

**ENVIRONMENTAL LIABILITIES RISK  
ASSESSMENT FOR MILTOWN COMPOSTING  
SYSTEMS,  
(WASTE LICENCE NO. W0270-01)**

**Prepared for:**

**MILTOWN COMPOSTING SERVICES LTD**

**MILTOWNMORE**

**FETHARD**

**TIPPERARY**

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**Prepared by:**

**JRE Ltd.**

**Purcellsinch Business Park**

**Carlow Road**

**Kilkenny**



**3260  
November 24<sup>th</sup>, 2017**

## **SUMMARY**

### **Activity details**

Name: Miltown Composting Systems Limited  
Address: Miltownmore, Fethard, County Tipperary, Tipperary  
Licence/Number: W0270-01  
Activities Licensed: Licensed under Section 83(1) of the Environmental Protection Agency Acts 1992 to 2013, to carry on the following activity:  
*'Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes'*

**Risk Category: G3**

### **Report Preparation**

This report was prepared on behalf of Miltown Composting by JRE Environmental Ltd.

Address: JRE Environmental Ltd.  
Purcellsinch Business Park,  
Carlow Road,  
Kilkenny

### **Comparison of Previous Plans**

This is the initial environmental liability risk assessment (ELRA) for the site

### **Overview of Plan**

The operator has prepared an ELRA in accordance with Condition 12.2.2 of the site EPA waste licence W0270-01. The methodology for the development of the report follows EPA guidance and it has been prepared by an independent and appropriately qualified consultant.

### **Financial Provision**

The financial provision from this assessment is based on plausible worst case scenarios.

## 1. INTRODUCTION

Section 12.2.2 of the waste licence states that:

*The licensee shall arrange for the completion, by an independent and appropriate qualified consultant, of a comprehensive and fully costed Environmental Liabilities Risk Assessment (ELRA) to address the liabilities from past and present activities. The assessment shall include those liabilities and costs identified in Condition 10 for execution of the DMP. A report on this assessment shall be submitted to the Agency for agreement within one month from the date of the completion of the extension for the facility. The ELRA shall be reviewed as necessary to reflect any significant change on site, and in any case every three years following initial agreement. The results of the review shall be notified as part of the AER.*

JRE Ltd. (JRE) was retained by Miltown Composting Systems Limited (Miltown) to complete an environmental liability risk assessment (ELRA) for their composting facility at Miltownmore, Fethard, County Tipperary. The ELRA was completed with reference to the Environmental Protection Agency document “Guidance on assessing and costing environmental liabilities”, 2014.

The main types of liabilities at the site are:

- **Known Liabilities** – These are planned liabilities associated with site closure, restoration and aftercare management and have been accounted for in the Decommissioning Management Plan (DMP); and
- **Unknown Liabilities** – These are liabilities that could occur through unexpected circumstances (e.g., fire) and are the main liabilities that are assessed through the ELRA process

## 2. SCOPING

The licence condition for the activity states that the ELRA should address the liabilities from past and present activities. In this regard, all aspects of the historic operation and current site operation that pose a plausible risk to the environment are covered in this ELRA. Planned liabilities associated with closure are not considered in this ELRA and have been addressed in the Decommissioning Management Plan prepared in accordance with Condition 10 of the licence.

## 3. RISK IDENTIFICATION

To identify the potential risks associated with the Miltown site, an assessment of risk based on a relatively simple risk identification process was used to assess potential environmental impacts that may result from the site activity. The risk identification was assessed based on three main factors:

- Site Operations
- Operator Performance; and
- Environmental Sensitivity.

These areas are assessed in more detail as follows;

### 3.1. Site Operations

#### Site Location

The facility is located in the townland of Miltownmore, approximately 6 km to the east of Fethard and 10 km to the south west of Cashel. It is accessible by a public laneway off the Rosegreen to Fethard third class public road.

The site encompasses approximately 5.9 hectares and is at an elevation of approximately 139m Ordnance Datum (OD), with the ground sloping gently to the west from a high point in the east. It is occupied by the main composting buildings, including: the Reception shed, sheds 1, 2 and 3 and the covered yard area. The site also consists of paved open yard areas; weighbridge, office; canteen/changing room; storage shed; integrated constructed wetlands, biofilter and former cattle sheds.

#### Size, Age and Nature of Activity

Miltown were granted a Waste Licence by the Environmental Protection Agency (EPA) to commence operations at the Miltownmore site under Waste Licence W0270-01 in September, 2010. The facility has been in operation since 2010. The facility is a composting plant that accepts a broad range of compostable materials, including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal waste water sludges, green wastes and organic fines generated in the treatment of mixed municipal solid waste (MSW). The facility is licensed to accept and process 24,500 tonnes of bio-waste per annum for biological treatment.

The treatment process generally consists of blending with bulking agents, composting in separate enclosed tunnels and bays, maturation in windrows and post treatment to remove impurities.

Incoming wastes are blended in the waste reception building with appropriate bulking agents (mainly woodchip, compost overs or green waste). Source segregated domestic/commercial (brown bin) organic waste and various sludges may be mixed together and blended with woodchip, while MSW fines are kept separate from other wastes to prevent contamination with plastics etc. Following blending the materials are placed within a dedicated composting tunnel. Once a compost batch has been processed it is then transferred to Sheds 2 and 3 for maturation in windrows until maturation. The matured material is then screened to remove impurities.

#### Licence/Permit Details

The Miltown facility is operated under the terms and conditions of the Waste Licence (Register Number W0270-01) issued by the EPA in September 2010. The site is licensed by the EPA to carry out the following activities;

- Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes)

and;

- Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.

## Overview of Site Infrastructure

The following buildings in place on the Miltown site:

Building	Location
Reception Building	West of Shed 1
Shed 1	South area of the site
Shed 2	South east area
Shed 3	South east area
Covered Yard Area	Between Shed 1 and Sheds 2 and 3
Slatted Cattle Shed	Middle of site
Storage Shed	South west of Shed 1, on the southern boundary
Weighbridge	Western boundary of facility, located beside the access road to the site
Canteen/Changing Room	South of Reception Building

The following equipment in place on the Miltown site:

Products	Volume
Telescopic Loader	3
Shredder	1
Trommell Screen	1
Star Screen	1
Power washers	2

## **Environmental Pathways**

This section describes the environmental monitoring on site as outlined in the waste licence. The environmental sensitivity in and around the facility is outlined below.

### Geology/Hydrogeology:

The subsoils at the site comprise Namurian Shale & Sandstone till (TNSS). The subsoils are shallow, ranging from 1 to 3 m below ground level. The underlying bedrock comprises muddy siltstone and silty mudstone belonging to the Killeshin Formation.

The subsoils are not significantly water bearing. The Killeshin Formation is classified by the GSI as a 'Poor Aquifer' which is generally unproductive except for local zones. Based on the available information on the thickness of the subsoils across the site, the aquifer vulnerability is Extreme. The inferred groundwater flow is to the west, towards the River Moyle.

There are no major groundwater abstractions in the surrounding area. Most residences in the vicinity of the site have mains water supply with farms and houses located away from the road still using wells for water supply.

### Surface Water Bodies

The site lies within the catchment of the River Moyle, which is approximately 1.6 km to the west of the site. An unnamed tributary of the Moyle, approximately 1 km south west of site boundary (Ref. Figure 3.1), is the closest surface water course to the site. The facility is located at a local high point

with falls to the west, south and north. Surface water drainage from the operational area is towards the west and south west. Drainage from the undeveloped fields north of the operational area is to the north. The main surface water emissions from the site are from rainwater runoff from the facility buildings roofs and external yard surfaces. Surface water currently discharges to the adjacent surface water ditch drain to the south and is monitored at SW1. Pending approval from the Agency, surface water will be directed to constructed wetlands for treatment and polishing prior to discharge off site.

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### Natural Habitats

The Miltown facility site is situated in an agricultural area of rural South Tipperary. The facility is surrounded by agricultural land with the nearest dwelling approximately 900 meters northwest of the facility. There are no protected habitats of note in the surrounding area of the Miltown site.

### Human Receptors

The Miltown facility is located on a 4.5-hectare site at Miltownmore, Fethard and is bounded on all sides by agricultural land. The nearest residential receptors are approximately 900m northwest of the facility boundary.

### Risk Identification

During the risk identification, all the processes on site were reviewed and the risks associated with each process were listed. All potential causes of failure of the processes and the effect/impact on the environment were identified. All plausible risks identified are listed in Table 1.

**TABLE B: Identified Risks at Miltown Composting Ltd.**

Risk No.	Process / Area	Potential Risk / Failure
1	Process Sheds	Fire Outbreak
2	Office Area	Fire Outbreak
3	All Areas of Facility	Fire
4	All Areas of Facility	Spread of Fire
5	Odour Monitoring	ELV exceeded non-compliance
6	Surface Water Monitoring	ELV non-compliance or trigger level exceedence
7	Noise Monitoring	ELV exceeded non-compliance,
8	Pipework Failure	Leachate Leak
9	Interceptor	Failure of surface water interceptor
10	Leachate Recirculation Tank	Failure of Leachate Recirculation Tank
11	Leachate Storage Tank	Failure of Leachate Storage Tank
12	Air Monitoring	ELV non-compliance
13	Diesel Storage Tank	Tank failure
14	Sudden shut down of site	Disposal of on-site chemicals and waste and Decontamination of site
15	Bund	Bund Failure
16	Air extraction system	Failure of air extraction system resulting in odour release from process sheds

#### 4. RISK ANALYSIS

Risk classification tables were used to evaluate and rank the identified risks and provide a comparison. The classification table forms the basis for assigning a rate of occurrence and severity to each identified risk. There are two examples of risk classification tables provided in the EPA Guidance document that were used to classify the environmental risks identified at the Miltown site. The example tables for 'Occurrence' and 'Severity' are provided in Table 2 and Table 3 below.

**Table 2 – Risk Classification – Occurrence Probability**

Rating	Occurrence Probability		
	Category	Description	Likelihood of Occurrence (%)
1	Very Low	Very Low Chance of Hazard Occurring	0-5%
2	Low	Low Chance of Hazard Occurring	5-10%
3	Medium	Medium Chance of Hazard Occurring	10-20%
4	High	High Chance of Hazard Occurring	20-50%
5	Very High	Very High Chance of Hazard Occurring	>50%

**Table 3 – Risk Classification – Consequence**

Rating	Consequence	
	Category	Description
1	Trivial	No impact or negligible change to the environment
2	Minor	Minor impact/localised or nuisance
3	Moderate	Moderate impact to environment
4	Major	Severe impact to environment
5	Massive	Massive impact to a large area, irreversible in medium term



**Table 4 Risk Analysis**

Risk ID	Process	Potential Risks	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of likelihood Rating	Risk Score (Consequence x Likelihood)
1	Sheds	Fire Outbreak	Emissions to air, firewater discharged to surface water	3	The compost material is not combustible owing to the high moisture level of the material. All sheds are made of non-combustible metal and each shed consists of fire breaks (concrete bays)	1	The compost material is not combustible owing to high moisture content and make-up of the material because of this the likelihood of a fire outbreak in the process sheds is unlikely	3
2	Office Area	Fire Outbreak	Emissions to air, firewater discharged to surface water	3	Fire water can be directed to the bunded waste reception building and leachate tank for collection	1	There is a slightly higher potential of a fire in the office building from electrical failure or similar source. However, there are operatives on site for large periods of the day who can react to the fire.	3
3	Site Buildings & Equipment	No fire warning equipment	Added emissions to environment	4	Potential to increase emissions due to delay in fire response procedures and emergency arrival times	2	Operatives are on site if a fire were to break out during daytime it would be quickly identified. However, at night it may not be detected.	8
4	All Areas of Facility	Spread of fire from one area of facility to another	Additional emissions to air	3	Uncontrolled emission, short and long term effects depending on pollutants emitted	1	The spread of fire from one area of the site to another is very unlikely owing to the fact the compost materials are not combustible, the sheds are metal and therefore not combustible either, and each bay in the sheds have fire breaks in them.	3
5	Odour Monitoring	ELV exceedances	Nuisance caused by Odour	1	Odour which may result in complaints	2	The location of the site makes the likelihood of site operations causing odour nuisance as very low.	2

Risk ID	Process	Potential Risks	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of likelihood Rating	Risk Score (Consequence x Likelihood)
6	Surface Water	Contamination	Leachate and/or contaminated storm water contaminating surface water	3	The contamination of surface water surrounding the facility by leachate and/or contaminated surface water	2	Leachate catchment system in place and a leachate recirculation and containment tank in operation.	6
7	Noise monitoring	ELV exceedances	Nuisance caused by noise	2	Nuisance noise which may result in complaints, damage to employees hearing	1	The location of the site makes the likelihood of site operations causing noise nuisance as very low.	2
8	Pipe Failure	Potential leaks or spills from pipework containing leachate	Surface water, groundwater and soil contamination	4	Spill of leachate and migration to surface water, soil or ground water receptors.	2	Weekly checks on pipework	8
9	Interceptor	Potential failure of interceptor	Water contamination	4	Regular inspections and controls in place	2	The leachate recirculation and storage tanks provide back up for diversion and storage of impacted water if interceptor failure occurs	8
10	Leachate Sump Recirculation Tank	Potential failure of tank	Surface water, groundwater and soil contamination	5	If there was a leachate recirculation or storage tank failure the effects could be harmful to the environment surrounding the facility	2	Checks on leachate recirculation and storage tank are carried out to ensure the tank is in good condition. Recirculation sump tank is located in in ground so potential for impacts from leak or spill from that tank is possible but not probable.	10

Risk ID	Process	Potential Risks	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of likelihood Rating	Risk Score (Consequence x Likelihood)
11	Above Ground Leachate Recirculation Storage Tank	Potential failure of tank	Surface water, groundwater and soil contamination	3	If there was a leachate recirculation or storage tank failure the effects could be harmful to the environment surrounding the facility	2	Checks on leachate recirculation and storage tank are carried out to ensure the tank is in good condition. Storage tank is located in bunded area so potential for impacts from leak or spill from that tank is significantly reduced	6
12	Air monitoring	ELV exceedances	Air pollution	3	Air emissions causing harm to the environment	2	Air emissions from the site are minimal and checks are carried out to check the biofilter and ensure no limits are exceeded	6
13	Diesel Storage Tank	A leak or failure of the diesel storage tank	Contamination of ground water, surface water and soil	4	Large scale contamination of the area surrounding the facility	2	Tank is located inside a bunded covered area with very low potential for loss of product.	8
14	Sudden Shut Down Of site	Sudden site closure without the implementation of the Decommissioning Management Plan	Possible odour, surface water, groundwater and soil pollution	5	Disposal of remaining compost on site and the decommissioning of plant activities	1	Would only happen in catastrophic circumstances	5

Risk ID	Process	Potential Risks	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of likelihood Rating	Risk Score (Consequence x Likelihood)
15	Bunded Storage Area	Overtopping, Catastrophic failure, inadequate design	Contamination of ground water, surface water and soil	4	Damage to aquatic ecosystems, fish kills and groundwater/soil contamination.	2	Design requirements and bund tests to ensure bund is fit for purpose. Failure of bund would result in liquid migration to reception building and could be intercepted and stored if required.	8
16	Air Extraction System	Failure of air extraction system fan motors or ducting	Failure of air extraction system resulting in odour nuisance at site	2	Distance to closest receptor is approximately 900m and the impact would be dependent on wind direction.	2	Air extraction system is monitored constantly to ensure it is operating effectively. Any motor replacements or ducting works are completed as soon as possible.	4

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#### 4.1. Risk Ranking

Risk ratings applied for each identified risk using the risk analysis allowed for the ranking of risks to be completed based on the scores calculated. The risk score is based on the product of the likelihood rating and the occurrence rating. The scores applied to each risk through the use of the risk analysis are provided in Table 4. Based on the results of the risk analysis process the site risks identified in Table 4 have been rearranged and ranked in descending order of risk (i.e., the highest ranked risk is at the top and the lowest at the bottom). The ranked site risk scores are outlined in Table 5.

**Table 5 – Site Risk Score Ranking**

Risk ID	Potential Risk	Risk Score
10	Leachate Recirculation Sump Tank Failure	10
13	Diesel Storage Tank Failure	8
8	Pipework Failure	8
15	Bund Failure	8
9	Interceptor Failure	8
3	Spread of Fire	8
6	Surface Water Contamination	6
11	Above Ground Leachate Storage Tank	6
12	Air Monitoring ELV Exceedance	6
14	Sudden Shut Down of Site	5
16	Air Extraction System Failure	4
1	Fire in Sheds	3
2	Fire in Office Area	3
4	Spread of Fire	3
7	Noise Monitoring ELV Exceedance	2
5	Odour Monitoring ELV Exceedance	2

#### 4.2. Risk Matrix

The risk matrix allows for the risks to be displayed and prioritised. The level of consequence forms the x-axis of the matrix and the likelihood forms the y-axis of the matrix. The matrix provides a visual representation of the levels of risk on site that can be easily reviewed and the success of any mitigation or controls can be measured. The risk matrix is displayed in Table 6 and is colour coded to provide an indication of the nature of each risk. The colour code can be read as follows:

- **Red** – High Level risks that require priority attention. These have the potential to be catastrophic and should be addressed as soon as possible.

- **Amber** – Medium level risks that require action but are not immediate.
- **Green** – Low level risks that indicate a need for continued awareness and monitoring to ensure that they do not develop into medium or high-level risks. If possible, low level risks should be managed to ensure that the risk is reduced to the lowest level practicable.

**Table 6 – Risk Matrix for Miltown Composting**

			Risk Identification Number				
<b>LIKELIHOOD</b>	<b>Very High</b>	<b>5</b>					
	<b>High</b>	<b>4</b>					
	<b>Medium</b>	<b>3</b>					
	<b>Low</b>	<b>2</b>	<b>5</b>	<b>16</b>	<b>6, 11, 12</b>	<b>3, 8, 9, 15, 13</b>	<b>10</b>
	<b>Very Low</b>	<b>1</b>		<b>3, 6, 7</b>	<b>1, 2, 4</b>		<b>14</b>
			<b>Trivial - 1</b>	<b>Minor - 2</b>	<b>Moderate - 3</b>	<b>Major - 4</b>	<b>Massive - 5</b>
			<b>Consequence</b>				

**4.2.1. Discussion of Risk Matrix**

The risk matrix provided in Table 6 indicates that no risks exist in the red risk zones that would require mitigation and/or management actions to be implemented. The majority of the risks identified are in the green zone, with some in the amber zone. The risks in the amber zone include:

- Risk 10 - Leachate Sump Recirculation Tank Failure
- Risk 3 – Site Fire
- Risk 13 - Diesel Storage Tank Failure
- Risk 8 - Pipework Failure
- Risk 15 - Bund Failure
- Risk 9 - Interceptor Failure

## 5. IDENTIFICATION OF MITIGATION ACTIONS

The control measures for the management and monitoring of identified risks is based on the cost effectiveness of the control and the value of each mitigation measure to reduce the associated risks identified. Based on the introduction of the mitigation measures, the risk scores were re-calculated to determine if the introduction of the mitigation measures would significantly reduce the potential liability associated with each identified risk. The identified on-site risks and the current and/or proposed monitoring, management or control measures for each risk and the recalculated risk scores are provided in Table 7 below.

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**Table 7– Identified Risks and Current and Proposed Management Actions**

Risk ID	Potential Risk	Risk Score	Mitigation Measure	Outcome	Action	Date for Completion	Owner
10	Leachate Recirculation Sump Tank Failure	10	Carry out checks and integrity tests on the recirculation tank.	To ensure the integrity of the recirculation tank and ensure no failures occur	Introduce a schedule of integrity tests, record all findings, if repairs are needed insure they are conducted by qualified persons	Continuous	Facility Manager
13	Diesel Tank Failure	8	Carry out checks and integrity tests on the Diesel tank to ensure the tank is fully functional	To ensure the integrity of the diesel tank and ensure that no failures occur	Introduce a schedule of integrity tests, record all findings, if repairs are needed insure they are conducted by amply qualified persons	Continuous	Facility Manager
8	Pipework Failure	8	Carry out checks and integrity tests on the pipework to ensure all pipes are fully functional	Develop plan to integrate the inspections and maintenance into operations	Introduce a schedule of integrity tests, record all findings, if repairs are needed insure they are conducted by amply qualified persons	Continuous	Facility Manager
15	Bund Failure	8	There is a bunded area for the above ground leachate storage tank, fuel tank/oil storage area and hydraulic oil and motor of Screener	Bunded tanks with a high reliability rating	Carry out integrity tests on the bunds to ensure they are structurally sound and fit for purpose	Continuous	Facility Manager
9	Interceptor Failure	8	Retain environmental consultants to perform monitoring in accordance with the licence and develop plan to regularly clean and inspect interceptors	Discharge of clean water from site	Carry out checks and maintenance, when necessary, of interceptor	Continuous	Facility Manager
3	No Fire Detection System	2	Ensure proper commissioning, inspections and staff training	Fully functional fire detection system required on site	Develop plan to install fire detection system and integrate inspections and training into operations		Facility Manager



Risk ID	Potential Risk	Risk Score	Mitigation Measure	Outcome	Action	Date for Completion	Owner
6	Surface Water Contamination	6	Perform monthly monitoring in accordance with the licence and develop plan to ensure no exceedances occur	Reduction in surface trigger value exceedances	Ensure that there are no releases to surface water of contaminated materials and that monitoring is occurring as scheduled	Continuous	Facility Manager
11	Failure of Above Ground Leachate Storage Tank	6	Carry out checks and integrity tests on the storage tank to ensure the tank is fully functional	To ensure the integrity of the leachate storage tank and ensure that no failures occur	Introduce a schedule of integrity tests, record all findings, if repairs are needed insure they are conducted by amply qualified persons	Continuous	Facility Manager
12	Air Pollution	6	Retain environmental consultants to perform monitoring in accordance with the licence and develop plan to ensure no exceedances occur	Reduction in air pollution and no exceedances of licence limits	Monitor the releases to air as set down in the Waste Licence	Continuous	Facility Manager and Consultants
14	Sudden Site Closure	5	Reduce potential for impacts from abandonment of material and equipment.	Facility can be closed to clean site status.	Waste removal plan to frequently move waste offsite		Facility Manager
16	Air Extraction System Failure	4	Carry out checks on ductwork and fan motors to ensure the system is fully functional	Reduction in air pollution and no exceedances of licence limits	Ensure all air extraction systems and odour controls are fully functional	Continuous	Facility Manager
1	Fire in Sheds	3	CCTV in place in the sheds. Fire suppression (e.g., fire extinguishers) are in place on site.	Any fire outbreak will be detected quickly allowing for a response	Install fire protection and detection measures in sheds		Facility Manager
2	Fire in Office Area	3	Fire suppression (e.g., fire extinguishers) are in place on site	Any fire outbreak will be suppressed quickly	Install fire protection and detection measures in office		Facility Manager
4	Spread of Fire	2	Buildings built to the appropriate fire regulations, and fire gaps exist in each building	Minimize the risk of fire spreading throughout the site	Review current regulations and technologies in fire safety	Continuous	Facility Manager

Risk ID	Potential Risk	Risk Score	Mitigation Measure	Risk ID	Action	Date for Completion	Owner
7	Noise Levels Exceeding Limits	2	Retain environmental consultants to perform monitoring in accordance with the licence and develop plan to ensure noise pollution is not occurring	Reduction in noise impacts	Ensure all processes occurring on site do not lead to noise levels which exceed ELV limits	Continuous	Facility Manager
5	Odour Nuisance	4	Retain environmental consultants to perform monitoring in accordance with the licence and develop plan to ensure no exceedances occur	Ensure Odour pollution is not occurring from the facility	Monitor the releases to air as set down in the Waste Licence	Continuous	Facility Manager

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## 6. IDENTIFICATION OF PLAUSIBLE WORST-CASE SCENARIO

The ELRA for the Miltown Composting facility in Tipperary identified the highest risk with a high or major consequence. This is considered to be a failure in the leachate recirculation tank leading to contamination of the surrounding environment. This is considered to be a major consequences because of the potential impacts on soils, surface water and groundwater and the potentially large clean-up efforts which would be necessary to abate the damage caused. The risk is considered to be the worst case scenarios for the activity and is quantified and costed for the purposes of financial provision below.

### 6.1. Quantification & Costing

The worst case scenario (Risk ID 10) have been quantified and costed in table 8. The costs were based on the following scenarios;

#### **Failure of Leachate Recirculation Tank**

In the event of the failure of the leachate recirculation sump tank there is the possibility of a release of leachate into the site subsoils and groundwater. The worst case scenario in terms of reclamation works for a leachate recirculation tank failure would involve the excavation of impacted soils and transfer of contaminated soil from site to a licenced site for treatment and disposal. It may also be necessary to treat impacted groundwater and surface water bodies. Following remedial works to clean the site, monitoring will be required until such time as the effects of the spill were not evident on the surrounding environment. Remedial monitoring will be carried out by a third party, monitoring events will be monthly until such time as the impact of the spill is not evident in the samples. Following this sampling events will become quarterly and then biannually and finally annually. The monitoring will include the sampling and analysis of samples collected at the site. Samples would have analysis completed for analytes including; COD, BOD, Ammonia, metals and Suspended Solid.

**Table 8– Quantification and Cost of Plausible Worst-Case Scenario – Leachate Tank Failure**

Task	Description	Quantity (No.)	Measure Unit	Unit Rate (€)	Cost (€)	Source of Unit Rate
<b>Leachate Recirculation Sump Tank Failure</b>	Spill Contamination Equipment & Disposal	6	Unit	500	€3,000	JRE
	Collection and Disposal of Waste Liquid	3	Days	1,000	€3,000	Enva
	Groundwater Monitoring	1	Unit	5,000	€5,000	JRE
	Tanking Leachate Off-Site	3	Unit	1,000	€3,000	Enva
	Treating Leachate & Disposal of Tank	3	M <sup>3</sup>	3,000	€9,000	Enva
	Decontamination	2	Days	2,500	€5,000	JRE
	Consultancy Costs	15	Day	600	€7,200	JRE
	Hydrogeological Assessment	1	Unit	7,000	€7,000	JRE
	Test Pit Excavation & Delineation of Impacts	12	Pits	150	€1,800	JRE
	Soil Sampling & Analysis	24	Samples	50	€1,200	JRE
	Excavation & Disposal of Impacted Soils	50	Tonnes	200	€10,000	JRE
	Reporting	6	Unit	500	€3,000	JRE

<b>Total €</b>	€58,200
<b>Plus Contingency at 20%</b>	€11,640
<b>Plus VAT at 13.5%</b>	€69,840

## 7. CONCLUSION

An environmental liabilities risk assessment has been carried out for the activity in accordance with the EPA guidance documentation. The financial provision has been based on the risk that poses the plausible worst case scenario. This is the maximum liability that may be incurred and such, financial provision is calculated at € 69,840 based on the leachate recirculation tank failure.

The risk management at the site is a dynamic process and should be updated through the addition of new risks or the omission of redundant risks. The financial provision will be reviewed in accordance with the requirements of condition 12 to ensure that it continues to cover the environmental liabilities.

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