

# CLOSURE AND DECOMMISSIONING PLAN (CDP)

**For Forge Hill Materials Recovery Facility (MRF)**

Prepared for: Forge Hill Recycling  
Site Reference No. W0291-01

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## DOCUMENT CONTROL

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## BASIS OF REPORT

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## 1.0 Introduction and Background

SLR Consulting Ireland (SLR) has prepared this independent Closure and Decommissioning Plan (CDP) in relation to the operation of a Materials Recovery Facility (MRF) at Forge Hill, Cork, operated by Forge Hill Recycling Ltd. This report will be submitted to the EPA in compliance with the requirements of Condition 10.3 of Waste Licence No. W0271-01. This CDP is consistent with EPA guidance provided in the 2014 published document “*Guidance on Assessing and Costing Environmental Liabilities*”.

The site was previously operated by Ipodec/Onyx/Veolia/Greenstar as a MRF under Waste Licence No. W0173-01. The site was closed in 2011 and the previous licence has now expired. It is notable that the previous site closure was orderly and carried out in a manner that was agreed with the Agency, leaving a valuable asset with no significant liabilities.

**Photo 1 – Forge Hill Materials Recovery Facility**



### 1.1 About SLR Consulting

SLR is a major international environmental consultancy, employing over 1,000 technical staff. SLR has 2 offices in Ireland as well as 22 offices in the UK, 9 offices in the United States, 16 offices across Canada, 8 in Australia (with further offices in New Zealand and Singapore) and offices in Namibia and South Africa.

Recent Clients include national governments, government departments (in Ireland, the UK and overseas) international lending agencies, the European Union, regional and local authorities, SMEs, waste treatment technology providers and private sector waste management companies.

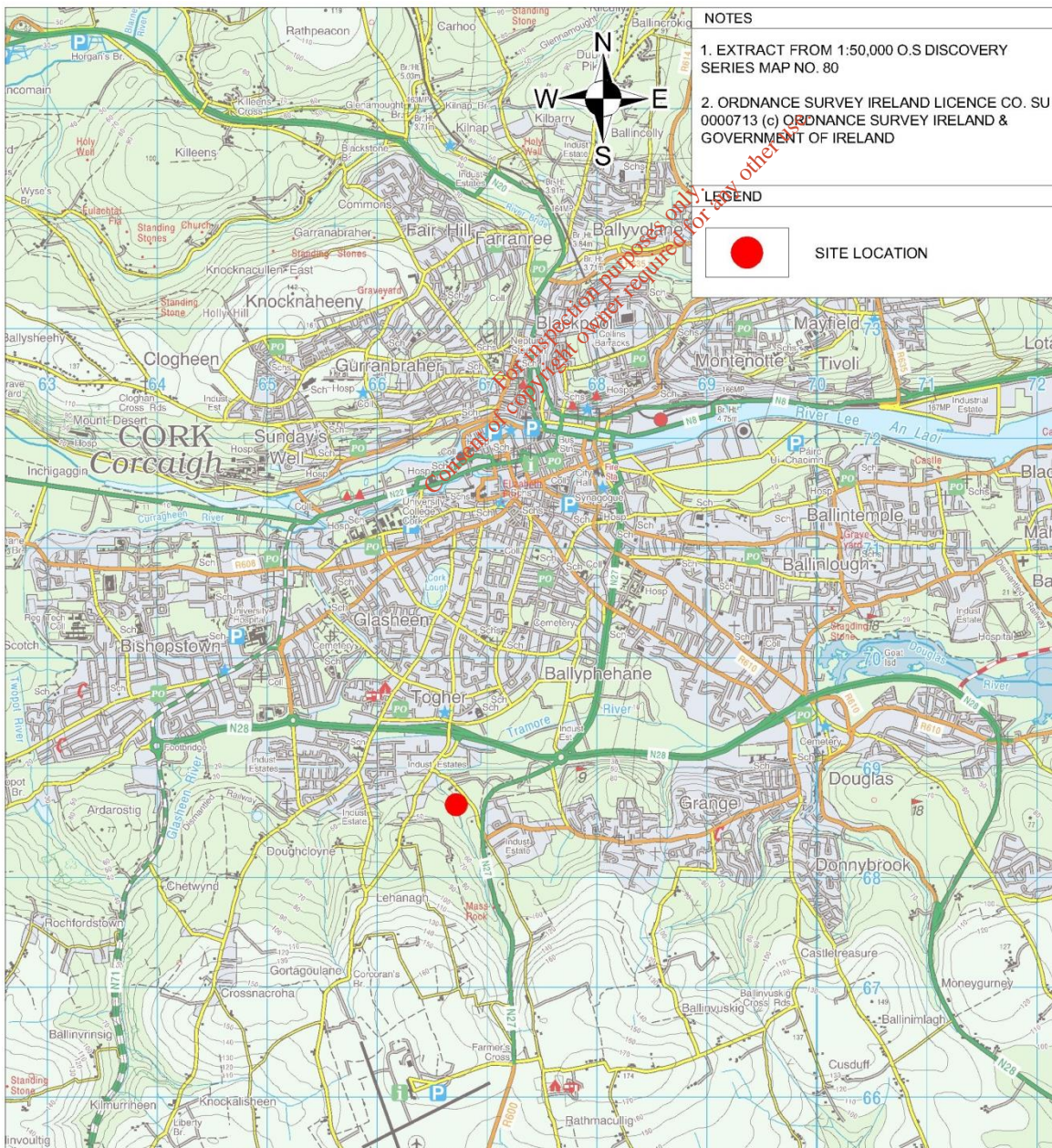
SLR has one of the largest teams of planning and environmental experts in Ireland and the UK and undertakes projects throughout Europe, North America, South Africa, Australia and further afield. Of the 400 staff employed in the UK and Ireland over 200 are employed on a near full time basis on waste management related projects.

### 1.2 Site Location

The existing MRF at Forge Hill, Cork is located on the southern fringe of Cork City, within the townland of Ballycurreen. The facility covers an area of approximately 1.03 hectares (2.48 acres) and is accessed from the Forge Hill Road via a junction on the N27 National Primary Road (Kinsale Road) leading from the N40 Southern Ring Road to Cork Airport. Greenstar’s (Starrus Eco Holding’s) Waste operations at the facility ceased in September 2011 and FHRL’s operations commenced in 2016.

The location of the facility is shown in Figure 1 below.

Figure 1 – Site Location



The MRF facility is located within the Forge Hill Business Park and is bounded to the north and south by other industrial and commercial premises. It is bounded to the west by a public road (Forge Hill) with other industrial premises on the opposite side of the road. To the east of the site is an area of undeveloped Greenfield land and beyond that is the N27 Kinsale Road. Figure 2 below shows an aerial view of the site and the surrounding area.

**Figure 2 – Aerial View of Site and Surrounding Area (from Microsoft Bing Maps)**



### 1.3 Site Description

The Forge Hill MRF commenced operation as a waste facility in the late 1970s. In September 2003, a waste licence (ref. no. W0173-01) was obtained for the facility by its operator at the time, IPODEC Ireland Limited.

The facility was licensed to accept and process up to 82,000 tonnes of mixed non-hazardous, municipal, commercial, industrial and commercial / demolition waste annually. Up to the time of its closure in 2011, this comprised:

- 25,000 tonnes of Municipal (Household) Waste
- 46,600 tonnes of Commercial Waste
- 6,400 tonnes of Industrial Waste
- 4,000 tonnes of Construction and Demolition (C&D) Waste.

No hazardous waste (in solid or liquid form) was accepted or processed at the facility.

IPODEC became Onyx and then Veolia Environmental Services through international mergers and/or acquisitions. Greenstar then purchased Veolia's waste management business in the Republic of Ireland and operated the site for a short period before the licence was transferred in 2013 to Starrus Eco Holdings Ltd, which is a company

controlled by Cerberus Capital Management. During the previous operation of the MRF, the site was leased, rather than owned by the operator. The site has now been purchased by Mr. Sean Murphy, the Managing Director of Forge Hill Recycling Ltd (FHRL) and also the Managing Director of Killarney Waste Disposal Ltd.

FHRL acquired a waste permit<sup>1</sup> to operate a MRF at the site with a limited throughput of 50,000 t/a of mixed dry recyclables. FHRL is now operating the site under a Waste Licence with an increased throughput of 82,000 t/a, which is consistent with the planning permission for the site.

All waste acceptance, handling and processing is undertaken indoors, within the material recovery buildings. The layout and details of the facility are shown on Drawings prepared by Brian O'Kennedy & Associates Ltd and included in the Waste Licence Application. There are a number of buildings on site. The main waste transfer and handling buildings are adjoining steel portal frame structures with a shared concrete wall where waste activities are carried out. A small building which was used to store power cleaning equipment is located in the northeast corner of the site. On the western boundary of the site close to the exit is an ESB substation.

There is a weighbridge located to the south of Unit 1 (the westernmost waste recovery building) and another situated in the north western corner of the site. In the north eastern corner of the site is an area which was used to wash out returned or damaged waste receptacles and to the north of Unit 1 is an engineered depression which was filled with water and used as a truck wheel wash. With the exception of a gravelled area around the offices, the open areas are paved with either tarmacadam or concrete.

Figure 3 below shows an aerial view of the site taken from Microsoft's Bing Maps website.

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<sup>1</sup> WFP-CK-15-0148-01 issued in December 2015 issued by Cork County Council.



Figure 3 – Aerial View of Site



## 1.4 Closure Scenarios

This Closure and Decommissioning Plan is consistent with EPA guidance provided in the 2014 published document *"Guidance on Assessing and Costing Environmental Liabilities"*. After the previous closure of the site, a residuals management plan was prepared by O'Callaghan Moran in consultation with the EPA. It was agreed at that time that there are no known environmental liabilities at the site and no reason to suspect underground contamination beneath the concrete and tarmacadam surfaces at the site. Proposed operations are not expected to leave residual environmental liabilities at the site, so it is clear that under normal working conditions restoration and/or aftercare will not be required once clean closure is established at the site. If this situation changes in the future a restoration and aftercare plan can be developed to address the circumstances that prevail at that time.

Therefore, this plan addresses clean closure at the site with no requirement for restoration and/or aftercare.

## 2.0 Site Evaluation

### 2.1 Operator Performance

FHRL is a new company, but it is controlled and managed by Mr. Sean Murphy, the owner of Killarney Waste Disposal Ltd (KWD). KWD has operated a licensed waste facility (W0217-01) at Aughacurreen near Killarney for many years. That site was licensed in 2006 and the operator has a good compliance record.

FHRL has developed an EMS for the facility and this was submitted with the Waste Licence Application.

The Forge Hill site has been operated for many years with a good compliance record. It is purpose built to control emissions, particularly emissions to the water environment, with concrete surfaces and good management of both surface water and foul water at the site. The materials that will be handled at the site going forward are considered to pose a low risk of environmental pollution.

### 2.2 Environmental Pathways and Sensitivities

The nearest residential properties to the site are located approximately 80 metres to the north-west of the waste facility (property fronting onto Forge Hill) and ca. 115m to the east (just off the N27 Kinsale Road). The newly constructed Manor Village residential development is also located approximately 150m to the west of the facility. The topography of the area immediately surrounding the facility is gently sloping. Ground levels slope down to a minor river valley to the west of the site and upward to low rising hills to the south.

Geological mapping published by the Geological Survey of Ireland (GSI) indicates that the bedrock underlying the site comprises sandstones, siltstones and mudstones of the Gyleen Formation which is classified as a moderately productive aquifer which is productive only in local zones (LI). GSI mapping also indicates that the aquifer vulnerability rating for the site is extremely high, primarily on account of thin soil cover. The site is indicated by Teagasc / EPA soil mapping to be underlain by Made Ground and/or glacial till derived from sandstone.

The site is located within the catchment of the Tramore River which flows into Cork Harbour. While the quality and status of the Tramore River is not monitored, the transitional waters into which it flows in the harbour are currently indicated to be of good status. In the absence of any other available information, it is assumed that the Tramore River is of moderate to good quality status, equivalent to water quality Class B.

The Forge Hill MRF is located over 3km west of the Douglas River Estuary proposed Natural Heritage Area (pNHA) and Cork Harbour Special Protection Area (SPA) and approximately 1.75km east of Cork Lough pNHA. There is no fruit, vegetable or dairy farming within 150 m of the working areas of the facility.

The pathway to groundwater is restricted by the provision of concrete surfaces on site and the handling of waste materials only inside the building which has a concrete floor.

The pathway to surface water is controlled by the purpose built drainage system that:

- directs potentially contaminated yard water to the foul sewer line and ultimately the local authority sewer, via a hydrocarbon interceptor
- directs clean roof water to the balancing tank from where it is pumped to the discharge point and on to the local stream
- directs water from clean yard areas to a large interceptor / silt trap prior to the balancing tank from where it is pumped to the discharge point and on to the local stream
- shut off valves are installed in the foul and surface water lines, and

- prevents fire-water or other discharges from inside the buildings, by way of ramps on the doors.

The pathways for dust, odour or noise emissions are restricted by operating only in the buildings and by the separation distance described above.

There are only 2 planned discharges from the site, SW1 (surface water) and FW1 (trade effluent / potentially contaminated yard run-off).

### 2.3 Site Processes and Activities

The facility accepts mixed dry recyclables and segregates and bales these materials prior to onward transport to processing facilities such as paper mills, steel mills, aluminium smelters and plastics factories. The segregation is highly automated using hi-tech plant to separate by size, shape, optical refraction and other physical qualities. Manual picking is mostly limited to quality control.

All wastes are unloaded inside the buildings. All baled recyclables are loaded to containers or vehicles either inside the buildings or at openings where there is adequate protection against the elements.

Residues and other non-conforming non-hazardous wastes are loaded into a compactor inside the buildings and are dispatched from there to appropriate treatment on a daily basis. Hazardous or other materials that are unsuitable to be treated as residues are quarantined in a designated area and dispatched off site for appropriate treatment within 48 hours.

There is no processing or handling of wastes in the outdoor areas of the site.

A wash area is provided in the north eastern corner of the site. This is used infrequently as there are no plans for bin, skip or truck storage or maintenance at the site. The wash area drains to foul sewer.

### 2.4 Inventory of Buildings, Plant and Equipment

The site and building layouts are shown on Drawings prepared by Brian O’Kennedy & Associates Ltd and included in the Waste Licence Application.

The following plant and equipment is used at the facility:

**Table 2-1 – Plant and Equipment used at the Facility**

Plant & Equipment	Function	Throughput Capability
Liebherr Grab	Transfer MDR from stockpile into processing plant bunker	40 tonne per hour
Metering Bunker	Regulate feed rate of MDR into the sorting plant	40 tonne per hour
OCC Screen	To remove large flat fractions from the MDR mix	25 tonne per hour separation
OCC Optical Sort	To remove OCC from the large flat fraction separated	10 tonne per hour (5 tonne per hour per meter belt width)
2 deck Ballistic Separator	Separate incoming MDR into 2 dimensional, 3 dimensional and fines fractions	40 tonne per hour. Efficiency reduced at throughputs above separation capacity.

Plant & Equipment	Function	Throughput Capability
2 Dimension Oversize Optical Separator – Plastic Separation	Separate plastic film from mainly paper 2-D oversize fraction	10 tonne per hour (5 tonne per hour per meter belt width)
2 Dimension Midsize Optical Separator	Separate paper from mainly 2-D midsize fraction	10 tonne per hour (5 tonne per hour per meter belt width)
3 Dimension Line Optical Separator - Bottles	To separate PET and HDPE bottles from the 3-D stream	10 tonne per hour (5 tonne per hour per meter belt width)
3-Dimension Line Optical Separator – Paper Recovery	To recover paper from the 3-D stream	10 tonne per hour (5 tonne per hour per meter belt width)
Fine Fraction Line Optical Separator – Paper Recovery	To recover paper from the 3-D stream	10 tonne per hour (5 tonne per hour per meter belt width)
Plastic Film Optical Separator	To remove clear plastic film from the plastics stream removed from the 2-D stream	10 tonne per hour (5 tonne per hour per meter belt width)
Eddy Current Separator	Positive separation of non-ferrous metal material from 3-D stream	Not applicable. Efficiency reduced at target material throughputs above separation capacity
Over-band Magnet	Positive separation of ferrous metals from 3-D stream	Not applicable. Magnet does not restrict or limit line throughput.
2 no. Twin Ram Automatic Balers	Baling of segregated fractions	2 by 30 tonne per hour
2 no. Forklift Units	Removal of baled product from baling stations	Not applicable
1 Teleporter	Moving of material to baler	Not applicable

## 2.5 Inventory of Raw Materials, Products and Wastes

The annual throughput of waste is limited to 82,000 t/a and the plant is designed to run at that rate with adequate spare / standby capacity. That equates to under 300 tonnes of waste per day.

All incoming waste will be mixed dry recyclables. The majority will be from household kerbside collections, but some will be of commercial origin.

The main products will be as follows:

- Baled Paper
- Baled Cardboard
- Baled Aluminium Cans
- Baled Steel Cans
- Baled Plastic (some different grades depending on market conditions)

There is potential for other dry recyclables to be accepted for processing or temporary storage, but in normal circumstances, inputs will comprise mixed dry recyclables and outputs will comprise baled single stream recyclables.

There is no fuel stored on site and no tanks provided for that purpose. Small quantities of oils such as lubricating oils and engine oils may be stored in drums on bunded pallets in a safe location inside the buildings.

## 2.6 Maximum Storage Capacity for Raw Materials, Products and Wastes

The maximum storage capacities for raw materials, products and wastes are detailed in Table 2-1 below.

Maximum storage quantities are based on fire-water retention containment limits.

The density of each material is assumed as follows:

- Unbaled mixed dry recyclables = **0.24** tonnes per m<sup>3</sup>, based on the size and payload of the large trailers that transport this material (20 tonnes in 84m<sup>3</sup>). Residues are assumed to have the same density.
- Baled Paper = **0.52** tonnes per m<sup>3</sup>, based on weights and measurement of current bales produced at KWD Recycling.
- Plastic Bales = **0.40** tonnes per m<sup>3</sup>, based on weights and measurement of current bales produced at KWD Recycling.
- Metal Can Bales = **0.50** tonnes per m<sup>3</sup>, based on weights and measurement of current bales produced at KWD Recycling.

**Table 2-2 – Maximum Planned Storage in Existing Buildings**

Location of waste	Tonnes	Height (m)	Area (m <sup>2</sup> )	Volume (m <sup>3</sup> )	Material
Quarantine Area (Building 1)	1	1	4	4	Residual MSW
Inspection Area (Building 1)	5	2	9	21	Mixed Dry Recyclables
Input Storage Area (Building 1)	100	1.1	200	417	Mixed Dry Recyclables
Waste on Process Line (Buildings 1&2)	10	n/a	n/a	42	Mixed Dry Recyclables
Paper and Card Storage in Building 2	95	4	46	183	Baled Paper & Cardboard
Plastic Storage in Building 2	95	4	60	238	Baled Plastic
Metal Can Storage in Building 3	70	4	35	140	Baled Metal Cans
Paper and Card Storage in Building 3	300	4	144	577	Baled Paper & Cardboard
Plastic Storage in Building 3	160	4	100	400	Baled Plastic
Non-Recyclable Residues (Enclosed trailer outside Building 1)	20	n/a	n/a	83	SRF
<b>Total</b>	<b>856</b>			<b>2,104</b>	

In order to comply with UK Environment Agency<sup>2</sup> and CFPA<sup>3</sup> recommendations, the following limits have been put on the stockpiles:

<sup>2</sup> Reducing fire risk at sites storing combustible materials: Technical Guidance Note (TGN7.01)\_UK Environment Agency.

<sup>3</sup> European Guideline CFPA-E No. 32:2014F Treatment and storage of waste and combustible raw materials

- maximum stockpile height of 4m
- maximum stockpile length of 20m
- maximum stockpile area of 235m<sup>2</sup>
- maximum stockpile size of 750m<sup>3</sup> for baled paper and 450 m<sup>3</sup> for baled plastics
- minimum separation distance of 6m between stockpiles (except where two stockpiles when combined fall within the limits described above)

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### 3.0 Criteria for Successful Closure

The most appropriate closure scenario for this site is 'Clean Closure'. There is currently no known residual contamination at the site and the planned processing of mixed dry recyclables does not pose a significant risk of contributing to residual contamination of soils or groundwater at the site.

After full clean decommissioning, there is no requirement for aftercare management for environmental protection purposes. There is also no requirement for demolition of the buildings or other infrastructure as the site can be sold or leased for similar or alternative uses.

Successful closure of the site will be achieved when the following criteria are met:

- All waste materials are removed from the site and recovered or disposed in an appropriate manner at an appropriately licensed or permitted facility.
- The plant and equipment is clean and has a positive value or has been removed from site and recovered or disposed in an appropriate legal manner.
- Site floors and yards are clean.
- Hydrocarbon interceptors and silt traps are cleaned of all contaminants.
- All potentially polluting materials such as drums of hydraulic or engine oils are removed from site, preferably for reuse elsewhere.
- A closure validation report is issued and includes monitoring data indicating that there is no residual contamination at the site and no potentially polluting materials left on site.
- Relevant records of site clearance and clean-up are available for EPA inspection, including destination details of all waste materials removed from site.
- The EPA is satisfied that the site no longer poses a risk of environmental pollution.

## 4.0 Closure Tasks and Costings

### 4.1 Plant and Equipment Decontamination

As the only materials handled at the site are dry recyclables, there will be little requirement to decontaminate the plant and equipment in the event of sudden closure of the facility. We allow a figure of **€1,000** to cover a general clean-up of plant and equipment.

### 4.2 Plant and Equipment Decommissioning

The site is fitted with modern hi-tech recycling plant and equipment that will have significant second-hand value and would be unlikely to be abandoned on site for an extended time period. It may take a few months to sell the plant and equipment, but as it will not be contaminated, it will not cause environmental damage during that period.

The scrap metal value of this equipment would also be attractive, so even obsolete or damaged pieces of equipment would have a re-sale value. Mobile plant generally contains fuel tanks, but we expect that any residual fuel would be handled in an appropriate manner at a waste licensed or waste permitted site, where such scrap metal is recovered.

There is the possibility that some plant and equipment could have no re-sale value and a low metal content so we suggest a contingency of **€1,000** for removal and disposal of unwanted plant and/or equipment.

### 4.3 Demolition

The facility is located in an industrial estate on the southern outskirts of Cork City. The fully decommissioned site would consist of a number of buildings and yards that would be suitable for a number of uses, subject to appropriate planning permission. There will be no immediate requirement to demolish the buildings after closure as the buildings add significant value to the site.

### 4.4 Removal of Waste Materials

It is hoped that site closure will occur in an orderly manner with waste materials removed in advance of closure. However, there is a risk that sudden and unforeseen closure could occur and waste materials could be left on site. In this scenario, we assume that the maximum storage quantities, as described in Table 2-2 above are on site when the site closes.

In Table 4-1 below, we apply costs for the removal of these materials to appropriate recovery or disposal facilities.

The baled single stream recyclables will have positive value and can be sold. However, we take the conservative view that they will be collected from site free of charge.



**Table 4-1 – Maximum Costs for Removal of Waste Materials**

Material	EWC Code	Tonnes	Loading Cost (€/t)	Transport Cost (€/t)	Recovery / Disposal Cost (€/t)	Admin Cost including TFS (€/t)	Total Cost per Tonne (€)	Total Cost (€)	Disposal route and/or technique	Notes, rationale, clarifications
Paper	191201	200	2	20	25	1	48	9,600	Dry Recyclable MRF or broker (collected)	Slight negative value currently. Assume transport to next nearest MRF.
Cardboard	191201	195	2	0	0	1	3	585	Dry Recyclable MRF or broker (collected)	Good value material. Would be collected from site without cost.
PET Bottles	191204	100	2	25	25	2	54	5,400	Dry Recyclable MRF	Price from Irish Packaging Recycling.
HDPE Bottles	191204	100	2	25	25	2	54	5,400	Dry Recyclable MRF	Price from Irish Packaging Recycling.
Plastic Film	191204	55	2	25	50	2	79	4,345	Dry Recyclable MRF	Price has dropped recently.
Steel Cans	191202	35	2	0	0	1	3	105	Dry Recyclable MRF or broker (collected)	Very Good value material. Would be collected from site without cost.
Aluminium Cans	191203	35	2	0	0	1	3	105	Dry Recyclable MRF or broker (collected)	Very Good value material. Would be collected from site without cost.
Mixed Dry Recyclables	200301	115	2	25	40	2	69	7,935	Dry Recyclable MRF such as IPR or Thorntons	SLR Conservative Estimate

Material	EWC Code	Tonnes	Loading Cost (€/t)	Transport Cost (€/t)	Recovery / Disposal Cost (€/t)	Admin Cost including TFS (€/t)	Total Cost per Tonne (€)	Total Cost (€)	Disposal route and/or technique	Notes, rationale, clarifications
Residual MSW	200301	1	3	25	120	2	150	150	Landfill or incineration	SLR Conservative Estimate
Solid Recovered Fuel	191210	20	3	30	90	2	125	2,500	Cement Kilns	KWD Conservative Estimate
<b>Total</b>		<b>856</b>						<b>36,125</b>		

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## 4.5 Removal of Other Potential Pollutants

### Effluent

Upon decommissioning of the site, the hydrocarbon interceptors and silt traps should be cleaned out by an appropriately permitted company and the effluents and sludges disposed appropriately.

The large underground water retention tank could contain a significant volume of sludge or other materials which would be removed off site for proper treatment and disposal. We estimate that this would cost a maximum of **€3,000**.

This is based on the costs quoted by Munster Drain when FHRL arranged the cleaning the two interceptors in Q3 of 2015. Munster Drain charged €130 per hour for cleaning and €150 per tonne for disposal of contaminants.

### Diesel Storage

There is no diesel storage on site.

### Chemical / Oil Product Storage

There may be a requirement for storage of other chemicals and oils on site, such as paints or white spirit for maintenance purposes and various drums of hydrocarbon products including hydraulic and engine oils.

Upon decommissioning, these potentially polluting materials should be removed from site. However, the materials are not specific to the waste industry and can be used in many businesses. For this reason, we consider that most will have a positive value and unusable materials such as open paint cans or out of date chemicals could be removed and appropriately disposed for **€500** or less.

## 4.6 General Clean-up

When all plant, machinery and waste materials are removed from the site, the floors of the buildings and the yard areas should be cleaned with a roadsweeper. We estimate that this can be achieved at a cost of less than **€3,000**.

## 4.7 Closure Validation Report

A site inspection and validation report prepared by an independent consultant will be required by the relevant authority to validate clean closure of the site. As the potential for contamination of soil and groundwater is low, we do not envisage an intrusive investigation in this scenario. We therefore expect that the report would be completed for a fee of c. **€3,000**.

The report should include validation that the interceptors have been cleaned out and details on the destination of all wastes and other potentially polluting materials removed from site. The water run-off from site should be proven to be clean and groundwater in the on-site well should also be tested to validate that there is no contamination of the groundwater at the site.

## 4.8 Environmental Monitoring Costs

It is assumed that during the licence surrender period and in support of the closure validation report that there will be one or two rounds of sampling surface water and groundwater at the site. There may also be a requirement for an Annual Environmental Report at the end of the closure year.

We estimate that **€3,000** will be more than adequate to cover these costs.

## 4.9 Site Management and Security During Closure Period

The site can be cleared in a short timeframe as the materials handled have established outlets and Financial Provisions will be available to pay for waste removal, sump & tank maintenance and site cleaning. We allow for 4 weeks of site management and security during the clean-up period at an estimated cost of **€25,000**. This is based on data from KWD’s experience, broken down as follows:

Site Management after closure:

24/7 x 4 weeks x 3 people is €20,000

€5000 for external monitoring

For the following 8 weeks, prior to final site closure, there will be no potentially polluting materials on site, so no need for site security or site management for environmental reasons, so we do not include a cost for this period. Site security during that period is a matter for the site owner and should not concern the EPA. It will clearly be in the interest of the site owner to protect a clean and valuable site, so we do not expect the site to be neglected during that period.

## 4.10 Sundries

Upon closure, there may be a number of additional costs such as disconnection of electricity supply and securing the site against intruders. As there will be no environmental risks posed by the site at the end of the closure period, there will be no need for active management of the site when it is closed and secure.

We suggest allowance of an additional **€2,000** to cover such sundry items.

## 4.11 Summary of Closure and Decommissioning Costs

Our estimate of the costs of decommissioning the site upon closure is set out in Table 4-2 below.

**Table 4-2 – Estimated Cost of Decommissioning after Closure**

Item	Estimated Cost
Plant or Equipment Decontamination	€1,000
Plant or Equipment Decommissioning	€1,000
Removal of Waste Materials	€36,125
Cleaning Hydrocarbon Interceptor & Silt Traps	€ 3,000
Removal of chemicals/paints, etc.	€ 500
Road Sweeping of Floors and Yards	€ 3,000
Site Inspection & Validation Report	€ 3,000
Environmental Monitoring & AER	€3,000
Site Management and Security during Closure Period	€25,000
Sundries	€ 2,000
<b>Subtotal</b>	<b>€ 77,625</b>
20% Contingency	€15,525
<b>Total (ex. VAT)</b>	<b>€ 93,150</b>

## 4.12 Closure Plan Update and Review

The Closure Plan should be updated and reviewed regularly to take account of site activities and relevant costs. The costs estimated in this report are based on assumptions of current site activities and current market conditions. Significant changes to site activities should trigger a review of the Closure Plan. Otherwise an annual update is considered more than adequate.

## 5.0 Programme for Closure and Decommissioning of Site

As there is no existing known contamination at the site and no planned sources of significant contamination, the Closure and Decommissioning Plan can be progressed in a short timeframe. We expect that the site should be cleared and cleaned within 4 weeks of closure at the very most. The closure plan is based on sending much of the material to other MRFs and with Financial Provision in place, there will be no difficulty in arranging removal of wastes and cleaning of the site. A further 8 weeks may be needed for monitoring and closure validation to prove that the site is not causing pollution, so a total of 12 weeks should be adequate.

## 6.0 Conclusions

Provision should be made for an expected liability of **€93,150** (ex VAT) to cover closure and decommissioning costs.

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## 7.0 Closure

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and publicly available data and has been accepted in good faith as being accurate and valid.

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