare at work legislation and other legal requirements.

Air conditioning will be provided in all areas of this building. Fire and intruder alarm systems will also be installed in this building.

The design of this building has sustainability at its core. To this end, the building is designed to include rain water harvesting from roofed areas, solar panels and geothermal heating.

The building will comply with the latest version of the Building Regulations (including access for disabled people).

It is the intention of Bord na Móna to utilise the educational room in the Administration and Welfare Building for environmental education needs. Poster presentations and literature on waste management and on the workings of the Drehid MBT Facility will be available in this room. Provision will also be made for the inspection of the EPA waste licence and Annual Environmental Reports (AERs) in this room.

2.2.1.4 Laboratory Facilities

A small laboratory is proposed to be established on site in the Administration and Welfare Building which will allow for the carrying out of the routine monitoring requirements at the site. Groundwater and surface water analyses will be carried out on a periodic basis in compliance with licence requirements. Basic parameters (e.g. dry solids, volatile solids, pH) for process control measures for the biological treatment process will also be measured in this laboratory. A stove and a small oven for drying samples will be provided in the laboratory. Portable instruments such as pH and temperature meters, a conductivity meter etc. will be retained on site in the laboratory.

The full suite of analyses for groundwater or surface water will not be carried out at the site laboratory. An external, accredited laboratory will carry out the analysis of samples as required under EPA waste licence conditions.

2.2.1.5 Mechanical Treatment Building

The Mechanical Treatment Building will be constructed as steel portal framed structures with piled foundations and reinforced concrete floor slabs with a proprietary cladding. Details of the structure and dimensions of the Mechanical Treatment Building are included in Drawing 6301-2325 (Volume 3 of this EIS). The building will be supplied with 3-phase power and will include both security and fire

alarm systems. Doors at the waste reception area will be rapid closing doors, with an opening or closing time of approximately 20 seconds. Doors for the acceptance of waste will be fitted with air curtains to minimise the escape of potentially odorous emissions when a door is opened. All processes proposed to take place in this building are detailed in Section 2.3 below. In addition, Section 2.3 describes the features and equipment proposed within this building.

2.2.1.6 Biological Treatment Buildings

The Biological Treatment Buildings (including Biological Treatment Building No. 1 and Biological Treatment Building No. 2) will be constructed as steel portal framed structures with piled foundations and reinforced concrete floor slabs with a proprietary cladding and with roller shutter doors. Plan and elevation details of the Biological Treatment Buildings are included in Drawing 6301-2328 to Drawing 6301-2335 (Volume 3 of this EIS). The buildings will be supplied with 3-phase power and will include both security and fire alarm systems. All processes proposed to take place in these buildings are detailed in Section 2.3 below, which includes a description of the processes for both Configuration A (MBT with Composting) and Configuration B (MBT with Dry Anaerobic Digestion and Composting). In addition, Section 2.3 describes the features and equipment proposed within these buildings.

2.2.1.7 Refining Building

The Refining Building will be constructed as steel portal framed structures with piled foundations and reinforced concrete floor slabs with a proprietary cladding and with roller shutter doors. Details of the structure and dimensions of the Refining Building are included in Drawing 6301-2326 (Volume 3 of this EIS). The building will be supplied with 3-phase power and will include both security and fire alarm systems. All processes proposed to take place in this building are detailed in Section 2.3 below. In addition, Section 2.3 describes the features and equipment proposed within this building.

2.2.1.8 SRF Building

The SRF Building will be constructed as steel portal framed structures with piled foundations and reinforced concrete floor slabs with a proprietary cladding and with roller shutter doors. The SRF thermal dryer will be located in this building. Details of the structure and dimensions of the SRF Building are shown on Drawing 6301-2324 (Volume 3 of this EIS). The buildings will be supplied with 3-phase power and will include both security and fire alarm systems. All processes proposed to take place in this building are detailed in Section 2.3 below. In addition, Section 2.3 describes the features and equipment proposed within this building.

2.2.1.9 Maintenance Building

The Maintenance Building will be constructed as steel portal framed structures with piled foundations and reinforced concrete floor slabs with a proprietary cladding and

with roller shutter doors. Details of the structure and dimensions of this building are included in Drawing 6301-2327 (Volume 3 of this EIS). This building will be fitted with secure storage areas to accommodate power tools, other small plant and equipment. A proprietary bunded container to EPA requirements will be provided for the storage of hydraulic oil. The building will be supplied by 3-phase power and will include both security and fire alarm systems.

2.2.1.10 SRF Storage Area

It is proposed that baled and plastic wrapped SRF will be stored in an outdoor storage area as shown on Figure 2.2. This storage area will comprise of a bunded concrete area and the SRF will be stored in wrapped bales approximately 1m³ in size and four bales high.

2.2.1.11 Biofilter/Odour Abatement Buildings

As shown on Figure 2.2, there will be three separate Biofilter/Odour Abatement Buildings at the MBT Facility. The Biofilter/Odour Abatement Buildings will be constructed as steel portal framed structures with piled foundations and reinforced concrete floor slabs with a proprietary cladding and with roller shutter doors. Details of the structure and dimensions of these buildings are included in Drawing 6301-2323 (Volume 3 of this EIS). An odour abatement system plant room will be located in the centre of each Biofilter/Odour Abatement Building. Plant rooms will be supplied with 3-phase power and will include both security and fire alarm systems. A storage tank for MBT process waste water and a storage tank for clean water will be located within each plant room.

Within each Biofilter/Odour Abatement Building, a biofilter section will be located at each side of the odour abatement system plant room as shown on Drawing 6301-2323 (Volume 3 of this EIS).

Each biofilter section will consist of a concrete basin. The biofilter floor will consist of perforated concrete slabs supported by walls which will allow the air to flow evenly under the complete biofilter field. The air discharged from the acid scrubbers and air humidifiers will be blown into air plenums before being forced through the biofilter material. Treated air emissions, from each biofilter section, will be vented to atmosphere by a 20m high stack.

A detailed description of the odour abatement systems is included in Appendix 2.1.

2.2.1.12 Weighbridge and Weighbridge Kiosk

Two proprietary weighbridges, each capable of weighing up to 60 tonnes, will be provided at the MBT Facility entrance at the locations outlined on Figure 2.2. Each weighbridge will be linked to the weighbridge kiosk, which will include proprietary

customised software to allow for the recording of details of each waste movement to the site including the following:

- Haulier name
- Vehicle registration
- Waste source
- Waste type (EWC Code)
- Laden weight
- Empty weight

Two weighbridges will be constructed, one to weigh incoming vehicles and the second to weigh outgoing vehicles. The two weighbridges are considered necessary to allow for the free-flow of vehicular traffic and to ensure efficient turn around times at the facility.

Entry control barriers will be provided at each of these weighbridges.

A weighbridge kiosk as shown on Figure 2.2 will be constructed between the two weighbridges and will include toilet facilities. Details of the weighbridge kiosk are presented on Drawing 6301-2316 (Volume 3 of this EIS).

2.2.1.13 Wheel wash

A wheel wash will be provided at the site, at the location shown on Figure 2.2. Details of the wheelwash are shown on 6301-2315 (Volume 3 of this EIS).

It is proposed to position the wheel wash at this location to ensure that waste vehicles leaving the waste reception area at the Mechanical Treatment Building do not carry excess waste onto the adjoining road infrastructure.

The wheel wash will have a self-contained water recirculation system. A tank will store water for washing purposes, a pump will re-circulate the water back into the tank during washing. Solids that settle at the base of the tank will be removed by a vacuum tanker. Water will only be discharged to the foul water system during the periodic replenishment of the used process water with fresh water.

2.2.1.14 Fuel Storage

Bunded fuel storage will be provided for the diesel fuel that will be required for the on site plant and equipment. Kerosene will also be stored on site for the backup heating system for the Administration and Welfare Building.

This bunded fuel storage area will be roofed and located to the south of the Mechanical Treatment Building at the location shown on Figure 2.2. This bunded fuel storage area will comprise of a proprietary 20,000 litre (20m³) diesel tank and a 5,000 litre (5m³) kerosene tank located in a bund with a total capacity of 30m³.

2.2.1.15 Site Roads, Parking and Hardstanding

Concrete hardstand areas will be provided at the waste reception area, fuel storage area, truck wash/parking area and skip storage area and adjacent to each MBT Facility Buildings.

Site roads are also proposed from the existing access road to the Administration and Welfare Building and around the MBT Facility. Roads and parking areas will typically be designed as bituminous macadam pavements, or where appropriate, concrete pavements. The proposed locations of these areas at the site are shown on Figure 2.2 and are detailed on Drawing 6301-2311 (Volume 3 of this EIS). Drainage from the hardstanding areas will be pumped/drained to the proposed surface water collection system, via oil interceptors. Where possible, existing trees and scrub will be retained within the MBT Facility Site.

2.2.1.16 Truck Wash/ Park & Skip Storage

It is proposed to locate a truck wash, a truck parking area and a skip storage area near the Maintenance Building as shown on Figure 2.2. This area will comprise of concrete hardstand areas and surface water drainage from this area will be connected to the overall surface water drainage network for the MBT Facility via oil interceptors. Water from the truck wash will be contained and recycled. Overflow will be treated as foul water and will be directed to an onsite holding tank, from where it will be tankered off site to a suitably licensed waste water treatment plant.

2.2.1.17 Traffic Control

All waste traffic will access the Bord na Móna landholding by turning from the R403 regional road into the existing permitted site entrance, and then travelling along the existing access road to the MBT Facility entrance. Traffic management to/from the MBT Facility site is dealt with in more detail in Chapter 11 (Traffic) of this EIS.

Given the length of the access road from the R403, there is no possibility of traffic on the R403 regional road being affected by vehicles queuing to enter the MBT Facility (or cumulative traffic associated with the Drehid Waste Management Facility).

All waste vehicles, having left the existing access road and entered the MBT Facility entrance gate, will travel to the site weighbridge/ reception kiosk at the location shown on Figure 2.2, where the weight, source, type etc. of waste will be recorded and instructions will be given as to where to proceed with the waste. Access to both the incoming and outgoing weighbridges will be controlled by the usage of security barriers.

An adequate number of signs will be positioned strategically around the site to direct users to each location within the MBT Facility in a proper manner. Access to the

weighbridge and the waste reception area at the Mechanical Treatment Building will be carried out in a queued formation, controlled by the site operatives.

A dedicated entrance to the Administration and Welfare Building will ensure that people visiting the facility, for example for deliveries or meetings, are kept removed from the main MBT Facility as shown on Figure 2.2.

Car parking is provided for 101 cars, 2 delivery vans and 2 coaches adjacent to the Administration and Welfare Building. In addition, there will be 18 spaces provided for HGV parking adjacent to the Maintenance Building.

2.2.1.18 Potable Water Supply

Potable water supply for the site is proposed to be from an on site borehole as indicated on Drawing No. 6301 - 2307 (Volume 3 of this EIS). It is proposed to pump water from this borehole to the site infrastructure, via a water treatment plant, which will treat the water to remove iron, manganese and ammonia to acceptable limits. A layout of the potable watermain is shown on Drawing 6301-2307, with details shown on Drawing No. 6301 – 2313.

The distribution main will be 100mm dia. and looped as per best practice where possible. However, where dead ends occur they will terminate in duckfoot hydrants as set out in the guidance document “Site Development Works for Housing Areas”. It is estimated that the peak water demand for the development is approximately 0.136 l/s (see potable water calculations in Appendix 2 of the Engineering Services Report for justification of this figure).

2.2.1.19 Surface Water and Foul Water Infrastructure

The layout of the surface water drainage system proposed for the site is shown on Drawing No. 6301 - 2305 (Volume 3 of this EIS).

As shown on Drawing No. 6301 – 2305, a proprietary grit interception trap and a proprietary oil interceptor will be installed through which intercepted run-off from hard stand and parking areas within the site will be diverted. The outfall from the grit trap and oil interceptor will be discharged to surface water attenuation ponds/lagoons for further treatment. These ponds are sized to provide adequate capacity for a 100-year storm event, meet facility fire-fighting water requirements and provide water to meet MBT process demands when necessary. Overflow from these attenuation ponds will be diverted to a nearby bog drainage channel. Details of the ponds (lagoons) are shown in Drawing 6301-2310 (Volume 3 of this EIS).

It is important to note that MBT process waste water will be fully contained and collected in process waste water tanks for reuse where possible. The MBT process

waste water collection system will be fully isolated from the surface water collection system during the lifetime of the facility.

The description and details of the attenuation ponds is provided in the Engineering Services Report (Appendix 2.2 of this EIS).

Potential sources of foul water at the proposed development are:

- Wastewater from sanitary facilities;
- Overflow water from the wheel wash;
- Run off from the external SRF storage area (only if contamination is detected);
- Run off from the truck wash; and
- MBT process waste water.

The foul water system has been divided into two distinct networks:

- Sanitary wastewater system, which will collect discharge from sanitary appliances within the various buildings and discharge to the onsite wastewater holding tank; and
- Process effluent system, which will collect leachate and runoff from the process buildings and discharge to the process water storage tanks, for reuse.

Sanitary wastewater (i.e. wastewater from toilets, washing facilities, kitchens etc.) will be collected in each building and directed to the onsite wastewater holding tank, via the foulwater collection network. The majority of the foul collection network will be a gravity system, however it is proposed that the weighbridge kiosk area be connected to the system via a pumping station and rising main, due to the distance from network and the flat gradient of the site.

The onsite storage tank will utilise a high level alarm which will notify the operators of the plant that the tank needs to be emptied and tankered to a suitably licensed WWTP.

Appendix 4 of the Engineering Services Report contains calculations with respect to the foul discharge loading and network characteristics.

2.2.1.20 MBT Process Waste Water Infrastructure

Waste water will be produced at various stages in the MBT process. The MBT process has been designed in order to maximise the reuse of waste water.

A collection system is proposed to collect waste water from the various processes within the proposed development. The collected process waste water shall be diverted to the process waste water storage tanks for reuse.

A flow diagram has been provided in Appendix 1 of the Engineering Services Report (Appendix 2.2 of this EIS), to further facilitate an understanding of the movement of process waste water throughout the proposed development.

To mitigate any risk of a leak from process waste water tanks it is proposed that they are constructed above ground, and located within the odour abatement system plant rooms. Thus, on the basis that there will be 3 No. odour abatement systems, there will be 3 No. waste water tanks. Each tank will have an envisaged capacity of 400 cubic metres. All pipe work used for the transport of process waste water shall be specified as fusion welded polyethylene, or similar approved.

In the case of MBT Configuration B (involving dry AD and composting), a fermentation tank will be constructed adjacent to the dry AD tunnels (between the dry AD tunnels and the composting tunnels) in Biological Treatment Building No.1 and in Biological Treatment Building No.2. Each fermentation tank will have an envisaged capacity of 900 cubic metres.

2.2.1.21 Other Services

Other services that will be provided at the MBT Facility site include:

- Telephone system;
- Water from an on-site borehole;
- 400v three phase electricity;
- Standby diesel generators;
- Standby pumps;
- Gas detection systems in the site buildings; and,
- Meteorological station.

2.2.1.22 Building Ventilation and Odour Abatement System

The proposed MBT Facility will include a building ventilation system and an odour abatement system.

The function of the building ventilation system will be to provide a number of air changes per hour and to maintain a negative air pressure environment within each building. The maintenance of a negative pressure environment within each building will prevent the emission of untreated air thereby minimising potentially nuisance causing odour emissions. The provision of air changes within each building will also provide appropriate working conditions for MBT plant operators.

The odour abatement system will treat the air extracted by the building ventilation system and the process air exhausted by the biological treatment process. The core components of the odour abatement system include acid scrubbers, humidifiers and biofilters. As is commonplace in modern MBT facilities, the volumes of extracted building air requiring treatment in the odour abatement system will be optimised by the integration and cascading of air flows between buildings and operational areas.

On the basis that each facility building at the proposed MBT Facility will facilitate a specific element of the MBT process, the ventilation and odour abatement system will take account of the different process activities in each facility building. This approach will ensure the efficient and focused treatment of odours generated by the MBT process.

The layout of the building ventilation system and the odour abatement system is presented in Appendix 2.1 for Configuration A (MBT with composting) and Configuration B (MBT with Dry Anaerobic Digestion and composting). A detailed description of the building ventilation and odour abatement systems is also included in Appendix 2.1.

2.2.1.23 Fire Control System

A number of fire control features are proposed for the MBT Facility as detailed in the Engineering Services Report (included in Appendix 2.2 of this EIS). These include fire alarms, a fire water supply by way of the surface water settlement ponds, a fire water main and fire water hydrants. In addition, the following fire control measures will also be implemented:

- Control of incoming waste vehicles to ensure that no burning or smouldering loads enter the facility;
- All site operatives and employees will be trained in fire prevention, control and emergency response procedures;
- Emergency response contact numbers (Fire Service, Gardaí, Ambulance and other agencies) will be posted in prominent locations;
- Automatic communication of fire alarms to mobile phone numbers of assigned responsible individuals;
- Fire extinguishers, smoke detectors and fire alarms will be provided in all facility buildings;
- A water bowser will be available to deal with any small fires within the facility;
- SRF material will be dried within a dedicated SRF Building. The heated air to the SRF dryer will be at an envisaged temperature of 150°C. As a result, the temperature of the SRF will not exceed 55-65°C – thereby minimising the occurrence of fires;
- A rainwater harvesting tank (located next to the Administration and Welfare Building) and the surface water settlement lagoons will act as back up fire-

- fighting water sources; and
- Smoking will not be permitted at the MBT Facility.

In the event of a fire at the MBT Facility, excess firewater will be collected within the surface water ponds. This firewater will subsequently be analysed prior to possible tankering off-site to an approved wastewater treatment plant.

2.2.1.24 Heat Transfer System

Both Configuration A (MBT with Composting) and Configuration B (MBT with Dry Anaerobic Digestion and Composting) will use process heat. Process heat will be used, primarily, in order to permit drying of the Solid Recovered Fuel (SRF) fraction in order to improve its fuel characteristics.

Under Configuration A (MBT with Composting), process heat will be provided by a CHP system (operating on landfill gas) at the existing Drehid Waste Management Facility.

Under Configuration B (MBT with Dry Anaerobic Digestion and Composting), process heat will be provided by a CHP system (operating on biogas generated by the dry AD process) at the MBT facility. The balance of the process heat required by the MBT Facility will be provided by a CHP system (operating on landfill gas) at the Drehid Waste Management Facility.

The transfer of heat from the CHP system at the Drehid Waste Management Facility to the MBT Facility will be by hot water, at approximately 180°C and approximately 20 bar pressure. The underground heat transfer pipe work will be installed adjacent to the existing access road between the MBT Facility site and the Drehid Waste Management Facility, as detailed on Drawing Nos. 6301 – 2308 and 6301-2320.

An inspection chamber will be located at each thermal expansion loop/joint, to permit ready inspection of the pipe work condition. The number of loops required will be calculated during the detailed design.

A detailed description of the heat transfer system between the existing Drehid Waste Management Facility and the Drehid MBT Facility is included in Appendix 2.3 of this EIS.

2.2.1.25 Gas Flare

The location for the gas flaring equipment is shown on Drawing 6301-2332 of the EIS Drawings, Volume III. The gas flare will be equipped with regulator valves, monitoring valves, ventilator, flame arrestor, flare and ignition equipment.

The gas flare will flare in accordance with EU standards in terms of combustion, temperature, retention times, emission levels, etc. In particular, biogas would be flared at a temperature of between 1000°C and 1200°C with a minimum combustion retention time of 0.3 seconds.

It should be noted that this is a standby gas flare which will be used in the event that the CHP Plants are unavailable and that there is insufficient volume in the biogas storage bladders. This standby gas flare will only be a feature of Configuration B (MBT with Dry Anaerobic Digestion and Composting).

2.2.2 Project Construction Phase

2.2.2.1 Construction Management Plan

A Construction Management Plan will be drawn up prior to the commencement of construction activities, in order to minimise the impacts on the environment during construction. The Construction Management Plan will detail the allowable working day, construction traffic, parking arrangements and will incorporate environmental protection measures. Provisions to reduce the environmental impact of the construction activities associated with the proposed MBT Facility development will include the following:

- Contractors will be required to ensure that no pollution or obstruction of ground water and watercourses is caused by their operations;
- Contractors will be required to comply at a minimum with the provisions of BS 5228 (Noise Control on Construction and Demolition Sites), Part I & Part 2, 1997;
- Where necessary, contractors will be required to erect suitable noise barriers to minimise disturbance and avoid nuisance when operating machines at night (between 2000 hours and 0800 hours);
- Limiting vibration caused by construction plant to the maximum permitted values in the Irish NRA document: “Guidance for the Treatment of noise and vibration in National Road Schemes”
- Contractors will be required to take reasonable precautions to ensure that all wastewater discharged will not be harmful to or cause obstruction or deposit in drains and to prevent oil, grease or other objectionable matter being discharged into drains;
- Contractors will be required, during the execution of works, to keep all plant and materials and all equipment connected with the construction of the works in good working order, clean and tidy;
- Contractors will be required to remove any waste materials from the site to a licensed waste facility;
- Contractors will be required to ensure that the public roads in the vicinity of the site are maintained free from all mud, dirt and rubbish, which may arise

from or by reason of the execution of the works. To facilitate this, Contractors will be instructed to use a temporary wheel wash which will be installed at the facility;

- Disposal of excess concrete on any part of the construction site will be prohibited;
- Contractors will be required to provide a designated bin for washing down the chutes of concrete lorries on site;
- Contractors will be required to keep the construction compounds free and clear of excess dirt, rubbish piles and scrap wood etc. at all times. Contractors will be required to keep the designated parking area and other common areas clear and free of rubbish and debris;
- Contractors will be required to be responsible for the disposal of all wood, food, food packaging and paper generated during the construction phase and will be required to furnish containers and vehicles to collect and haul these items and dispose of them to a licensed waste recovery facility. Dumping of these items within the construction site will be prohibited;
- Scrap materials, rubbish, etc. will be hauled out of the work areas (daily) and disposed of by the Contractor on a daily basis to a licensed waste recovery facility;
- Contractors will be required to obtain any necessary permits from the Local Authority or Environmental Protection Agency for the disposal of waste;
- At the completion of the work, contractors will be required to leave the construction area in a neat, clean and orderly condition;
- Individual contractors will be required to provide sanitary facilities that are adequate for their construction personnel. Sanitary facilities will include proper wash down WC's with sewer connections, or if this is impractical, chemical closets; and
- All temporary buildings associated with construction of the development will comply with the Safety, Health and Welfare at Work Regulations (2005). On completion of the works, contractors must remove them entirely with all slab, drains and water mains and restore the surface of the land to its original condition or other reasonable conditions.

In addition, any excavated material generated during the construction of the facility will be reused on site, where appropriate. Parking facilities for construction vehicles and private transportation will be located within the development site. Temporary site fencing will be erected and maintained to secure the site during the construction phase.

2.2.2.2 Waste Generated during the Construction Phase and Fill Material Requirements

The wastes/spoils likely to be generated during the construction phase are presented in Table 2-2 below. This table also includes an estimate of the volumes of suitable fill material that will be imported during the construction phase.

Table 2-2 Construction Waste and Fill Material Estimates

Peat to be excavated for Construction (m ³)	Peat to be reused on site for landscaping (m ³)	Material to be imported for Construction (including hardstand, parking and storage areas) (m ³)
66,567.17	66,567.17	96,779.76

All construction materials (including oils and diesel) will be managed on site according to best practice and removed from site by appropriate measures where required.

Materials will be used where possible in landscaping (as shown in Table 2-2 above) and in the construction itself.

2.2.2.3 Construction Scheduling

It is envisaged that the construction of the proposed development will take place over a period of 24 months. The commissioning phase will be additional to this 24 month period and is envisaged to take place over a period of 8 months.

2.2.2.4 Construction Quality Assurance

In order to provide assurance that the MBT Facility is constructed in accordance with intended design and technical specifications, a comprehensive Construction Quality Assurance (CQA) plan will be implemented during the construction stage. The CQA plan will include Construction Quality Control (CQC) procedures to ensure that materials and workmanship meet defined specifications.

Construction quality control procedures will include the integrity testing of all surface water, foul water, process water pipe work and underground structures in accordance with industry accepted standards and procedures. All integrity testing will be inspected and witnessed by a Bord na Móna engineer or a consultant engineer acting on its behalf. Integrity test certificates will be signed by both the contractor's engineer and the engineer representing Bord na Móna.

Following the completion of construction and testing of the MBT Facility and prior to the acceptance of waste, it is proposed that a Construction Quality Assurance (CQA) Report will be prepared by a third party in compliance with good industry practice.

2.2.3 Project Operational Phase

2.2.3.1 Hours of Operation

The mechanical treatment process at the Drehid MBT Facility will operate 6 days per week (Monday to Saturday inclusive) and for 16 hours per day (on a two shift basis) as follows:

- Shift A = 08.00 to 17.00
- Shift B = 17.00 to 02.00

The SRF drying process and the biological treatment process will operate on a continuous basis (24 hours per day and 7 days per week) and will be fully automated. It is envisaged that there will be two operators required at the MBT Facility, between the hours of 02.00 and 08.00, to supervise the SRF drying process.

Waste will be accepted to and outputs will depart from the MBT Facility from 7.30am to 6.15pm. Waste acceptance at the facility will only take place outside these hours when required to cater for the late arrival of refuse vehicles due to breakdown or other exceptional circumstances. Waste that is accepted at the facility at or near closure of operating hours will be unloaded at the waste reception area and stored overnight within the fully enclosed Mechanical Treatment Building and handled during the next working day.

2.2.3.2 Plant and Equipment

The following mobile plant and equipment will be employed on-site for the two proposed configurations:

Configuration A (MBT with Composting)

- 2 No. Loading Shovels (Mechanical Treatment Building)
- 2 No. Loading Shovels (Maturation Building)
- 2 No. Loading Shovels (Refining Building)
- 2 No. Forklifts
- 2 No. Mechanical Grab Machines
- 1 No. Windrow Turner
- 1 No. Road Sweeper
- 1 No. Articulated Lorry for moving trailers

Configuration B (MBT with Dry Anaerobic Digestion and Composting)

- 2 No. Loading Shovels (Mechanical Treatment Building)
- 2 No. Loading Shovels (Dry AD/Composting Tunnels)
- 2 No. Loading Shovels (Maturation Building)

- 2 No. Loading Shovels (Refining Building)
- 2 No. Forklifts
- 2 No. Mechanical Grab Machines
- 1 No. Windrow Turner
- 1 No. Road Sweeper
- 1 No. Articulated Lorry for moving trailers

2.2.3.3 Waste Acceptance Procedures

Only household, commercial and non-hazardous industrial wastes will be accepted at the MBT Facility.

Waste will be accepted at the facility only from customers who are holders of a waste collection permit, unless exempted, under the Waste Management (Collection Permit) Regulations (S.I No. 820 of 2007) and amending Regulations, the Waste Management (Collection Permit) (Amendment) Regulations (S.I No. 87 of 2008). The MBT Facility will not accept waste delivered directly by the general public and a civic amenity facility will not be provided at the site.

Waste contractors using the site will be required to have a contract with Bord na Móna. This will ensure that all contractors will be assessed in advance and that the general composition of the waste will be known. Any contractors who arrive on-site without such a contracted agreement will be refused entry and turned away.

The waste contractor/carrier will be required to provide documentation, which allows a written record to be maintained for each load of waste arriving at the facility. The following information will be recorded:

- a) the date;
- b) the name of the carrier (including if appropriate, the waste carrier registration details);
- c) the vehicle registration number;
- d) the name of the producer(s)/collector(s) of the waste as appropriate;
- e) the name of the waste facility (if appropriate) from which the load originated including the waste licence or waste permit register number;
- f) a description of the waste including the associated EWC codes;
- g) the quantity of the waste, recorded in tonnes; and
- h) the treatment, where applicable, to which the waste has been subjected.

Bord na Móna will also record the following information:

- a) the name of the person checking the load; and
- b) where loads or wastes are removed or rejected, details of the date of occurrence, the types of waste and the facility to which they were removed.

Following logging of authorised vehicles at the in-weighbridge, these vehicles will be directed to the waste reception area at the Mechanical Treatment Building.

Loads suspected of being non-compliant entering the MBT Facility will be tipped into the waste reception bunker within the Mechanical Treatment Building and inspected by the mechanical treatment process supervisor. If the load is non-compliant then the waste will be reloaded and the waste contractor will be responsible for removing it off-site.

A detailed description of waste acceptance for both scenarios – Configuration A (MBT with Composting) and Configuration B (MBT with Dry Anaerobic Digestion and Composting) - is included in Section 2.3 of this EIS.

Waste Storage

Waste from the HGVs will be deposited into the waste reception bunker within the Mechanical Treatment Building as directed by the site operative on duty at the MBT Facility. In the event of unavailability of the mechanical processing equipment, contingency is provided by virtue of the storage available in the waste reception bunker. This bunker is designed to accommodate the storage of approximately three days of incoming waste.

2.2.3.4 Site Management Structure

The management of the MBT Facility will generally be in accordance with that outlined in Table 2.3 below. It is envisaged that these permanent on-site staff will be employed directly by Bord na Móna.

The personnel employed at the facility will be suitably experienced and qualified to fill the role for which they will be employed.

Table 2-3 Site Management Structure

Position	Duties/Responsibilities	Qualifications/Training
Facility Manager	Overall management and responsibility for the operation and maintenance MBT Facility	Engineering degree or equivalent
Environmental Engineers/Scientists	Responsibility for environmental compliance of the MBT Facility	Engineering/Science degree
Maintenance Engineers	Responsibility for overall maintenance of the MBT Facility	Engineering degree
Mechanical	Overall supervision of the	Training in waste

Position	Duties/Responsibilities	Qualifications/Training
Treatment Process Supervisors	mechanical treatment process	management
Biological Treatment Process Supervisors	Overall supervision of the biological treatment process	Training in waste management
Refining and ABP Hygienisation Process Supervisors	Overall supervision of the refining and ABP hygienisation process	Training in waste management
Logistics Manager	Management and organisation of the transport of outputs to end destinations	Training in waste management
Weighbridge Operator	Waste acceptance Operation of weighbridge	Training in EPA waste acceptance procedures
Machine Operators	Waste handling for the MBT Facility	Training in operation of on-site machinery
Maintenance Technicians	Execution of preventative maintenance programmes and emergency maintenance tasks	Appropriate mechanical and electrical trade qualifications
General Operatives	General maintenance and repairs, quality control, cleaning etc.	

2.2.3.5 Raw Materials and Energy

The volumes of wastes/spoils likely to be generated, and the volumes of suitable fill material likely to be required, during the construction stage are outlined in Section 2.2.2.2.

The envisaged usage of diesel fuel, hydraulic oil, electricity and water is outlined in Table 2.4 and Table 2.5 below for both Configuration A (MBT with Composting) and Configuration B (MBT with Dry Anaerobic Digestion and Composting).

Table 2-4 Estimated Raw Materials and Energy Usage for Operation of the Drehid MBT Facility – Configuration A (MBT with Composting)

Material/Resource	Annual Usage per Annum	Amount Stored On-Site
Hydraulic Oil	1,500 litres	5,000 litres
Electricity	27,696 megawatt hours per annum	Not stored
Diesel	350,000 litres	20,000 litres
Water	1,463m ³ (Domestic Requirement)	Water supplied from on site borehole (well)
Water	11,462m ³ (For all processes including washdown of buildings)	<ul style="list-style-type: none"> • 4,000m³ (min) held in the surface water lagoons • 60m³ x 3 No. clean water tanks in odour abatement system plant rooms

Table 2-5 Estimated Raw Materials and Energy Usage for Operation of the Drehid MBT Facility – Configuration B (MBT with Dry Anaerobic Digestion and Composting)

Material/Resource	Annual Usage per Annum	Amount Stored On-Site
Hydraulic Oil	1,500 litres	5,000 litres
Electricity	28,172 megawatt hours per annum (Note: 12,091 megawatt hours per annum produced by Configuration B)	Not stored
Diesel	400,000 litres	20,000 litres
Water	1,463m ³ (Domestic Requirement)	Water supplied from on site borehole (well)
Water	14,097 m ³ (For all processes including washdown of buildings)	<ul style="list-style-type: none"> • 4,000m³ (min) held in the surface water lagoons • 60m³ x 3 No. clean water tanks in odour abatement system plant rooms

2.2.3.6 MBT Outputs

The proposed MBT Facility will provide for the acceptance and treatment of 250,000 tonnes per annum of municipal solid waste. A detailed description of the MBT process is provided in Section 2.3. The mechanical treatment process and the biological treatment process will produce outputs – as outlined in Table 2.6 and Table 2.7 below.

Table 2-6 Estimated Annual Outputs for Configuration A (MBT with Composting)

Output Type	Estimated Tonnage (TPA)	Envisaged Destination
Recyclables Recovered	37,397	Overseas
Solid Recovered Fuel (SRF)	78,159	Approved cement kilns located in the Republic of Ireland and overseas
Biostabilised Waste	50,084	Drehid Waste Management Facility (or other destinations - beyond life of Drehid WMF)
Rejects	19,533	Drehid Waste Management Facility (or other destinations - beyond life of Drehid WMF)
Process Losses	64,827	-

Table 2-7 Estimated Annual Outputs for Configuration B (MBT with Dry Anaerobic Digestion and Composting)

Output Type	Estimated Tonnage (TPA)	Envisaged Destination
Recyclables Recovered	37,397	Overseas
Solid Recovered Fuel (SRF)	78,159	Approved cement kilns located in the Republic of Ireland and overseas
Biostabilised Waste	50,084	Drehid Waste Management Facility (or other destinations - beyond life of Drehid WMF)
Rejects	19,533	Drehid Waste Management Facility (or other destinations - beyond life of Drehid WMF)
Process Losses	57,987	-
Biogas	6840	-

Recyclables, including metals and plastics (e.g. PET, HDPE), will be transported out of the facility in baled form. Recyclables will typically be exported to reprocessors such as plastic reprocessing plants where the material will be processed for use in other applications or processed directly into new products.

Solid Recovered Fuel (SRF) will typically comprise of high calorific items such as plastics, paper/cardboard, wood and textiles. Please refer to Section 2.3 for a description of the SRF production process. The markets for SRF include cement kilns where it displaces the use of fossil fuels in the production of cement. SRF will be transported out of the MBT Facility in the form of wrapped bales or in loose form (the latter typically referred to as SRF 'fluff'). Loose SRF will be transported in compactor trailers. SRF will be produced to a defined standard in regard to parameters such as net calorific value, moisture content, chlorine content, mercury content and particle size. A quality control programme will be implemented for the production of SRF

which will involve the taking of regular samples for laboratory analysis. A recognised classification system for SRF is the CEN TC 343 (CEN/TS 15359:2006) standard.

Biostabilised waste will meet the EPA's stabilisation requirement (as set out in waste licences for landfill facilities) where stabilisation means the reduction of decomposition properties of the waste to such an extent that offensive odours are minimised and that the respiration activity after four days is less than 10mgO₂/gDM until 1 January 2016 and less than 7mgO₂/gDM thereafter. Biostabilised waste will be accepted for landfilling at the Drehid Waste Management Facility during its remaining operational life (until 2028). Thereafter, biostabilised waste will be transported to alternative destinations.

Rejects or residues produced by the MBT Facility will be landfilled at the Drehid Waste Management Facility during its remaining operational life (until 2028). Thereafter, rejects or residues will be transported to alternative destinations. Rejects or residues will typically include materials which could not be extracted as a marketable recyclable, SRF or a stabilised biowaste.

In the case of Configuration B (MBT with Dry Anaerobic Digestion and Composting), the biogas produced will be converted to renewable electricity and heat by the CHP plants. The renewable electricity produced will be exported to the electricity network. The heat produced will be used within the MBT process.

2.2.4 Nuisance Controls

2.2.4.1 General

The operation of the proposed MBT Facility will be undertaken under licence issued by the EPA. The conditions of the waste licence will include measures to minimise or prevent nuisance to the public occurring as a result of the operation of the facility. A complaints register detailing any complaint received from the general public in respect of the operation of the facility will be maintained at the site. The following sections detail the proposed nuisance control measures to be undertaken at the site. Bord na Móna also undertakes to implement any additional control measures included in the waste licence – to be granted by the EPA.

2.2.4.2 Litter Control

The following measures will be employed at the site to control litter:

- All waste entering the MBT Facility will be in covered vehicles. Bord na Móna will exclude any contractor failing to comply with this requirement from entering the site;
- All waste processing will take place in fully enclosed buildings
- The approach roads to the MBT Facility site will be monitored on at least a daily

- basis and in the event of litter being found on these roads, site staff will promptly remove it and deposit it in the appropriate manner at the facility;
- General clean-up and attendance work will be carried out when required by site staff around the entire perimeter of the MBT Facility footprint, on all internal access roads and on approach roads;
 - There will be no external storage of waste with the exception of the baled and wrapped SRF material;
 - Residues, recyclables and biostabilised waste leaving the MBT Facility will be in covered vehicles; and
 - All site areas will be inspected and cleaned regularly.

Given the above litter control measures it is envisaged that there will be no nuisance associated with litter at the MBT Facility.

2.2.4.3 Vermin Control

It is recognised that badly managed waste management facilities sites have the potential to attract vermin such as rats and flies. Strict control procedures will be put in place at the MBT Facility in order to control the population of vermin.

All proposed MBT activities will take place indoors and all plant, equipment and tipping areas will be cleaned regularly. SRF will be baled and wrapped in plastic before being stored outdoors. It should be noted that SRF will typically not contain food waste and therefore will not be attractive to vermin. The biological treatment process will take place within completely enclosed buildings, including the storage of organic fines, mixing, composting/anaerobic digestion and refinement.

A detailed Vermin Control Plan has been developed by Bord na Móna as part of the Environmental Management Plan for its waste management facilities and a similar plan will be developed for the Drehid MBT Facility. This Plan will incorporate the following elements:

- A site map showing the positions and numbers of each bait point;
- A bait point monitoring routine will be established with monthly inspection records for the facility filled up by the vermin control company and signed by the facility manager;
- Inspection records for the bait points will describe any signs of vermin and highlight any vermin attractions on site;
- The facility manager will be responsible for acting on the findings of the monthly inspection records; and
- A vermin control manual containing the bait point location maps, product details/specifications for the baits used and the monthly inspection records will be maintained and kept at the facility.

A firm of professional vermin control experts will implement the Vermin Control Plan. Baiting will be undertaken in a professional manner and every precaution will be taken to avoid non-target species. In particular the bait will be placed in areas which are not accessible to non-target species and where possible dead or dying vermin will be removed as soon as possible. It should be noted however that vermin such as rats normally return to their nests to die.

2.2.4.4 Odour Control

Measures will be implemented at the MBT Facility to eliminate or minimise nuisance odour emissions. These measures include:

- All aspects of the MBT process will be undertaken in fully enclosed buildings;
- All waste delivered to the MBT facility will be in covered/enclosed vehicles. Similarly, all waste residues being removed from the MBT facility will be in covered/enclosed vehicles;
- Doors at the waste reception area of the Mechanical Treatment Building will be rapid closing doors, with an opening or closing time of approximately 20 seconds;
- Doors at the waste reception area of the Mechanical Treatment Building will be fitted with air curtains to minimise the escape of odourous emissions when a door is opened for the acceptance of waste;
- The first stage of the biological treatment process is the most critical with respect to odour emissions, since easily biodegradable components (e.g. sugars, proteins and fats) are degraded at a high rate, thus causing gaseous by-products. This intensive phase of the biological treatment process will be undertaken in fully enclosed concrete composting/dry AD tunnels located within an enclosed building - thereby providing double containment features;
- The maturation process will be undertaken by means of negative aeration. Negative aeration draws air from within the building through the trapezoidal windrows and into the aeration ductwork. This arrangement will greatly reduce emissions from the trapezoidal windrows within the building, thereby minimising the potential for nuisance odour emissions;
- Air streams with a potential for high ammonia levels will be treated in an acid scrubbers prior to biofiltration;
- An odour management plan will be developed prior to the detailed design and construction of the facility. This plan will include management strategies for the prevention of emissions and a strict preventative maintenance and management program for ensuring that all odour mitigation techniques remain operational at optimal capacity throughout all operational scenarios;
- Critical and key odour abatement system performance parameters will be continually monitored on the SCADA control system. Should any parameter deviate outside of its accepted range, an alarm will be immediately generated. Critical alarms will be texted to selected mobile phones numbers thereby ensuring the communication of critical alarms to responsible individuals on a

- 24 hour basis;
- Good housekeeping practices (internally and externally) and a closed-door management strategy will be maintained at all times;
 - Biofilters will be compartmentalised to facilitate maintenance and replacement of media. Each biofilter will comprise of two sections such that treatment is provided by one of the sections while the other section is being maintained;
 - Biofilters will be covered and hence isolated from extreme weather conditions (e.g. intensive rainfall or intensive heat) thereby providing optimum control of biofilter efficacy;
 - Normal operational practices will be such that the organic fines fraction (putrescible fraction with the highest potential for odour) generated in any day by the mechanical treatment process will be loaded into the composting/dry AD tunnels on the same day;
 - Treated air from the biofilters will be emitted through 20m high stacks to facilitate appropriate residual odour dispersion;
 - The organic fines fraction will be conveyed from the Mechanical Treatment Building to the biological treatment buildings in fully covered and enclosed galleys;
 - If composting temperatures exceed approximately 65°C, odour emissions increase significantly, due to the changes in process biochemistry. Excessive increases in composting temperatures are especially relevant in the first stage of composting when, due to the fast degradation, a lot of energy will be released. Temperature sensors will be used to measure the temperature in the composting tunnels and subsequently in the maturation area. The SCADA control system will ensure that the composting temperature does not exceed 65°C by adding more fresh process air to the composting mass. This will reduce the odour load in the process air being transported to the odour abatement systems; and
 - In the case of Configuration B (MBT with Dry Anaerobic Digestion and Composting), a standby gas flare will be provided to facilitate the thermal destruction of the biogas in the event of unavailability of the CHP plants and that there is insufficient volume in the biogas storage bladders.

2.2.4.5 Fire Control

A number of fire control measures will be implemented at the MBT Facility. These include the following:

- Control of incoming waste vehicles to ensure that no burning or smouldering loads enter the facility;
- All site operatives and employees will be trained in fire prevention, control and emergency response procedures;
- Emergency response contact numbers (Fire Service, Gardaí, Ambulance and other agencies) will be posted in prominent locations;
- Automatic communication of fire alarms to mobile phone numbers of assigned

- responsible individuals;
- Fire extinguishers, smoke detectors and fire alarms will be provided in all facility buildings;
 - A water bowser will be available to deal with any small fires within the facility;
 - SRF material will be dried within a dedicated SRF Building. The heated air to the SRF dryer will be at an envisaged temperature of 150°C. As a result, the temperature of the SRF will not exceed 55-65°C – thereby minimising the occurrence of fires;
 - A rainwater harvesting tank (located next to the Administration and Welfare Building) and the surface water settlement lagoons will act as back up fire-fighting water sources; and
 - Smoking will not be permitted at the MBT Facility.

In the event of a fire at the MBT Facility, excess firewater will be collected within the surface water ponds. This firewater will subsequently be analysed prior to possible tankering off-site to an approved wastewater treatment plant.

2.2.5 Decommissioning

There is no site life defined for the proposed MBT Facility, therefore detailed financial, administrative and technical provisions are not presented under a decommissioning plan for the development.

In the event of decommissioning, measures will be undertaken by Bord na Móna to ensure that there will be no environmental impacts from the closed facility. Such measures are outlined as follows:

- Bord na Móna will ensure that any remaining waste materials within the facility are managed and removed off site to an appropriately licensed facility;
- All oils and fuels on site at the time of closure will be collected by an approved waste contractor;
- All plant and equipment associated with the facility will be removed from the site including the equipment from the MBT Facility buildings;
- All site floor and process building walls will be power cleaned to clear all debris and dust;
- All tanks will be de-sludged and interceptors cleaned. The waste from the cleaning operations will be disposed to relevant licensed facilities;
- Where possible, all portable or removable structures will be dismantled or removed from site;
- The weighbridge, weighbridge kiosk and wheel wash will be decommissioned and removed; and
- A monitoring programme of all potential emissions including surface water and dust will be conducted after the decommissioning process in order to ensure that emissions from the facility have ceased. The monitoring

programme will consist of two monitoring rounds carried out within two months of decommissioning of the facility.

When operations have ceased, and assuming confirmation from the monitoring programme that all emissions have ceased, it is expected that there will be no requirement for long-term aftercare management at the site.

2.2.6 Health & Safety

Impacts regarding health and safety at the proposed MBT Facility, relate primarily to concerns about individuals either straying or trespassing into the facility, alongside the health and safety of each worker or visitor to the facility.

In the case of workers and visitors to the site, the day to day operation of this development, including any activities associated with site machinery and on-site vehicles, and additionally how visitors are to present and conduct themselves when engaging with this enterprise, will be undertaken in compliance with all health and safety laws and regulations pertaining to such.

Security fencing will be erected as detailed in Section 2.2.1.2 to prevent accidental or intentional trespass onto the facility. Warning signs will be placed along the fencing at regular intervals, informing people of the potential hazards associated with unauthorised trespass.

Access to the MBT Facility will be via the existing permitted access road constructed to the southwest of the facility which joins the R403 regional road at Killinagh Upper. The existing entrance at the R403 regional road is already secured against unauthorised access and trespass.

All machinery will be locked during non-working hours and parked within the confines of the MBT Facility site. The limited number of houses in the general vicinity of the site, and the fact that the surrounding roads are not designated walking routes, will undoubtedly reduce opportunistic trespass.

2.2.7 Environmental Monitoring

The following sections describe the monitoring programmes that will be established at the Drehid MBT Facility. Specific elements of monitoring will also be required during the construction phase at the site and these requirements will also be addressed.

All environmental monitoring will be carried out under the conditions of an EPA waste licence for the facility. Emission Limit Values (ELV) will be set by the EPA for many of the parameters to be monitored. Exceeding these values will be considered a non-compliance with the waste licence.

The primary aims of these monitoring programmes will be to comply with legislation, the requirements of the EPA, to monitor the quality of the environment in the vicinity of the site and identify any adverse impacts from the development of the facility.

As part of the Waste Licence, it is anticipated that an Annual Environmental Report (AER) will be formulated that will collate and report all monitoring data each year. Within the AER, a comparative assessment will be made with data from previous years. An AER will be submitted to the EPA on a yearly basis.

It should also be noted that the monitoring programme as outlined below may be changed by the conditions of the Waste Licence but it is envisaged that it will be largely similar to that outlined herein.

2.2.7.1 Dust Monitoring Programme

Dust will be monitored using Bergerhoff gauges, as specified in the German Engineering Institute VDI 2119 document “Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method)”. It is proposed that gauges will be installed around the MBT Facility site at the locations shown on Figure 2.5 with the grid references tabulated in Table 2-8 below.

Table 2-8 Proposed Dust Monitoring Locations

Reference No.	Grid Reference
D2	275770, 230983
D5	273567, 230886
D8	272965, 228186
D9	274778, 230271
D10	274354, 230893
D11	275016, 230668

The limit of activity derived dust deposition measured at the above monitoring points will be 350 mg/m²/day, based on 30 day composite samples.

It is proposed that during the active life of the MBT Facility, dust monitoring will take place at least twice per annum including once between the months of May and September during which there would be a greater potential for dust generation.

At least one month prior to the commencement of construction of the MBT Facility, dust gauges will be installed at the locations outlined above and the baseline rate of dust generation prior to construction recorded. Dust monitoring will be undertaken at a frequency of every 4 months during the construction phase of the proposed development.

In addition to the above, the site and adjoining roads will be inspected on a daily basis for evidence of excessive generation of airborne dust. This inspection will be carried out by Bord na Móna personnel and by the site contractor during the construction phase. Any necessary remedial actions, such as road cleansing, will then be implemented.

2.2.7.2 Groundwater Monitoring Programme

Groundwater quality will be monitored at both upgradient and downgradient sampling locations.

All groundwater sampling will be carried out by trained personnel from Bord na Móna or a suitable firm of consultants and all off-site analyses will be carried out by an accredited laboratory.

Proposed Monitoring Sites

For the location and reference numbers for the proposed monitoring points refer to Figure 2.5. These reference numbers and grid references are outlined in Table 2-9.

Table 2-9 Proposed Groundwater Monitoring Locations

Location	Reference No.	Grid Reference
Upgradient		
Bedrock Monitoring Borehole	GW2D	E275305 N230640
Subsoil Monitoring Borehole	GW2S	E275312 N230650
Bedrock Monitoring Borehole	GW4D	E 275180 N231248
Downgradient		
Bedrock Monitoring Borehole	GW3D	E274349 N230902
Subsoil Monitoring Borehole	GW3S	E274354 N230907
Bedrock Monitoring Borehole	GW11D	E274325 N230775

Operational Phase

The main elements of the groundwater monitoring programme during the operational phase will be as follows:

- Water levels in the monitoring wells will be measured on a monthly basis;
- The wells will be sampled in accordance with industry standard protocols and guidelines prepared by the EPA. Samples will be handled and transported in accordance with the same accepted protocols;
- The samples recovered from these wells will be analysed for the list of parameters given in Table 2.10; and
- Data will be collated, tabulated and reported, including interpretation and comparison with the previous year's data. The data will be presented within an AER, which will be submitted to the EPA.

Table 2-10 Proposed Analyses for Groundwater Samples

Parameter	Frequency	Unit
Visual Inspection/Odour*	Monthly	-
Groundwater Level (wells)*	Monthly	m
Electrical Conductivity *	Monthly	µS/cm(@20° C
Ammoniacal Nitrogen	Monthly	mg/l as N- NH ₄
Chloride	Monthly	mg/l as Cl
Nitrate	Annually	mg/l as N
Sulphate	Annually	mg/l as SO ₄
Total Phosphate/Orthophosphate	Annually	mg/l as PO ₄
Potassium	Annually	mg/l as K
Sodium	Annually	mg/l as Na
Calcium	Annually	mg/l as Ca
Magnesium	Annually	mg/l as Mg
Iron	Annually	mg/l as Fe
Manganese	Annually	mg/l as Mn
Zinc	Annually	mg/l as Zn
Lead	Annually	mg/l as Pb
Copper	Annually	mg/l as Cu
Mercury	Annually	mg/l as Hg
Nickel	Annually	mg/l as Ni
Chromium	Annually	mg/l as Cr
Cadmium	Annually	mg/l as Cd
List 1/11 Organic substances (Screen)**	Annually	-
Total Coliform	Annually	cfu/100ml
Faecal Coliform	Annually	cfu/100ml

* Field and Laboratory Measurements

** Screening for priority pollutant list substances (such as US EPA volatile and/or semi-volatile compounds).

No monitoring of groundwater additional to that outlined for the operational phase will be required during the construction phase at the site.

2.2.7.3 Meteorological Monitoring Programme

A meteorological station will be installed on-site prior to commencement of operation of the MBT Facility.

Precipitation volume, wind force and direction, evapotranspiration, temperature, and barometric pressure will be continuously monitored on-site.

Again all data will be collated, tabulated and reported in the AER, which will be submitted to the EPA on an annual basis.

2.2.7.4 Noise Monitoring Programme

During the operational phase of the MBT Facility, noise monitoring will be carried out on an annual basis. The survey will be undertaken in accordance with the methodology specified in the *'Environmental Noise Survey Guidance Document'* published by the EPA and to limits which will be specified by the EPA.

Subject to waste licensing conditions imposed by the EPA there will be 6 No. noise monitoring locations. The proposed locations for noise monitoring are as outlined in Figure 2.5 and tabulated in Table 2-11 below. These are also the noise monitoring locations currently used for reporting to the EPA on the Drehid Waste Management Facility.

Table 2-11 Proposed Noise Monitoring Points

Reference No.	Grid Reference
N1	273059, 231480
N2	274690, 233140
N3	274909, 232667
N4	272939, 228160
N5	275563, 230357
N6	273349, 231046

An additional round of noise monitoring will take place during the construction phase of the MBT Facility. This shall be undertaken at a time so as to include for percussive piling impact should it be required during the construction phase.

Due to the distance separation of approximately one kilometre from the proposed MBT Facility location to the nearest sensitive receptor, it is not anticipated that vibration monitoring will be required.

Noise monitoring will be undertaken by suitably qualified persons employed by Bord na Móna or by consultants retained by Bord na Móna. Noise emission limits for the operational phase of the proposed MBT Facility will be set at 55 db L_{Aeq} for daytime and 45 dB L_{Aeq} for the night period at the noise monitoring points. The results of the noise monitoring undertaken at the facility and an interpretation of these results will be reported in the AER submitted to the EPA.

2.2.7.5 Air Monitoring Programme

In the case of Configuration B (MBT with dry Anaerobic Digestion and Composting), the standby gas flare system and the CHP plants will generate emissions to air.

Monitoring of the emissions to air will be in accordance with the conditions of the EPA Waste Licence.

In regard to emissions to air from the standby gas flare system and the CHP plants, it is proposed to monitor the following:

- carbon monoxide (continually);
- nitrogen oxides (biannually);
- sulphur dioxide (biannually); and
- particulates (annually).

In terms of the biofilter emissions, it is proposed to monitor for amines, ammonia and mercaptans using colorimetric indicator (Dräger) tubes on a frequency to be agreed with the EPA.

2.2.7.6 Odour Monitoring Programme

A daily record of the odours observed by on-site personnel will be maintained. Any odours observed and reported by members of the public off-site will also be recorded. The occurrence of odour will also be compared with climatic conditions. Control measures including the proposed building ventilation system and odour abatement system will minimise potentially nuisance causing odour emissions.

2.2.7.7 Emissions to Water Monitoring Programme

Surface water quality will be monitored downstream of the proposed MBT Facility during the operational phase of the development. A number of surface water channels originate within the property boundary.

It is intended that all surface water sampling will be carried out by trained personnel from Bord na Móna or by a suitable firm of consultants retained by Bord na Móna. All analyses, with the exception of on-site readings, will be carried out by an accredited laboratory. A visual inspection of all surface water streams on and adjacent to the site will also be carried out by site personnel on a weekly basis.

Proposed Monitoring Sites

For the location and reference numbers for the proposed monitoring points refer to Figure 2.5. These reference points and respective grid references are outlined in Table 2.12 below.

Table 2-12 Proposed Surface Water Monitoring Points

Reference No.	Grid Reference
SW4	E271601 N231227
SW5	E274059 N230848
SW7 (SW Pond discharge pt)	E274415 N230850
SW8 (SW Pond discharge pt.)	E274760 N230470

The need for additional monitoring locations may be recommended by the EPA. In addition, the need for further monitoring locations will be determined on an annual basis.

The elements of the surface water monitoring programme will be as follows:

- Surface water sampling locations will be identified with a permanent identification marker;
- The surface water will be sampled quarterly in accordance with industry standard protocols and guidelines prepared by the EPA. Samples will be handled and transported in accordance with accepted protocols;
- The samples recovered from monitoring points will be analysed for the list of parameters given in Table 2.13;
- The analytical programme will be carried out such that an ion balance can be computed; and
- Annual biological monitoring will be undertaken at SW4 and SW5 during the monitoring period June-September as follows. Kick samples will be taken and analysed annually, in accordance with EPA guidelines, to determine the invertebrate colony of the surface water environment. A relationship between water quality and macroinvertebrate community structure will be determined in the form of a 'Q' value, where Q1 represents poor quality water and Q5 represents good quality water. The locations at which samples will be obtained will be agreed with the EPA.

As part of this monitoring programme a range of diesel range organics, petrol range organics, mineral oils, and BTEX compounds (benzene, toluene, ethyl-benzene & xylene) will be taken once a year from one of the downstream monitoring points.

Continuous monitoring will take place at the inlet and outlet of the surface water ponds. Instrumentation linked to the SCADA system will continually monitor the following parameters:

- Dissolved Oxygen;
- pH;
- Electrical Conductivity; and
- Flow Rate.

An actuated valve at the surface water pond outlets will be controlled by the SCADA system. This valve will be programmed to close should any of the above parameters fall outside permitted levels. The volume of surface water discharged to the surrounding environment will also be controlled through the same actuated valve and SCADA system.

Table 2-13 Proposed Analyses for Surface Water Samples

Parameter	Frequency (SW4 & SW5)	Frequency (SW7 & SW8)	Unit
Visual Inspection	Weekly	Daily	
Temperature *	Quarterly	Daily	°C
Electrical Conductivity *	Quarterly	Daily	µS/cm(@20°C
Dissolved Oxygen*	Quarterly	Daily	%
Chloride	Quarterly	Weekly	mg/l as Cl
pH*	Annually	Weekly	pH Units
Ammoniacal Nitrogen	Annually	Weekly	mg/l
Total Suspended Solids	Annually	Weekly	mg/l as N- NH ₄
Nitrate	Annually	Annually	mg/l as N
Sulphate	Annually	Annually	mg/l as SO ₄
Chemical Oxygen Demand	Annually	Quarterly	mg/l as O ₂
Biochemical Oxygen Demand	Annually	Quarterly	mg/l as O ₂
Total Phosphate/Orthophosphate	Annually	Annually	mg/l as PO ₄
Potassium	Annually	Annually	mg/l as K
Sodium	Annually	Annually	mg/l as Na
Calcium	Annually	Annually	mg/l as Ca
Magnesium	Annually	Annually	mg/l as Mg
Iron	Annually	Annually	mg/l as Fe
Manganese	Annually	Annually	mg/l as Mn
Zinc	Annually	Annually	mg/l as Zn
Lead	Annually	Annually	mg/l as Pb
Copper	Annually	Annually	mg/l as Cu
Mercury	Annually	Annually	mg/l as Hg
Nickel	Annually	Annually	mg/l as Ni
Chromium	Annually	Annually	mg/l as Cr
Cadmium	Annually	Annually	mg/l as Cd
List 1/11 Organic substances (Screen)**	Annually	Annually	-
Total Coliform	Annually	Annually	cfu/100ml
Faecal Coliform	Annually	Annually	cfu/100ml

* Field and Laboratory Measurements

** Screening for priority pollutant list substances (such as US EPA volatile and/or semi-volatile compounds).

All other scheduled water sampling will be carried out by trained personnel from Bord na Móna or by a suitable firm of consultants retained by Bord na Móna. All analyses, with the exception of on-site readings, will be carried out by an accredited laboratory.

Data will be collated, tabulated and reported including interpretation and comparison with the previous year's data. This information will be presented in the AER, which will be submitted to the EPA.

In addition to the above a visual inspection of the surrounding surface water will be carried out on a daily basis to ensure that clay/mud/sand etc. is not impacting on the water quality during the construction phase. No additional monitoring of surface water will be required during the construction phase at the site.

2.2.7.8 Ecological Monitoring Programme

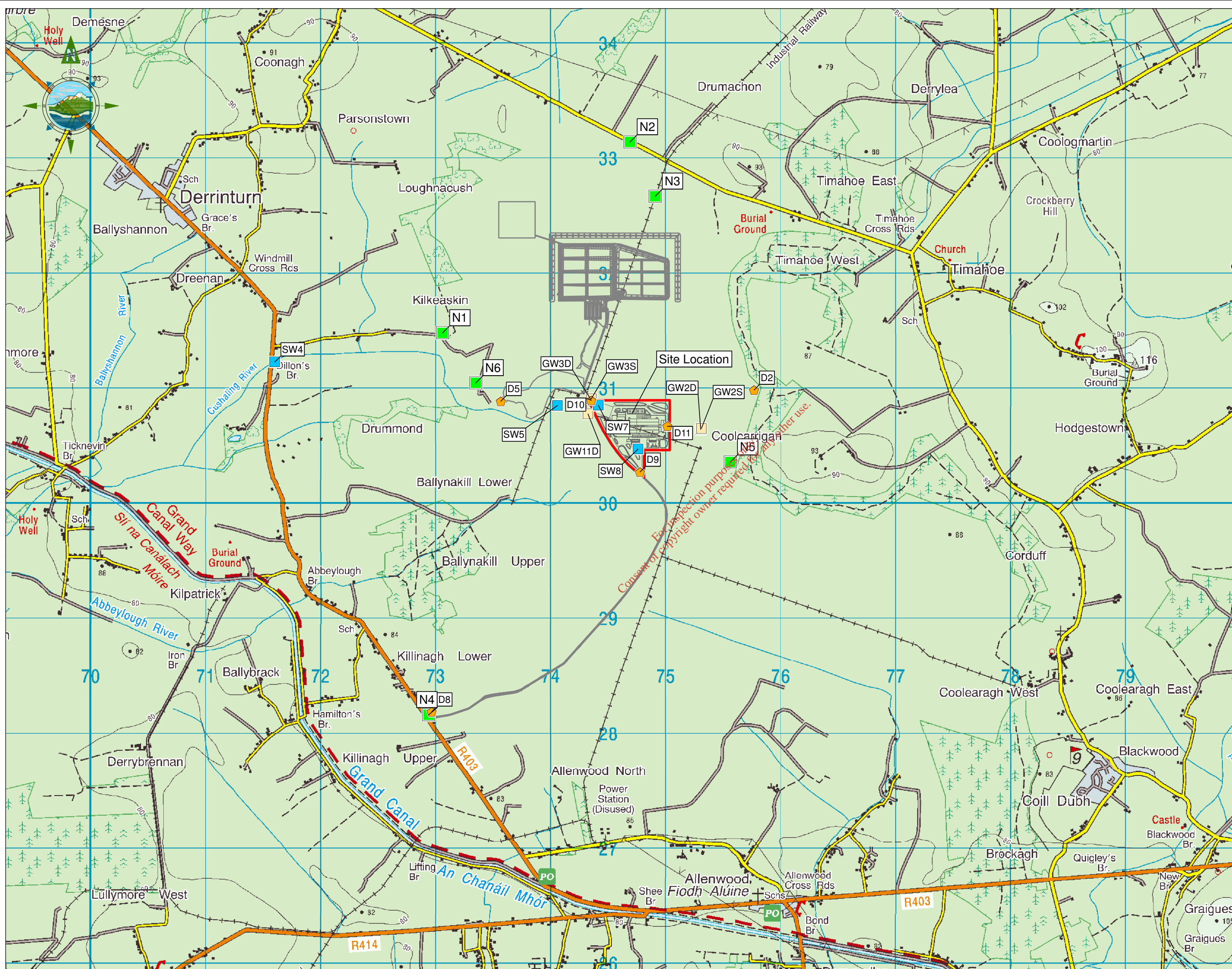
As an extended period of time may arise prior to site clearance works, it is recommended that a pre-site clearance ecological survey be conducted to update baseline ecology and determine any additional site specific recommendations for minimising impacts to potential key ecological receptors.

As frogs breed on the site it is recommended that pre-site clearance surveys of drainage ditches, in particular, be conducted to inform best practice during the site clearance phase.

It is recommended that where vermin control measures are proposed, that an ecological expert be consulted to determine suitability and control of spread (e.g. poisons) in the context of protected species in the wider landholding.

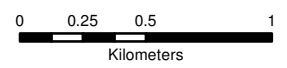
Biological Quality kick samples will be taken and analysed, in accordance with EPA guidelines, to determine the invertebrate colony of the surface water environment. Locations will be agreed with the EPA.

The MBT Facility site will be maintained and monitored on a regular basis after commencement of the proposed landscape planting scheme to confirm that the planted trees, shrubs, grasses etc. have sufficiently established at the site.



Legend

- ◆ Dust Monitoring Locations
- Surface Water Monitoring Locations
- Groundwater Monitoring Locations
- Noise Monitoring Locations
- Site Boundary
- Landownership Boundary
- ▲ Air Monitoring Locations to be agreed with EPA



- NOTES**
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
 4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Chkd.
A	05-06-12	Issued for Waste License	G.F.	J.D.

Client:
BORD NA MÓNA

Project:
 DREHID
 MECHANICAL BIOLOGICAL
 TREATMENT (MBT) FACILITY

Title:
 PROPOSED ENVIRONMENTAL
 MONITORING LOCATIONS (MBT)

Scale @ A3: 1:30,000

Prepared by:	Checked:	Date:
G.Fil	S.Tinnelly	May 2012

Project Director: D.Grehan

TOBIN
 Patrick J. Tobin & Co Ltd.
 Consulting, Civil and Structural Engineers,
 Block 10-4, Blanchardstown Corporate Park,
 Dublin 15, Ireland.
 tel: +353-(0)1-8030406
 fax: +353-(0)1-8030409
 e-mail: info@tobin.ie
 www.tobin.ie

Figure 2.5 A

2.2.8 Contingency Arrangements

2.2.8.1 Contingency Plans for any Emergency On-Site.

Any accidents and other emergencies will be handled by on-site personnel in accordance with Bord na Móna emergency response procedures. Emergency response contact numbers for the relevant authorities including the Fire Service, Gardaí, and Ambulance Services will be prominently posted on-site. All site operatives and other relevant employees of Bord na Móna will be regularly trained in emergency response procedures and in fire prevention and control.

Site safety procedures will be adopted to protect any persons from injury on-site. Should injury occur, the trained site operatives, where appropriate, will be the first to administer assistance. Emergency and first-aid materials will be available in the MBT Facility site buildings. Emergency and first-aid procedures will also be prominently displayed in the site buildings, and adjacent to the surface water settlement lagoons.

2.2.8.2 Contingency Plans for any Breakdowns On-Site

The regular maintenance of all plant and equipment utilised on-site will be undertaken in accordance with the manufacturer's guidelines. This maintenance programme will help to minimise occurrences of breakdowns on-site. In the event of any breakdown, the item of plant or equipment will be promptly repaired or replaced. As previously outlined, a maintenance building will be provided on site to facilitate this maintenance programme. All plant and equipment will be checked on a daily basis.

2.2.8.3 Contingency Plans in Respect of Absentee Staff

Off roster fully trained staff will be deployed to the site in the event of sickness to key personnel. This will also apply to general site operatives and plant operators will be sourced from local plant contractors should the need arise.

2.2.8.4 Contingency Procedures outside Normal Operating Hours

In order to supervise the SRF drying process, it is envisaged that Bord na Móna staff will be present at the MBT Facility at all times, including Sundays and Bank Holidays.

Site personnel and other employees of Bord na Móna will be available in the event of any emergency at the site outside of normal working hours. An emergency contact number will be prominently posted at the existing entrance at the R403 regional road.

Local emergency services will be informed of contact numbers for key Bord na Móna personnel. Outside normal working hours security personnel will also be provided at the site who will also have the relevant contact numbers.

These security arrangements will be implemented in order to guard against unlawful trespass and vandalism. Basic routines will exist whereby any cash, records and equipment will either be taken off-site daily or secured within the Administration and Welfare Building. These procedures will be in the interest of overall security.

2.2.8.5 Contingency Plans in the Event of Environmental Contamination

It is important to note that MBT process waste water will be fully contained and collected in process waste water tanks. The MBT process waste water collection system will be fully isolated from the surface water collection system during the lifetime of the facility.

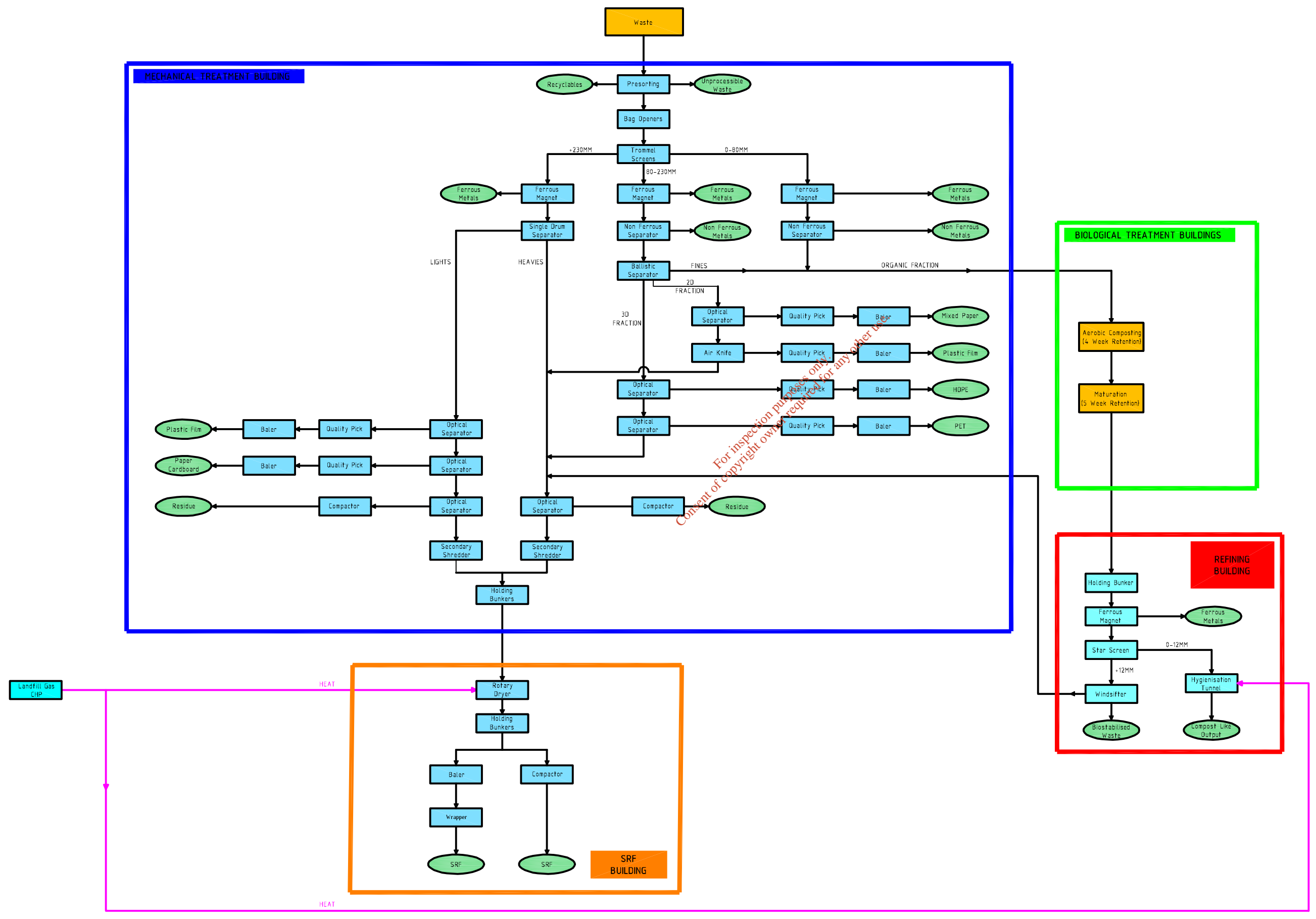
The discharge from the surface water settlement ponds to the existing surface water drainage system and eventually the Cushaling River will be monitored continuously in respect of electrical conductivity, pH, dissolved oxygen and flow rate. In the unlikely event that deterioration in the surface water quality being discharged is detected, an automated isolating valve will close. This isolating valve will allow for the retention of all surface water on-site until the contamination event is investigated and remediated.

2.3 OUTLINE OF THE MBT PROCESS –MBT WITH COMPOSTING (AND OPTIONAL DRY ANAEROBIC DIGESTION STEP)

The following sections, Section 2.3.1 and Section 2.3.2 include detailed descriptions of the two proposed configurations for Mechanical and Biological Treatment. Section 2.3.1 details the envisaged processes involved in the development of a facility for Mechanical and Biological Treatment of waste with composting only (Configuration A (MBT with Composting)). Section 2.3.2 details the envisaged processes involved in the development of a facility for Mechanical and Biological Treatment of waste with composting and dry anaerobic digestion (Configuration B (MBT with Dry Anaerobic Digestion and Composting)).

The flow diagrams for both scenarios as presented in Chapter 1 (Introduction) are also included in this section for reference. The following sections should be read in conjunction with the MBT process flow diagrams shown on Figure 2.6 and Figure 2.7 respectively.

CONFIGURATION A
(MBT WITH COMPOSTING)



Issue	Date	Description	By	Crk'd
A	27.06.12	ISSUED FOR WASTE LICENCE	M.N.	D.C.



Project:
DREHID
MECHANICAL BIOLOGICAL
TREATMENT (MBT) FACILITY

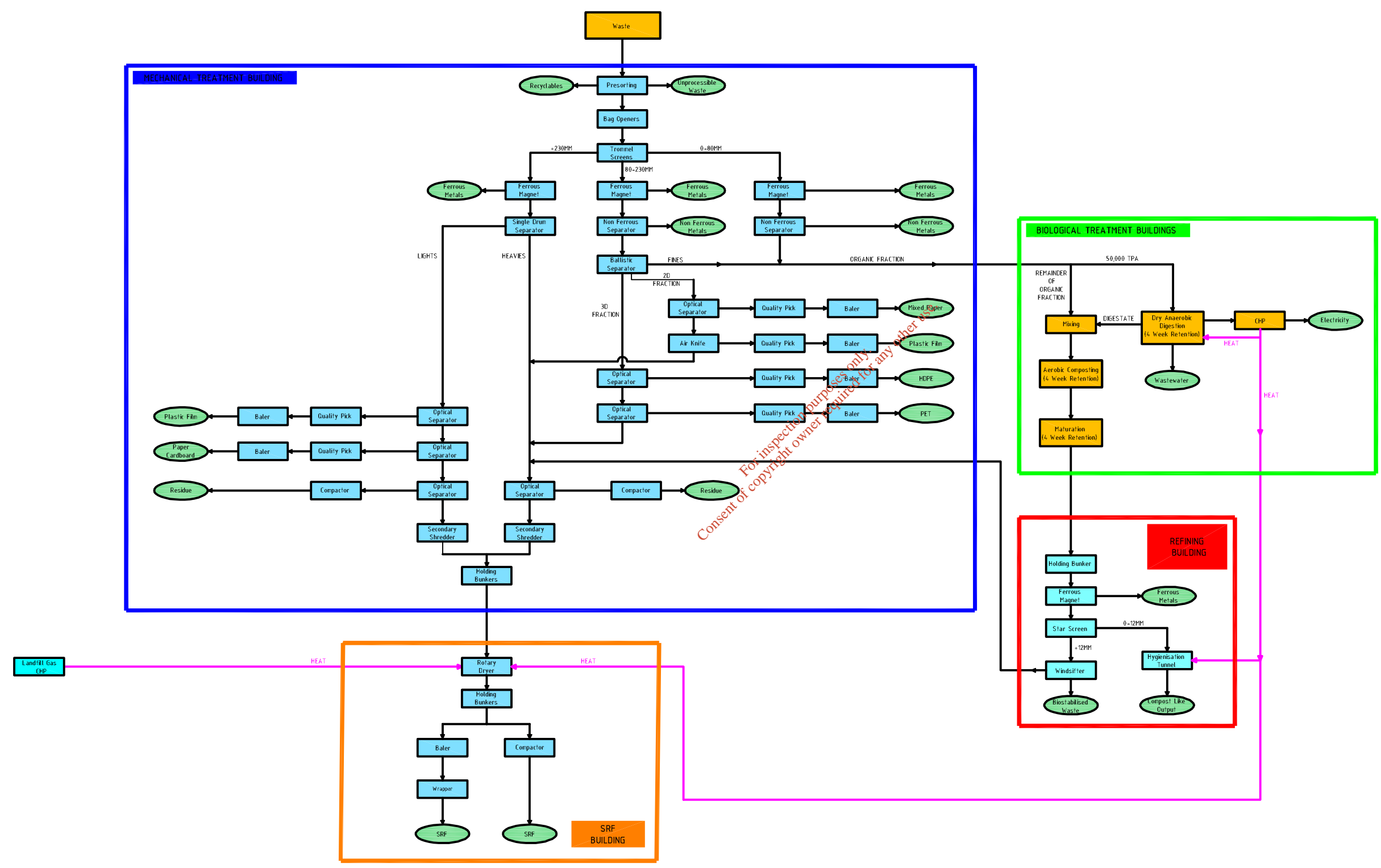
Title:
PROCESS FLOW DIAGRAM
CONFIGURATION A
(MBT WITH COMPOSTING)

Scale @ A3: NTS
Prepared by: M. Nolan
Checked: D. Conneran
Date: May 2012
Project Director: D. Grehan

Consulting, Civil and Structural Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15, Ireland.
tel: +353-(0)1-8030406
fax: +353-(0)1-8030409
e-mail: info@tobin.ie
www.tobin.ie

Drawing No.: Figure 2.6 A

CONFIGURATION B
(MBT WITH DRY ANAEROBIC DIGESTION & COMPOSTING)



Issue	Date	Description	By	Crk'd
A	27.06.12	ISSUED FOR WASTE LICENCE	M.N.	D.C.

Client:

Project:
**DREHID
MECHANICAL BIOLOGICAL
TREATMENT (MBT) FACILITY**

Title:
**PROCESS FLOW DIAGRAM
CONFIGURATION B
(MBT WITH DRY ANAEROBIC
DIGESTION & COMPOSTING)**

Scale @ A3: **NTS**

Prepared by: **M. Nolan** Checked: **D. Conneran** Date: **May 2012**

Project Director: **D. Grehan**

Consulting, CMI and Structural Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15, Ireland.
tel: +353-(0)1-8030406
fax: +353-(0)1-8030409
e-mail: info@tobin.ie
www.tobin.ie

Drawing No.: **Figure 2.7** A