

SECTION F – CONTROL & MONITORING

Sub-Section	Title	Location of Information
F.1	Treatment, Abatement, and Control Systems	WLA p.27 and Attachment F.1 EIS Vo1 1, Section 2.5
F.2	Monitoring and Sampling Points - Air	WLA p.27 and Attachment F.2
F.3	Monitoring and Sampling Points – Surface Water	WLA p.27 and Attachment F.3
F.4	Monitoring and Sampling Points – Sewer Discharge	WLA p.28 and Attachment F.4 EIS Vo1 1, Section 2.5
F.5	Monitoring and Sampling Points – Groundwater	WLA p.28 and Attachment F.5
F.6	Monitoring and Sampling Points – Noise	WLA p.28 and Attachment F.6
F.7	Monitoring and Sampling Points – Meteorological Data	WLA p.28 and Attachment F.7
F.8	Monitoring and Sampling Points – Leachate	WLA p.28 and Attachment F.8
F.9	Monitoring and Sampling Points – Landfill Gas	WLA p.29 and Attachment F.9

Figure No.	Title	Scale	Size
F.1	Proposed Environmental Monitoring Locations	1:2,500	A3

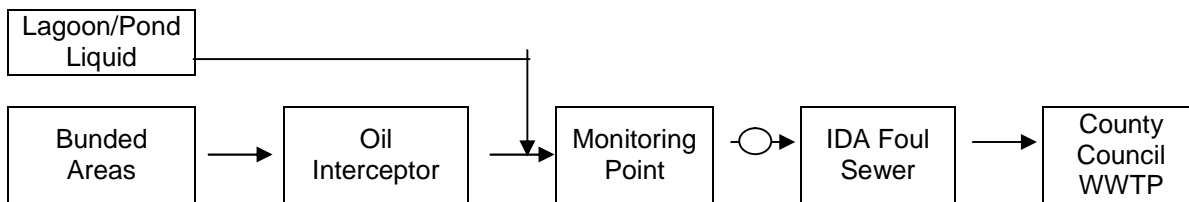
ATTACHMENT F.1
EMISSIONS AND ABATEMENT

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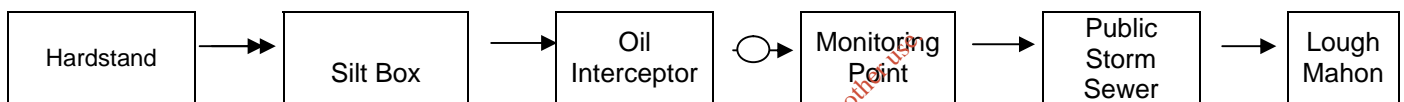
F.1 MONITORING AND SAMPLING POINTS – EMISSIONS AND ABATEMENT

The flow diagrams below show the paths taken by surface water, foul water and trade effluent leaving the facility.

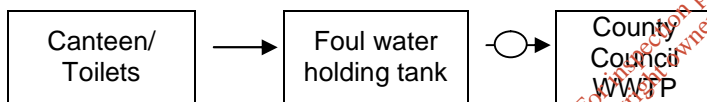
Trade Effluent SE1



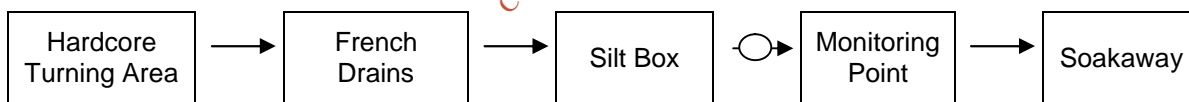
Stormwater SE2



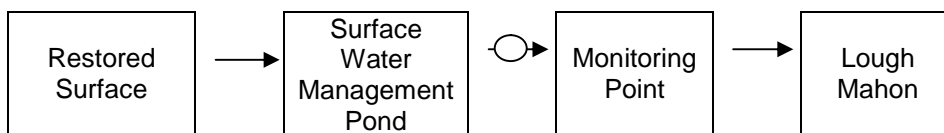
Foul Water Holding Tank SE3



Stormwater GW1



Surface Water Run-off SW1



○ = Shut Off Valve

ATTACHMENT F.2
MONITORING AND SAMPLING POINTS - AIR

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F.2 MONITORING AND SAMPLING POINTS – AIR

Dust monitoring will be carried out at locations around the facility. The locations of these will be revised from the baseline monitoring locations so that they fall inside the site boundary. Refer to Figure F.1 attached for locations.

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TABLE F2: Fugitive ENVIRONMENT MONITORING AND SAMPLING LOCATIONS

Monitoring Point Reference No : D1, D2, D3, D4

Parameter	Monitoring frequency	Accessibility of Sampling point
German TA Luft Air Quality Standards 350 mg/m ² /day	Quarterly	Fully accessible with dust poles placed around the Site

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ATTACHMENT F.3
MONITORING AND SAMPLING POINTS – SURFACE WATER

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F.3 MONITORING AND SAMPLING POINTS – SURFACE WATER

Surface water from the surface of the capped/restored areas will be collected in piped French drains running along the southern perimeter of the Facility. These drains will discharge into a Surface Water Management Pond to allow solids to settle out before drainage into Lough Mahon or pumping to the IDA Sewer. A monitoring point will be located on the discharge to Lough Mahon. Surface water ponds (Cells 13 and 15) and the stream at the eastern side of the Facility will be monitored on a quarterly basis. Refer to Figure F.1 for locations.

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TABLE F3.1 : EMISSIONS MONITORING AND SAMPLING POINTS

Emission Point Reference No(s). : SW1, SW2, SW3, SW4, SW5

Parameter	Monitoring frequency	Accessibility of Sampling Points
pH	Quarterly	Manhole
Conductivity	Quarterly	Manhole
DO	Quarterly	Manhole
Temperature	Quarterly	Manhole
Colour	Quarterly	Manhole
Odour	Quarterly	Manhole
TSS	Quarterly	Manhole
Total Oxidised Nitrogen	Quarterly	Manhole
Calcium	Quarterly	Manhole
Magnesium	Quarterly	Manhole
Potassium	Quarterly	Manhole
Fluoride	Quarterly	Manhole
Chloride	Quarterly	Manhole
Orthophosphate	Quarterly	Manhole
Sulphate	Quarterly	Manhole
Copper	Quarterly	Manhole
Iron	Quarterly	Manhole
Manganese	Quarterly	Manhole
Lead	Quarterly	Manhole
Mercury	Quarterly	Manhole
Nickel	Quarterly	Manhole
Zinc	Quarterly	Manhole

ATTACHMENT F.4
MONITORING AND SAMPLING POINTS – SEWER DISCHARGE

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F.4 MONITORING AND SAMPLING POINTS – SEWER DISCHARGE

A Trade effluent will be discharged to the IDA sewer. This will originate from the bunded fuel area, waste quarantine area and hardstand for storing skips used for segregated material. Run-off from the bunded fuel storage and loading area will pass through an oil interceptor before being discharged to the IDA sewer. The current maximum discharge volume of effluent to the IDA sewer is 1000m³/day. An inspection chamber for monitoring discharge will be constructed on the line leading to the main IDA sewer line. Discharge to the IDA sewer will be relatively low and will coincide with heavy rainfall leading to a build up of water in the bunded areas.

Surface water run-off from the macadam hardstand located at the car parking area will be directed to a silt box and oil interceptor and discharged to the stormwater sewer. An inspection chamber will be constructed before discharge to stormwater sewer for monitoring. Refer to Figure F.1 for locations.

Proposed parameters and monitoring frequency for discharge to the IDA sewer are listed below in Table F.4.1a.

As the capping of the waste surface proceeds, the quantity of the surface water run-off from the Site is expected to improve. During and post capping operations surface water run-off will be directed to a Surface Water Management Pond (SWMP) that will have a gravity outlet, with a shut off valve, to Lough Mahon. If the water quality in the SWMP is not acceptable the SWMP will be pumped to the IDA sewer. (See Figure D.1b). Refer to Figure F.1 for details of monitoring points.

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TABLE F.4.1a : EMISSIONS MONITORING AND SAMPLING POINTS

Emission Point Reference No(s). : SE1 (IDA Sewer)

Parameter	Monitoring frequency	Accessibility of Sampling Points
Flow	Continuous	Manhole before discharge
Temperature	Monthly	"
pH	Monthly	"
BOD	Monthly	"
Suspended solids	Monthly	"
Total Heavy Metals	Quarterly	"
Manganese	Monthly	"
Iron	Quarterly	"
Total Sulphide	Monthly	"
Sulphate	Monthly	"
Orthophosphate	Quarterly	"
Fats, Oils & Greases	Quarterly	"

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TABLE F.4.1.b: ABATEMENT / TREATMENT CONTROL

Emission point reference number : SE1 (IDA Sewer)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Total Petroleum Hydrocarbons	Oil Interceptor	Inspection and emptying as required	Not/Applicable	Shut-off valve

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Total Petroleum Hydrocarbons	Bi-annual water sampling for analysis	Bailer Grab Sample	Not Applicable (laboratory Testing)

TABLE F.4.2a: EMISSIONS MONITORING AND SAMPLING POINTS

Emission Point Reference No(s) : SE2 (Public Storm Sewer)

Parameter	Monitoring frequency	Accessibility of Sampling Points
Conductivity	Quarterly	Manhole before discharge
Suspended Solids	Quarterly	
Total Petroleum Hydrocarbons	Quarterly	
COD	Quarterly	

TABLE F.4.2b: ABATEMENT / TREATMENT CONTROL

Emission point reference number : SE2 (Public Storm Sewer)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Suspended Solids	Silt Box	Inspection and emptying as required	Not/Applicable	Shut-off valve
Total Petroleum Hydrocarbons	Oil Interceptor	Inspection and emptying as required	Not/Applicable	Shut-off valve

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Suspended Solids	Bi-annual water sampling for analysis	Bailer Grab Sample	Not Applicable (laboratory Testing)
Total Petroleum Hydrocarbons	Bi-annual water sampling for analysis	Bailer Grab Sample	Not Applicable (laboratory Testing)

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ATTACHMENT F.5
MONITORING AND SAMPLING POINTS - GROUNDWATER

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F.5 MONITORING AND SAMPLING POINTS – GROUNDWATER

As part of the previous licence agreement, groundwater monitoring must be carried out at five wells. The five monitoring wells originally used were MD5, MD6, MD7, MD8 and MD9. As some of these have been decommissioned it is proposed to monitor MD5, MD6B, MD7B, MD8A, MD9A and MD10B. These will be monitored biannually as part of the current IPPC licence. The groundwater emission GW1 will also be monitored on a quarterly basis. See attached Figure F.1 for locations.

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TABLE F.5.1a: Fugitive ENVIRONMENT MONITORING AND SAMPLING LOCATIONS

Monitoring Point Reference No : MD5, MD6B, MD7B, MD8A, MD9A, MD10B

Parameter	Monitoring frequency	Accessibility of Sampling point
pH Conductivity BOD Temperature Colour Odour TSS Total Oxidised Nitrogen Calcium Magnesium Potassium Fluoride Chloride Orthophosphate Sulphate Copper Iron Manganese Lead Mercury Nickel Zinc	Bi-annual	Monitoring Well

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TABLE F.5.1a: Fugitive ENVIRONMENT MONITORING AND SAMPLING LOCATIONS

Monitoring Point Reference No : GW1

Parameter	Monitoring frequency	Accessibility of Sampling point
pH Conductivity BOD Temperature Colour Odour TSS Total Oxidised Nitrogen Calcium Magnesium Potassium Fluoride Chloride Orthophosphate Sulphate Copper Iron Manganese Lead Mercury Nickel Zinc Total Petroleum Hydrocarbons	Quarterly	Manhole before discharge

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ATTACHMENT F.6
MONITORING AND SAMPLING POINTS NOISE

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F.6 MONITORING AND SAMPLING POINTS – NOISE

It is proposed to revise the base line noise monitoring locations so that they fall inside the current IPPC licence boundary and the proposed waste licence boundary. Refer to the attached Figure F.1 for revised locations. Monitoring will be carried out at these locations on an annual basis.

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TABLE F6: Fugitive ENVIRONMENT MONITORING AND SAMPLING LOCATIONS

Monitoring Point Reference No : N1, N2, N3, N4, N5, N6

Parameter	Monitoring frequency	Accessibility of Sampling point
L _{Aeq} (30 min) L _{A10} (30 min) L _{A90} (30 min) 1/3 Octave Band Analysis	Annually	Fully Accessible Locations around the Site

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ATTACHMENT F.7
MONITORING AND SAMPLING POINTS – METEOROLOGICAL DATA

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F.7 MONITORING AND SAMPLING POINTS – METEOROLOGICAL DATA

Monitoring of meteorological data will not be carried out at the Facility. There are two synoptic stations located near the Facility. One at Cork Airport ca. 10km west of the Application Site and Roche's Point ca. 15km south of the Facility. These weather stations are located in coastal regions and typify the meteorological conditions which are likely to occur on-site.

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ATTACHMENT F.8
MONITORING AND SAMPLING POINTS – LEACHATE

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F.8 MONITORING AND SAMPLING POINTS – LEACHATE

Surface water run-off from the exposed waste surface may be considered leachate. Surface water discharges and discharges to the IDA sewer will be monitored (See Attachments F.3 and F.4)

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ATTACHMENT F.9

MONITORING AND SAMPLING POINTS – LANDFILL GAS (NA)

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F.9 MONITORING AND SAMPLING POINTS – LANDFILL GAS

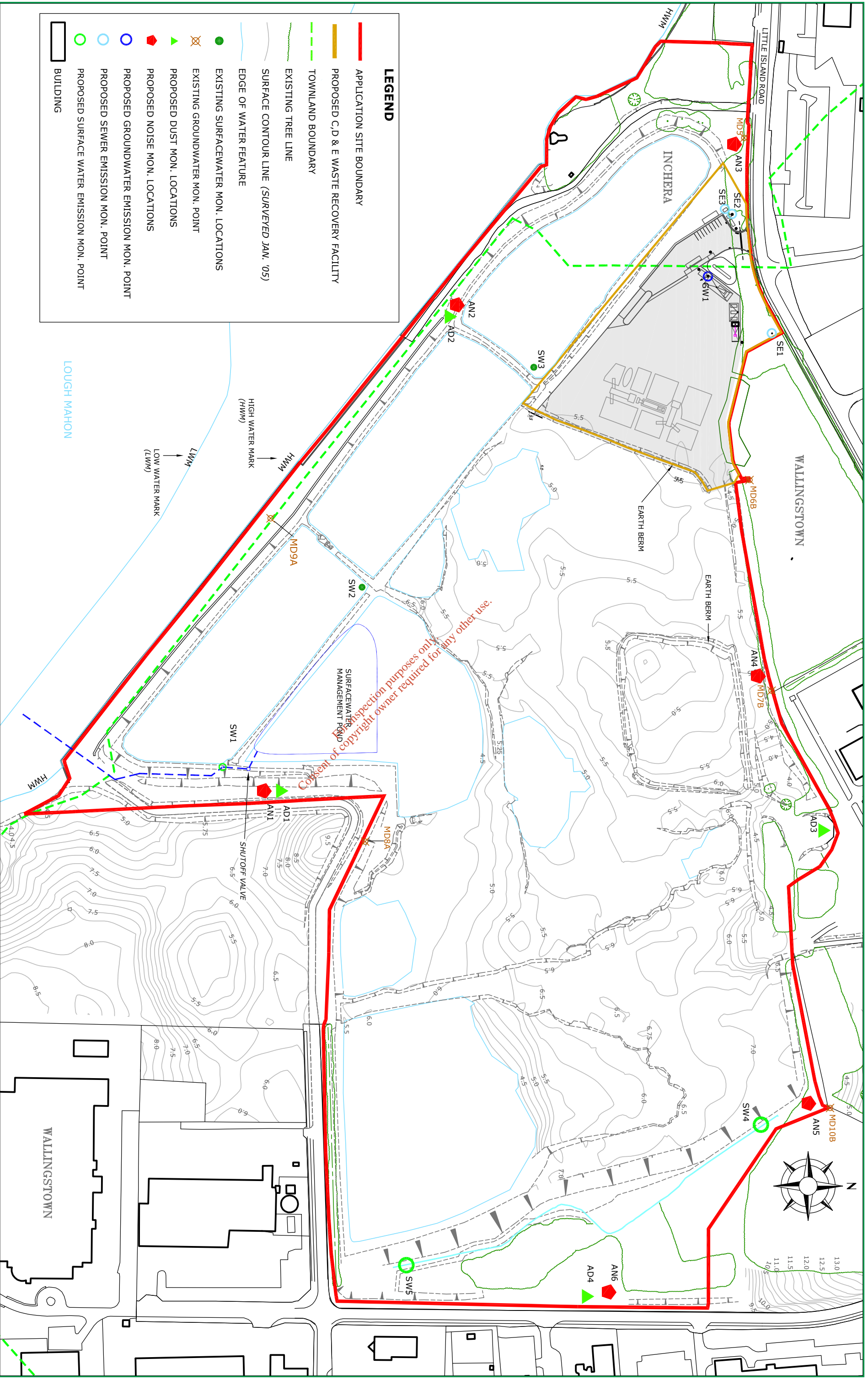
This Attachment is not applicable to this Facility as the waste accepted will not physically or chemically react or undergo any biodegradable change leading to the production of landfill gas.

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Co-ordinates for Emissions & Monitoring Points

Location	Figure No.	Easting	Northing
SE1	E.1/E.2/F.1	174050	71654
SE2	E.1/E.2/F.1	174206	71689
SE3	E.1/E.2/F.1	174117	71655
GW1	E.1/E.2	174165	71643
MD 5	F.1	174065	71669
MD 6B	F.1	174313	71673
MD 7B	F.1	174465	71689
MD 8A	F.1	174574	71395
MD 9A	F.1	174340	71327
MD 10B	F.1	174767	71731
SW1	E.1	174520	71293
SW 2	F.1	174390	71393
SW 3	F.1	174231	71517
SW 4	F.1	174779	71681
SW 5	F.1	174880	71425
AD1	F.1	174537	71322
AD2	F.1	174186	71461
AD3	F.1	174566	71726
AD4	F.1	174900	71571
AN1	F.1	174537	71322
AN2	F.1	174186	71461
AN3	F.1	174070	71663
AN4	F.1	174455	71679
AN5	F.1	174763	71716
AN6	F.1	174900	71571
D1	I.1	174521	71245
D2	I.1	174819	71537
D3	I.1	174759	71827
D4	I.1	174540	71894
D5	I.1	174242	71722
D6	I.1	174195	71490
N1	I.1	174548	71508
N2	I.1	174819	71557
N3	I.1	174533	71212
N4	I.1	174221	71716
N5	I.1	174724	71995

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LEGEND

- APPLICATION SITE BOUNDARY
- PROPOSED C, D & E WASTE RECOVERY FACILITY
- TOWNLAND BOUNDARY
- EXISTING TREE LINE
- SURFACE CONTOUR LINE (SURVEYED JAN. '05)
- EDGE OF WATER FEATURE
- EXISTING SURFACEWATER MON. LOCATIONS
- EXISTING GROUNDWATER MON. POINT
- ▲ PROPOSED DUST MON. LOCATIONS
- ◆ PROPOSED NOISE MON. LOCATIONS
- PROPOSED GROUNDWATER EMISSION MON. POINT
- PROPOSED SEWER EMISSION MON. POINT
- PROPOSED SURFACE WATER EMISSION MON. POINT
- ▭ BUILDING

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		Client: THORNBUSH HOLDINGS Ltd.	Project number: 07507120021	Created by: ODB	Issue to: ISSUE TO CLIENT	Date: MAY '08	Revision: A	Title: PROPOSED ENVIRONMENTAL MONITORING LOCATIONS	FIGURE No.: F.1
Location: WALLINGSTOWN, LITTLE ISLAND, CO. CORK		File Location: GRAPHICS\12 LAND DEVELOPMENT (AUTOCAD)\THORNBUSH\WLA\F.1	ORDNANCE SURVEY IRELAND LICENCE NUMBER: AR0056008	Engineer: DK	Issue to EPA:	MAY '08	B	Scale: 1:1,250 A1 1:2,500 A3	
Project: WASTE LICENCE APPLICATION				Reviewed by: GP					