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DECOMMISSIONING PLAN
STARRUS ECO HOLDINGS LTD
MATERIALS RECOVERY FACILITY
MILLENNIUM BUSINESS PARK
BALLYCOOLIN
COUNTY DUBLIN

INDUSTRIAL EMISSIONS LICENCE NO. W0183-01

Prepared For: -

Starrus Eco Holdings Ltd
Fassaroe
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Prepared By: -

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Project		Decommissioning Management Plan		
Client		Starrus Eco Holdings Ltd		
Report No	Date	Status	Prepared By	Reviewed By
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1. INTRODUCTION

1.1 Activity Details

Starrus Eco Holdings Ltd (SEHL) operates a Materials Recovery & Transfer facility (MRF) at Millennium Business Park, Ballycoolin, Dublin 11 under Industrial Emissions Licence (IED) (W0183-01) issued by the Environmental Protection Agency (Agency) in April 2004.

The installation is currently licensed to accept and process 220,000 tonnes of waste per annum, comprising commercial/industrial non-hazardous waste, municipal waste and construction and demolition wastes. All waste processing takes place inside the waste transfer building, as specified in Condition 4.1 of the Licence. The Agency has granted approval for the outdoor storage of wrapped bales of Solid Recovered Fuel (SRF).

A Closure and Decommissioning Plan (Plan) was prepared in 2013. SEHL appointed O’Callaghan Moran & Associates (OCM) to revise and update this Plan. The methodology followed the EPA Guidance on assessing and costing environmental liabilities (2014).

1.2 Site Description

The installation occupies 4.45 hectares (ha) in the east of the Millennium Business Park, Ballycoolin, Dublin 11 (Figure 1.1). It is intended to develop the facility in a number of Phases. Phases 1 and 2 opened in July 2006 and involved the construction of the Materials Recovery Facility (MRF) building and supporting ancillaries as shown on Figure 1.2. The licence allows for the construction of a biowaste treatment building but this has not yet been constructed. The Business Park (Park) is accessed via the Cappagh Road, the entrance to the installation is off an internal road within the Park.

1.3 Commencement of Operations

In 2004, An Bord Pleanála granted planning permission for the construction of the facility and construction began in January 2005 with the construction of Phase 1 and 2. Prior to this construction the installation was agricultural purposes. There is no record or evidence of any previous development on the site.

The Agency granted Greenstar a Waste Licence (Reg No. W0183-01) in April 2004. The Licence was transferred to SEHL on the 4th March 2014. The Licence was transitioned to an Industrial Emissions Licence (IED) on the 16th December 2015.

1.4 Closure Scenario and Scope

The installation has no defined lifetime and the risk of closure is low. The commercial viability of the installation will be kept under review and, if market conditions dictate the need to close the installation, the Agency will be notified and the Plan will be implemented. Following a planned closure SEHL may, depending, on the future plans for the installation, apply to surrender the licence.

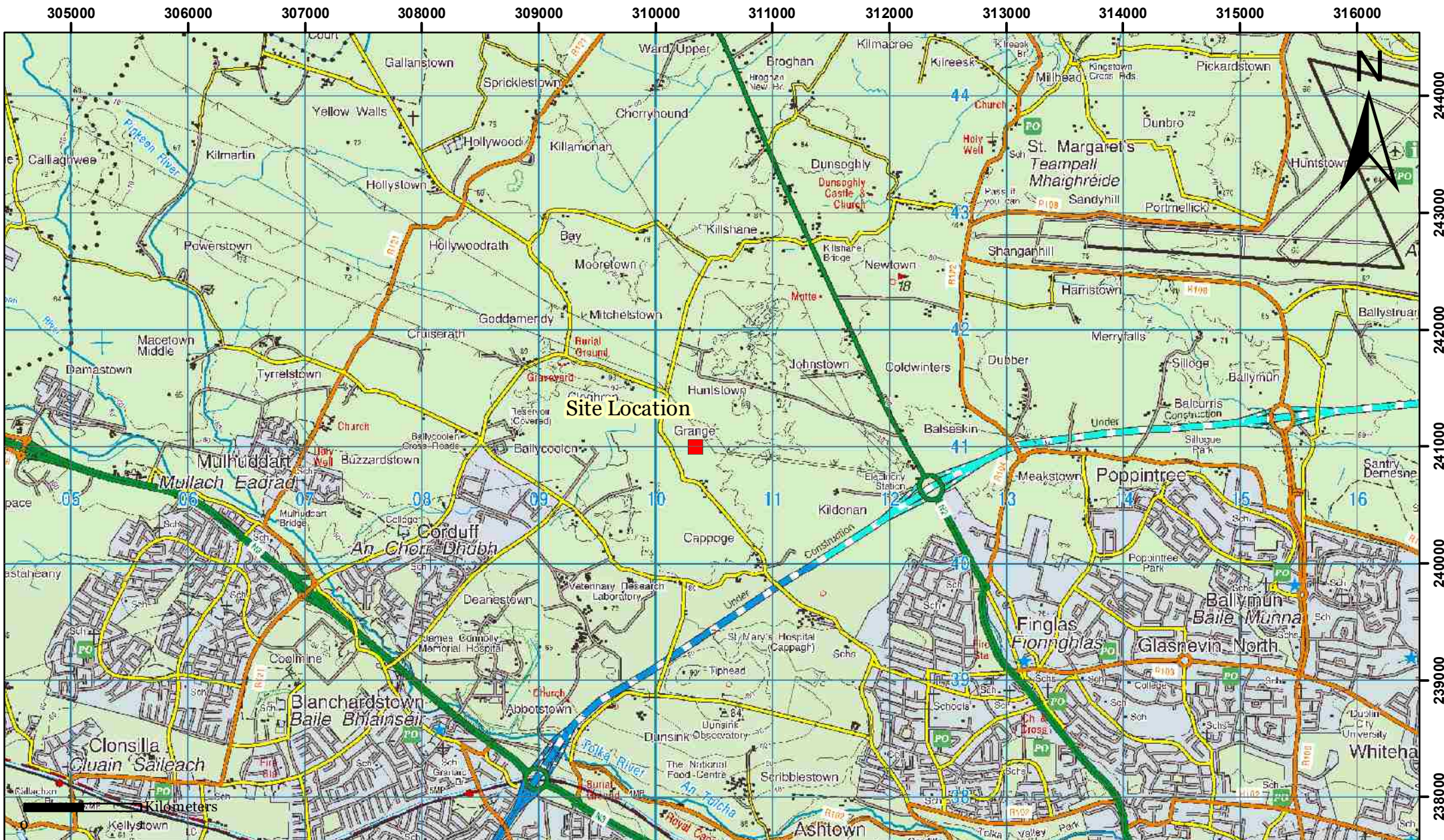
For the purpose of costing this Plan, it has been assumed, in accordance with the Agency's Guidance, that the plant will close unexpectedly and that the Plan will be implemented by third parties contracted by the Agency.

1.5 Restoration and Aftercare Plan

At the time of the preparation of this plan a Restoration and Aftercare Plan was not considered necessary.

1.6 Limitations

The assessment of costs associated with the implementation of the Plan is based on the information available at the time of the report preparation, including the Agency's Guidance, and may be subject to amendment based on future investigations.



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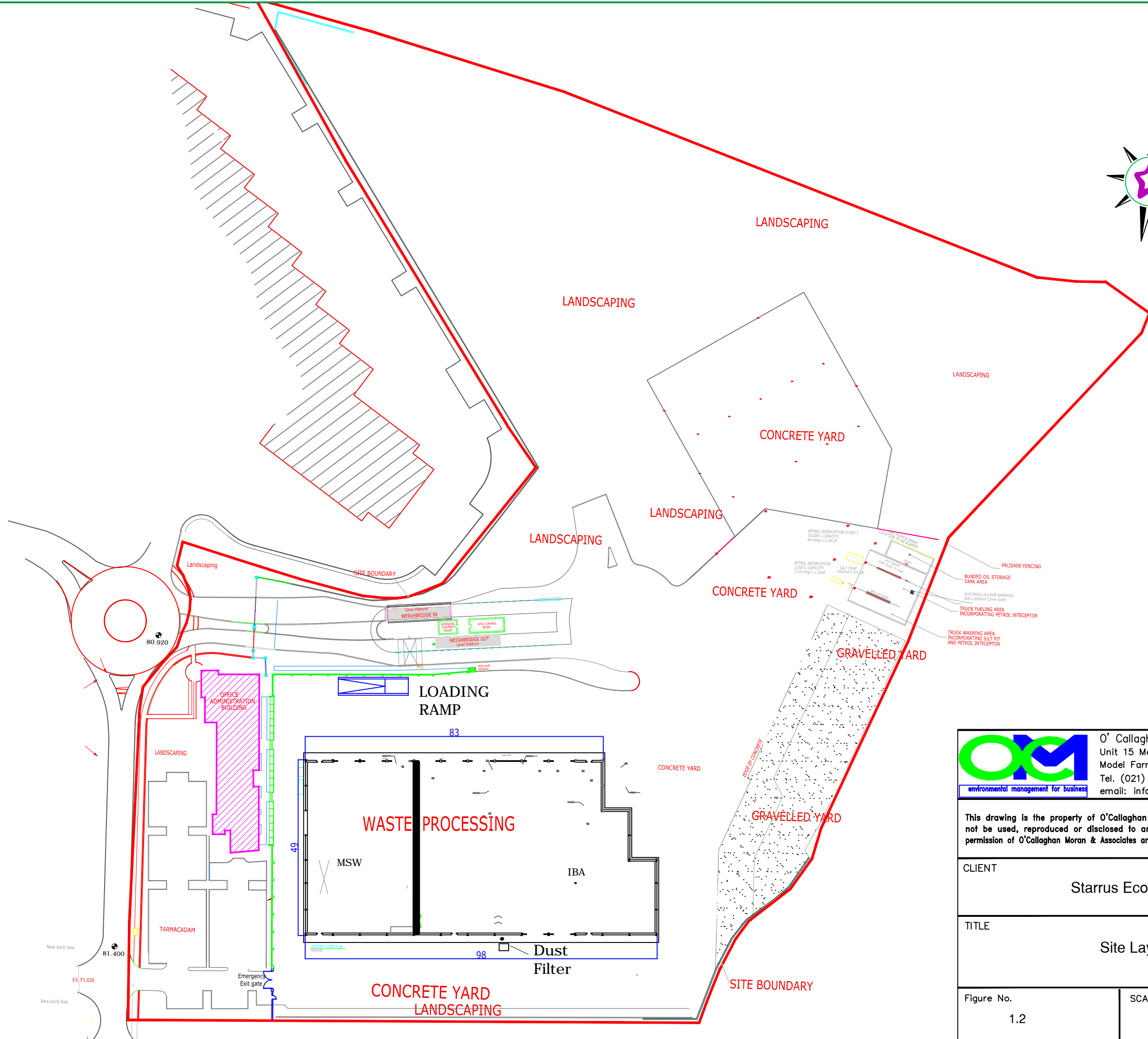
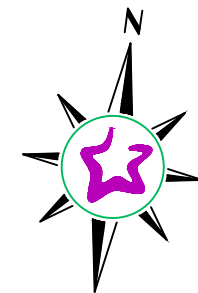
CLIENT
 Starrus Eco Holdings Ltd.


TITLE
 Site Location

Details:
■ Site Location

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Figure 1.1




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CLIENT
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TITLE
 Site Layout

Figure No. 1.2	SCALE NTS
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2. SITE EVALUATION

2.1 Operator Performance

2.1.1 Facility Management

SEHL has prepared a documented Environmental Management Programme (EMP) which serves as a guidance document for installation staff and describes operational control and management practices. The EMP is a core element of the installation's Environmental Management System (EMS). All operatives are provided with the appropriate and necessary training to complete their assigned tasks.

2.1.2 Compliance History

In 2016, the installation received one (1 No.) non-compliance in relation to waste management. In 2017, the installation received one (1 No.) non-compliance in relation to bunding and materials handling.

2.1.3 Enforcement History

The installation has never been the subject of any enforcement action taken by the regulatory authorities.

2.1.4 Incidents History

There were no reportable incidents at the installation in 2016.

2.1.5 Complaints History

SEHL maintains a register of complaints received in accordance with Condition 9.4 of the licence. No complaints were received in 2016.

2.2 Environmental Pathways & Sensitivities

2.2.1 Surface Water

Rainwater run-off from the building roofs, car parks and areas of the yard where wastes are not stored, used to discharge to the municipal storm water sewer and the quality was monitored at two locations.

In 2013, the surface water monitoring identified contamination. As part of the investigation SEHL contacted the Millennium Business Park Management Company who informed it that there was a problem with the flow in the sewer system serving the Business Park, which was causing back flow into the installation resulting in stagnant and nutrient rich water collecting at the monitoring locations.

Responsibility for addressing the drainage problems rests with the Management Company and, pending the resolution, the surface water run-off from the site has been diverted to the foul sewer. Therefore there are currently no emissions to surface water; however it is intended to recommence emissions to the surface water sewer serving the Business Park once the Management Company has resolved the drainage problems.

2.2.2 Foul Water

Floor wash water from the Materials Recovery building, wash water from the vehicle cleaning area and run off from hard-standing associated with waste handling, storage and processing discharges to the foul sewer serving the Business Park via a silt trap and oil interceptor.

2.2.3 Geology & Hydrogeology

Geotechnical site investigations undertaken at the Business Park indicate that the subsoils range in thickness from less than 1.3 m to 8.45 m. At the installation, the thickness is thin in the north-western portion of the site and thickens to the east and south. Information from the Geological Survey of Ireland (GSI) suggests a similar range in subsoil thickness locally in the surrounding area. The subsoil comprises sandy gravelly boulder clays.

The bedrock locally comprises calcareous, shale, limestone, conglomerate of the Tober Coleen Formation. Based on data obtained from the GSI the bedrock aquifer is a locally important (**Lm**) aquifer that is productive in local zones. The aquifer vulnerability rating is Extreme (**E**).

2.2.4 *Neighbouring Developments*

The installation is located within an existing business park. The installation is bound to the north and east by a quarry operated by Roadstone Wood and to the west and south by other business premises within Millennium Business Park. The site is traversed from north-west to south-east by the Finglas to Woodlands high voltage (220kV) overhead power lines. The Finglas to Macetown high voltage (100kV) overhead power line runs from east to west along the southern site boundary.

The nearest occupied dwelling, 200 m to the south of the site, is screened by the hedgerow bordering Millennium Business Park as well as screening bordering the residence.

2.2.5 *Designated Sites*

There are no Natural Heritage Areas, Special Areas of Conservation (SAC) or Special Protection Areas (SPA) within 10 km of the installation.

2.2.6 *Emissions*

Site operations are a source of noise and the licence specifies noise emission levels for the nearest noise sensitive locations. Operations are also a potential source of dust emissions and the licence specifies measures to control odour and dust emissions.

There are no environmental emissions to surface water or groundwater. All surface water and foul water is directed to an oil interceptor before discharging to the sewer within the Business Park.

2.3 **Site Processes & Activities**

The installation is licensed to accept the following waste types and quantities, as specified in Schedule A of the Licence

- Municipal Waste (100,000 tonnes),
- Commercial & Industrial (90,000 tonnes),
- Construction & Demolition (30,000 tonnes).

No hazardous wastes or liquid waste are accepted at the facility.

The Materials Recovery building was designed to accommodate distinct waste handling areas for the Commercial and Industrial (C&I) waste, Municipal Solid Waste (MSW) and Construction and Demolition (C&D) waste. Each area has separate access for loading and unloading and waste sorting, processing and storage.

Over time the types of waste accepted and the method of processing changed. In 2014 the C&D and C&I processing line were removed and the processing of C&I and C&D waste ceased. The site continued to accept C&D waste, primarily household skip waste and residual household MSW and food waste. These wastes are bulked up and sent to other waste management facilities for treatment. Loose and baled SRF produced at other waste management facilities is accepted and stored at the site. The loose SRF is stored inside the building, while the bales are stored in a designated open area.

2.4 Plant Inventory

The operational area comprises three adjoining Recycling Buildings (Building No 1, No 2 and No 3) that are used for waste processing and storage; a Workshop; Fabrication Shop; Weighbridge and Weighbridge Office; Office and Canteen; Staff Car Park and open yards that are used for truck parking and skip storage. Details of the site infrastructure are presented in Table 2.1-

Table 2.1 – Site Infrastructure

Ref	Infrastructure	Details
1	Administration Building	Located at the north-eastern boundary.
2	Main Processing Buildings	2533m ² . Reinforced concrete floors precast lower (3.5m high) walls and upper walls and roof composed of metal cladding
3	Workshop	286m ²
4	Fabrication Building	
5	1 No Double Weighbridge	Located close to the facility entrance, with potakabin offices
6	Diesel Storage Tank	1 No. 30,000 litre
7	Kerosene Tank	1 No 200 litre
8	Engine/lubricating oil Tanks	2 No. 1500 litre
9	Electrical Sub-station	
10	Underground wastewater storage tanks	2 No combined capacity 8m ³ .
11	Hardstanding	8,605m ²
12	Oil Interceptor	Klargester KF 100 full retention interceptor
13	Puraflow WWTP	No discharge to ground

Installation operations require the use of a range of fixed and mobile plants which are listed in Table 2.2.

Table 2.2 Plant and Equipment

Type of Plant	Number
Front Loading Shovel	1
Forklifts	2
Grab Machine	1

2.5 Inventory of Raw Materials & Wastes

The site contains two 2,500 litre self-bunded plastic tanks containing diesel. Relatively small volumes of chemicals and hydrocarbons are stored on site, such as paints or white spirit for maintenance purposes, drums of hydraulic oils for maintenance of machinery, engine oils and anti-freeze etc. These materials are stored on pallets in the maintenance shed.

At any one time the maximum amount of waste stored on site is 4,600 tonnes, comprising mainly mixed municipal waste and dry recyclables (Table 2.3).

Table 2.3 – Materials Inventory

Wastes/Products	Quantity Stored
Mixed C & D	100
MMW	100
Organics	25
Batteries	1
Metal	20
Dry Waste	100
Timber	45
Non Ferrous Metals	6
Tyres	6
Cylinders	1
DMR	50
SRF	4000
Mattress	30
Diesel	5,000 litres
Engine and Lubricating Oil	200 litres
AdBlu	50 litres

The quantities given in the Table are based on the volumes kept on site at any one time, but in the event of the planned closure the actual quantities should be considerably smaller, as the shutdown would be preceded by a reduction in the on-site inventory.

3. CLOSURE TASKS & PROGRAMMES

3.1 Closure Tasks

3.1.1 *Materials Management*

A planned shutdown of operations would be carried out after the last batches of waste received at the site had been processed and consigned. It would be preceded by a scaling down of activities, thereby reducing the quantities of materials, particularly fuel and wastes, to be dealt with when implementing the Plan.

The diesel, engine and lubricating oils will be used in the plant and equipment deployed in the decommissioning works. When these are completed, it should be possible to return some of the diesel, engine and hydraulic oils to the suppliers either for resale, or reuse.

A vacuum tanker will empty the oil interceptor and the wastewater storage sumps and the contents will be sent for disposal at a suitably licensed facility.

3.1.2 *Buildings*

It is not proposed to demolish any of the buildings, but they will be cleaned out and left in situ for future use. Given the nature of the waste handled at the facility, specialist decontamination of the Main Processing Buildings will not be required and the cleaning will primarily involve the use of a road sweeper to clean the floor. Decontamination will not be required in the Workshop.

3.1.3 *Plant & Equipment*

In the event of a planned closure, the plant and equipment will be either sent to other SEHL installations, sold for use, or scrapped at an approved waste recycling/recovery facility. At the time of the preparation of this Plan it is not possible to accurately quantify every item of plant that would be suitable for resale, as this depends on their future condition. Those items of plant that cannot be sold will be scrapped. All the metal items have a scrap value and therefore the removal of the plant and equipment should be cost neutral.

3.1.4 Interceptors & Drains

All surface water and foul water drainage pipes will be flushed using water. The interceptors and storage tanks will be cleaned and the contents removed off site for treatment.

3.1.5 Services

The telecom and electricity supply services will be disconnected.

3.1.6 Soil & Groundwater Assessment

The objective of the assessment is to determine the impact, if any that licensed activities have had on the baseline soil and groundwater conditions, which were determined by the site investigations completed in 2007, 2008, 2012 and 2015 and by the on-going groundwater monitoring programme.

The scope of the assessment will be agreed in advance with the Agency, but it may comprise the installation of soil borings and groundwater monitoring wells and the collection and testing of soil and groundwater samples. The investigations will be supervised by an experienced geologist who will log the borings in accordance with BS5930, as amended and adopted by the GSI.

The field observations and results of laboratory results will form the basis for the assessment of the significance of the impact, if any, and the need for and extent of any remedial works. If remedial works are considered necessary, a proposed scope will be submitted to the Agency for approval before implementation.

3.1.7 Environmental Monitoring

Monitoring will continue following the closure of the installation and pending the surrender of the Licence. The extent of the monitoring and the frequency may be amended, subject to the Agency's approval, to reflect the fact that the installation is closed.

3.2 Closure Programme

In the event that the entire facility is closed all the operational areas will be decommissioned. The works will be carried out by a third party contracted by the Agency. The decommissioning of the operational area will take approximately 6 weeks (Figure 3.1) and will be carried out in a number of tasks, some of which will happen concurrently.

Figure 3.1 Decommissioning Plan Schedule			Week						
	START	DURATION	1	2	3	4	5	6	7
Tasks									
Task 1 Removal of wastes and consumables	1	3	■	■	■		■		■
Task 2 Cleaning and removal of plant and equipment	3	2			■	■			
Task 3 Empty and clean oil storage	4	1				■			
Task 4 Clean-out of buildings.	3	3			■	■	■		
Task 5 Empty and clean interceptors	5	1					■		
Task 6 Wash-out of drains	5	1					■		
Task 7 Soil and groundwater assessment	4	3				■	■	■	
Task 8 Clean yards	6	1						■	
Task 9 Disconnecting services	6	1						■	
Task 10 Closure audit	7	1							■

4. CRITERIA FOR SUCCESSFUL CLOSURE

Successful closure will only be complete when:

- All consumables, wastes and residual materials have either been treated onsite, or consigned to appropriately authorised recovery/disposal facilities;
- Records of all wastes, materials and plant removed from the site have been prepared;
- All buildings have been cleaned out and services disconnected;
- A site investigation, if required, confirms that soil and groundwater conditions present no significant environmental risk;
- The environmental monitoring confirms no impact associated with the closure and decommissioning works;
- A Closure Audit has been completed and approved by the Agency.

5. CLOSURE PLAN VALIDATION

5.1 Closure Audit & Validation Report

Following the completion of the site clean out an experienced independent environmental auditor will carry out a Closure Audit, and produce a Validation Report that demonstrates the successful implementation of the Plan. The Closure Audit will address: -

1. Disposal of raw materials;
2. Disposal of wastes;
3. Decommissioning of plant and equipment;
4. Disposal of obsolete equipment;
5. Results of monitoring and testing during the decommissioning period;
6. Soil & Groundwater Assessment, and
7. The need for on-going monitoring, remedial actions or aftercare management.

The Validation Report will describe all of the activities carried out during the Closure Audit, and will contain records of the destinations of all wastes and materials consigned from the site during decommissioning.

6. CLOSURE PLAN COSTING

The costs of a planned closure will be met in full by SEHL. The costs of implementing the Plan in an unplanned closure scenario, where SEHL is not in a position to meet the costs are presented in Table 6.1. The costs are based on the following assumptions:

- The closure will be unforeseen and unexpected with no advance warning that would allow an orderly wind down of activities.
- The entire installation will be decommissioned and cleaned, with all wastes, end of waste and consumables and office equipment removed from the site. The buildings and storage tanks will not be demolished. The mobile plant will be removed from the site and either sold or scrapped.
- The decommissioning and building and plant cleaning will be carried out by appropriately trained and experienced Temporary Site Management Team appointed by the Agency and will be completed in 6 weeks. The Team will include a Site Manager and 3 No operatives to implement the decommissioning and clean out.
- Specialised contractors will be hired in to empty and clean the interceptors and all associated drainage pipework and this is costed separately. The costs are based on those for the decontamination of storage tanks in the Agency's Guidance on Assessing and Costing Environmental Liabilities: Unit rate costs for verification.
- The quantity of materials and wastes on site will be as listed in Table 2.3.
- A soil and groundwater assessment will be carried out. At the time of the preparation of this report there was no evidence of any significant contamination that would require remedial works. It is assumed that any incidents that occur when the site is operational will be investigated and remediated as part of on-going operations.
- The rates applied are a combination of those currently incurred by SEHL and the costs in the EPA's guidance.
- A contingency of 20% is made.

Table 6.1 DMP Costs

	LoW Code	Waste Disposal	Tonnage on site	Disposal Costs per tonne (€)	Processing/ tonne (€)	Loading cost/tonne (€)	Transport cost/tonne (€)	Admin cost/tonne (€)	Total Cost (€)	Potential Value / tonne (€)	Revenue Value (€)
		Alternative Destination	On site							Value/Tn	Value €
Mixed C & D	170904	Thorntons	100	50		1.96	6	1.23	5,919		
MMW	200301	IPR	100	111.5		1.96	8.5	1.23	12,319		
Organics	200108	Thorntons	25	70		1.96	0	1.23	1,830		
Batteries	160601*	Wilton Waste	1	0		1.96	0	1.23	3		0
Metal	191202	Multimetals	20	0		1.96	0	1.23	64	-150	-3,000
Dry Waste	191212	Thorntons	100	82.5		1.96	7.5	1.23	9,319		0
Timber	191207	Thorntons	45	50		1.96	7.5	1.23	2,731		0
Non Ferrous Metals	191203	Multimetals	6	45		1.96	0	1.23	289	-200	-1,200
Tyres	160103	IPR	6	100		1.96	6	1.23	655		0
Cylinders	160505	Calor Gas/Flo Gas	1	0		1.96	0	1.23	3		0
DMR	200301	DCC MRF	50	0		1.96	6	1.23	459	-60	-3,000
SRF	191210	Lagan	4000	45	0.5	1.96	5	1.23	214,756		
Mattress	200307	Thorntons	30	50		1.96	6	1.23	1,776		
Waste Water Holding Tank	161002	Navan WWTP	150	5		1.96	6.5	1.23	2,203		
Drain & Tanks Jet Vac Cleaning									1,880		
Oil Interceptor & Bunds	130503*	Rilta/Enva	20	90			6.5		1,930		
Plant/Building Clean down - 2 men/2 days and Equipment									2,250		
Insurance Cover - E/L P/L - 4 weeks									4,000		
Utility Costs - Electricity & Water - 4 weeks									1,000		
Fuel - Derv				0						-1	0
Fuel - Add Blue										-0.3	0
Fuel - Gas Oil			2	0						-0.7	-1
Surface water monitoring as per schedule c.2.2									592		
Security - Based on current rates - 4 Weeks									24,000		
Tns ex Diesel Diesel & Liquid			4484						287,979		-7,201
Contingency (20%)									57,596		
Total									345,575		

Notes

Security

Based on current rates at per day cost

Fuel is maximum purchased litres

Utility based on estimated office power and amenities,
and yard lighting

Liquid Waste loading costs included in
transport costs

No TFS required, no export from this
facility.

Revenue related product:

There is a real revenue value on these products totalling €7,201 that the EPA can
achieve.

This has not been considered by the EPA
in arriving at total cost.

Also there is potential revenue from sale of yard sheds and plant and equipment which has not
been factored into the costs.

has also not been considered in arriving at
total cost

Weeks			2
Loading/Handling	Loader	1,400	2,800
			0
	Track	800	1,600
	2 Men	1,600	3,200
	Diesel	600	<u>1,200</u>
			<u>8,800</u>
	Tns/Hr	4484	1.96
Admin	Weigh Op	750	1500
	Manager	1000	2000
	Procurement	2,000	2,000
		4484	5500
	Tns/Hr		1.23
Drains/Waste	Weeks		0.4
Water	JetVac incl		
Tank/Bunds	Man Hours	4250	1700
Disposal - Est			
Ltrs	6000	0.03	<u>180</u>
			1880