



WATERFORD CITY COUNCIL

**RESPONSE TO ARTICLE 14(2)(b)(ii) REQUEST IN
RELATION TO WASTE LICENCE APPLICATION W0234-
02**

ORIGINAL

AUGUST 2013





WATERFORD CITY COUNCIL

RESPONSE TO ARTICLE 14(2)(b)(ii) REQUEST IN RELATION TO WASTE LICENCE APPLICATION W0234- 02

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RESPONSE TO ARTICLE 14(2)(b)(ii) REQUEST IN RELATION TO WASTE LICENCE APPLICATION W0234- 02

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Client: Waterford City Council

Keywords: waste licence application, anaerobic digestion

Abstract: This document presents to response from Waterford City Council in response to a request received in June 2013 under Article 14 (2)(b)(ii) of the Waste Management Licencing Regulations, regarding waste licence application W0234-02

TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION	1
1. ISSUE 1	2
1.1 RESPONSE TO ISSUE 1	2
2. ISSUE 2	3
2.1 RESPONSE TO ISSUE 2	3

APPENDICES

Appendix 1: ELRA & CRAMP

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INTRODUCTION

This submission is made in response to an information request, made under Article 14 (2)(b)(ii) of the Waste Management Licencing Regulations (as amended), regarding waste licence application W0234-02, in correspondence dated 24th June 2013.

Information regarding the following issues is to be provided.

1. State whether or not the stormwater attenuation pond will be lined. Indicate how discharge through the base of the pond will be limited in order to avoid discharge to groundwater.
2. In accordance with section 53(1) of the Waste Management Acts 1996 to 2013, please furnish particulars in respect of the ability of Waterford City Council to meet the financial commitments of liabilities that will be entered into or incurred in carrying on the proposed activity and provide evidence that Waterford City Council will be in position to make financial provision that is adequate to discharge these financial commitments.
Specifically:

(a) Prepare a fully detailed and costed Closure, Restoration and Aftercare Management Plan (CRAMP) for the facility, to include as a minimum the following:

- A scope statement for the plan.
- The criteria which define the successful closure and restoration of the facility or part thereof, and which ensure minimum impact to the environment.
- A programme to achieve the stated criteria.
- Where relevant, a test programme to demonstrate the successful implementation of the plan.
- Details of the long-term supervision, monitoring, control, maintenance and reporting requirements for the restored facility.
- Details of the costings for the plan and the financial provisions to underwrite those costs.

(b) Prepare a fully detailed and costed Environmental Liabilities Risk Assessment (ELRA) which addresses the liabilities and potential liabilities from past and proposed activities, including those liabilities and costs identified in the CRAMP.

Provide evidence that the assessment was prepared or reviewed, and was found to be complete and accurate, by an independent and appropriately qualified consultant or expert.

(c) Provide a proposal for financial provision to cover any liabilities associated with the operation and identified in the ELRA (including closure, restoration and aftercare and unanticipated accidents, incidents and liabilities). Provide evidence that Waterford City Council will be in a position to put such financial provision in place in the event that a waste licence is granted and prior to development works commencing.

The preparation of the CRAMP and ELRA and evaluation of the amount and form of financial provision should have regard to Environmental Protection Agency guidance including *Guidance on Environmental Liability, Risk Assessment, Residuals Management Plans and Financial Provision (2006)*.

1. ISSUE 1

State whether or not the stormwater attenuation pond will be lined. Indicate how discharge through the base of the pond will be limited in order to avoid discharge to groundwater.

1.1 Response to Issue 1

During detailed design, the design criteria for the stormwater attenuation pond will be the achievement of a permeability of 1×10^{-9} m/s or less. This will be achieved by installing HDPE liner above a geosynthetic clay liner (GCL) or using compacted natural clay, subject to prevailing site conditions.

The stormwater attenuation pond will comprise 1:3 side slopes with a flat bottom.

The lagoon will have a composite liner comprising a 1.0 mm textured HDPE liner overlying an insitu clay barrier or a geosynthetic clay liner. The HDPE will be anchored in a 500mm wide x 500mm deep perimeter trench located at the top edge of the liner. Clay barrier/GCL liner will be designed to ensure an underlying permeability of 1×10^{-9} m/s or lower for an equivalent thickness of 750mm – 1000mm.

The lagoon will have a dead storage of approximately 500 mm and a freeboard allowance of 750 mm.

CQA testing of the HDPE liner being utilised, will comprise:

- Non destructive vacuum and / or air pressure testing
- Destructive shear and peel testing

It should be noted that all surfacewater generated onsite will pass through a Class 1 full retention interceptor prior to entering the surfacewater attenuation pond, thus limiting the potential for any potentially polluting substances to enter into the lagoon.

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2. ISSUE 2

In accordance with section 53(1) of the Waste Management Acts 1996 to 2013, please furnish particulars in respect of the ability of Waterford City Council to meet the financial commitments of liabilities that will be entered into or incurred in carrying on the proposed activity and provide evidence that Waterford City Council will be in position to make financial provision that is adequate to discharge these financial commitments.

Specifically:

(a) Prepare a fully detailed and costed Closure, Restoration and Aftercare Management Plan (CRAMP) for the facility, to include as a minimum the following:

- A scope statement for the plan.*
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- A programme to achieve the stated criteria.*
- Where relevant, a test programme to demonstrate the successful implementation of the plan.*
- Details of the long-term supervision, monitoring, control, maintenance and reporting requirements for the restored facility.*
- Details of the costings for the plan and the financial provisions to underwrite those costs.*

(b) Prepare a fully detailed and costed Environmental Liabilities Risk Assessment (ELRA) which addresses the liabilities and potential liabilities from past and proposed activities, including those liabilities and costs identified in the CRAMP.

Provide evidence that the assessment was prepared or reviewed, and was found to be complete and accurate, by an independent and appropriately qualified consultant or expert.

(c) Provide a proposal for financial provision to cover any liabilities associated with the operation and identified in the ELRA (including closure, restoration and aftercare and unanticipated accidents, incidents and liabilities). Provide evidence that Waterford City Council will be in a position to put such financial provision in place in the event that a waste licence is granted and prior to development works commencing.

The preparation of the CRAMP and ELRA and evaluation of the amount and form of financial provision should have regard to Environmental Protection Agency guidance including Guidance on Environmental Liability, Risk Assessment, Residuals Management Plans and Financial Provision (2006).

2.1 Response to Issue 2

An ELRA and CRAMP have been prepared and are included in Appendix 1 to this report.

Appendix 1

ELRA & CRAMP

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ENVIRONMENTAL BALANCE IN DESIGN AND CONSTRUCTION



ENVIRONMENTAL LIABILITIES RISK ASSESSMENT (ELRA) & CLOSURE, RESTORATION AND AFTERCARE MANAGEMENT PLAN (CRAMP) FOR W0234-02

AUGUST 2013



ENVIRONMENTAL LIABILITIES RISK ASSESSMENT (ELRA) & CLOSURE, RESTORATION AND AFTERCARE MANAGEMENT PLAN (CRAMP) FOR W0234-02

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Client: Waterford City Council

Keywords: anaerobic digestion, waste licence, Environmental Liability Risk Assessment, Closure Restoration Aftercare Management Plan (CRAMP), Environmental Liabilities Risk Assessment (ELRA)

Abstract: Item 2 of an information request received under Article 14 (2)(b)(ii) of the Waste Management Licencing Regulations, dated 24 June 2013, requires the preparation of a fully detailed and costed CRAMP and an ELRA, with indication of financial provision to cover any liabilities associated with same. This document forms the response in relation to this issue.

TABLE OF CONTENTS

PAGE

1 INTRODUCTION.....	1
1.1 ENVIRONMENTAL LIABILITY REGULATIONS	1
1.2 ENVIRONMENTAL LIABILITY RISK ASSESSMENT	2
1.3 STATUS OF DOCUMENT	4
2 STEP 1: INITIAL SCREENING AND OPERATIONAL RISK ASSESSMENT	5
2.1 COMPLEXITY	6
2.2 ENVIRONMENTAL SENSITIVITY ASSESSMENT	6
2.3 COMPLIANCE RECORD ASSESSMENT	7
2.4 OVERALL RISK ASSESSMENT	8
3 STEP 2: CLOSURE, RESTORATION AND AFTERCARE MANAGEMENT PLAN (CRAMP) - KNOWN LIABILITIES	9
3.1 CLOSURE PLAN FOR WATERFORD CITY ANAEROBIC DIGESTION FACILITY	9
3.1.1 Introduction	10
3.1.2 Site Evaluation.....	10
3.1.3 Closure considerations	12
3.1.4 Criteria for Successful Closure.....	13
3.1.5 Closure Plan Costing	13
3.1.6 Closure Plan Update and Review.....	13
3.1.7 Closure Plan Implementation	13
3.1.8 Closure Plan Validation.....	15
3.2 RESTORATION AND AFTERCARE MANAGEMENT PLAN FOR WATERFORD CITY ANAEROBIC DIGESTION FACILITY	15
3.3 CONCLUSION – KNOWN LIABILITIES.....	16
4 STEP 3: ENVIRONMENTAL LIABILITIES RISK ASSESSMENT (ELRA) - UNKNOWN LIABILITIES	17
4.1 RISK SCOPE	17
4.1 RISK CLASSIFICATION AND IDENTIFICATION	17
4.2 ASSESSMENT OF RISKS	19
4.3 RISK MATRIX	19
4.4 RISK PREVENTION & MITIGATION.....	21
4.5 QUANTIFICATION OF UNKNOWN ENVIRONMENTAL LIABILITIES	21
4.6 REVIEWS OF RISK ASSESSMENT	22
5 STEP 4: FINANCIAL PROVISION	23

LIST OF APPENDICES

Appendix 1: Drawings

LIST OF TABLES

	<u>PAGE</u>
TABLE 2.1: COMPLEXITY RATING	6
TABLE 2.2: RISK CATEGORY SCORING	6
TABLE 2.3: ENVIRONMENTAL SENSITIVITY ASSESSMENT	7
TABLE 2.4: OVERALL RISK SCORE	8
TABLE 3.1: DECOMMISSIONING AND CLOSURE TASKS AND ASSOCIATED COSTS AND RESPONSIBILITIES	14
TABLE 3.2: ESTIMATED RESTORATION & AFTERCARE COSTS	16
TABLE 4.1: RISK CLASSIFICATION TABLE – OCCURRENCE (EPA, 2006)	19
TABLE 4.2: RISK CLASSIFICATION TABLE – SEVERITY (EPA, 2006)	19
TABLE 4.3: RISK REGISTER FOR POTENTIAL UNKNOWN RISKS	20
TABLE 5.1: FINANCIAL PROVISION FOR WATERFORD CITY ANAEROBIC DIGESTION FACILITY	24

LIST OF FIGURES

	<u>PAGE</u>
FIGURE 2.1: FLOW CHART OF INITIAL SCREENING AND OPERATIONAL RISK (EPA, 2006)	5
FIGURE 3.1: CLOSURE, RESTORATION AND AFTERCARE MANAGEMENT PLAN PROCESS (CRAMP) (EPA, 2006) .	9
FIGURE 4.1: ENVIRONMENTAL LIABILITY RISK ASSESSMENT – RISK CATEGORY 3 FACILITIES (EPA, 2006)	18

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1 INTRODUCTION

A waste licence application was made to the Environmental Protection Agency in August 2012 regarding the proposed development of a 22,000 tonnes per annum anaerobic digestion (AD) facility on the site of the former composting facility at Six Cross Roads, Kilbarry, Waterford. This application has been assigned the register number W0224-02. The applicant is Waterford City Council.

Item 2 of an information request regarding the application for W0234-02, received under Article 14 (2)(b)(ii) of the Waste Licencing Regulations and dated 24 June 2013, requires the preparation of a fully detailed and costed CRAMP and an ELRA, with identification of financial provision to cover any liabilities associated with same. This document forms the response in relation to this issue.

Waterford City Council has retained Fehily Timoney & Company (FTC) to prepare this ELRA & CRAMP. As an independent waste management and environmental consultancy, FTC is experienced in the preparation of ELRAs and CRAMPs and has prepared and submitted a number of these documents to the Agency in the past for landfill facilities, particularly for local authority clients.

The specific request is presented as follows:

In accordance with section 53(1) of the Waste Management Acts 1996 to 2013, please furnish particulars in respect of the ability of Waterford City Council to meet the financial commitments of liabilities that will be entered into or incurred in carrying on the proposed activity and provide evidence that Waterford City Council will be in position to make financial provision that is adequate to discharge these financial commitments.

Specifically:

(a) Prepare a fully detailed and costed Closure, Restoration and Aftercare Management Plan (CRAMP) for the facility, to include as a minimum the following:

- A scope statement for the plan.*
- The criteria which define the successful closure and restoration of the facility or part thereof, and which ensure minimum impact to the environment.*
- A programme to achieve the stated criteria.*
- Where relevant, a test programme to demonstrate the successful implementation of the plan.*
- Details of the long-term supervision, monitoring, control, maintenance and reporting requirements for the restored facility.*
- Details of the costings for the plan and the financial provisions to underwrite those costs.*

(b) Prepare a fully detailed and costed Environmental Liabilities Risk Assessment (ELRA) which addresses the liabilities and potential liabilities from past and proposed activities, including those liabilities and costs identified in the CRAMP.

Provide evidence that the assessment was prepared or reviewed, and was found to be complete and accurate, by an independent and appropriately qualified consultant or expert.

(c) Provide a proposal for financial provision to cover any liabilities associated with the operation and identified in the ELRA (including closure, restoration and aftercare and unanticipated accidents, incidents and liabilities). Provide evidence that Waterford City Council will be in a position to put such financial provision in place in the event that a waste licence is granted and prior to development works commencing.

1.1 Environmental Liability Regulations

A relevant and related issue concerns the Environmental Liability Directive (2004/35/EC), which has been transposed into law through the European Communities (Environmental Liability) Regulations (2008) and the Environmental Liability Act. The Directive identifies activities for which 'strict liabilities' apply, for which waste management operations are identified.

The Regulations places a number of responsibilities on operators i.e. the entity that controls an activity, namely:

- Prevention of environmental damage including taking measures to prevent (environmental) damage occurring when there is an imminent threat of damage
- Informing the EPA of the imminent threat of environmental damage where the preventative measures have not been successful in dispelling the threat
- Informing the EPA when environmental damage has occurred
- Complying with the EPA's direction in relation to where an imminent threat of damage has occurred
- Where damage has occurred, the operators shall take steps to control, contain, remove or manage the contaminants

Section 4.1 of the document '*Environmental Liabilities Regulations – Guidance Document, EPA 2011*' identifies **proactive risk management** as a core principle by which these Regulations will be implemented by the EPA. Section 4.3 of the Regulations identifies Environmental Liability Risk Assessment (ELRA) as being a good example of a methodology for environmental risk management. Therefore, the preparation of an ELRA can be considered as a means of implementation of these Regulations.

1.2 Environmental Liability Risk Assessment

Environmental Liabilities can be subdivided into **known** and **unknown liabilities**. Different financial instruments are appropriate depending on whether it is an anticipated liability, such as the ongoing environmental management of a closed and restored landfill, or whether it is an unknown liability arising from, for example, accidental discharge or tank rupture of uncontrolled migration at a waste treatment facility.

- The financial instruments most suited for the provision of **known liabilities (Closure and Aftercare)** are cash based, such as Trusts, Cash funds or Escrow.
- The financial instruments most suited for the provision of **unknown liabilities (ELRA)** are Insurances, Bonds, Standby Letters of Credit and Guarantees.

The EPA guidance document '*Guidance on Environmental Liabilities Risk Assessment, Residuals Management Plans and Financial Provision*' (hereafter referred to as the 'Guidance Document') states that "Closure Restoration Management Planning (CRAMP), Environmental Liabilities Risk Assessment (ELRA) and Financial Provision (FP) are mutually dependent".

This document identifies a systematic step-wise approach to assess and quantify the risks and liabilities of a licensed facility as follows:

- Step 1: Initial Screening & Operational Risk Assessment
- Step 2: Preparation of a Closure, Restoration and Aftercare Management Plan (CRAMP) for known Liabilities
- Step 3: Environmental Liability Risk Assessment (ELRA) for unknown Liabilities
- Step 4: Identification of Financial Provision (FP) and Instruments

Step 1: Initial Screening & Operational Risk Assessment

Step 1 of the process involves a risk assessment decision matrix which is used to classify the Waterford City Anaerobic Digestion Facility into a Risk Category (1-3) and thereby select the specific CRAMP, ELRA and FP requirements that are required.

Step 2: Preparation of a Closure, Restoration and Aftercare Management Plan (CRAMP) for Known Liabilities

Depending on the nature of activities, either a Closure Plan or a more extensive Closure, Restoration and Aftercare Management Plan (CRAMP) will be required.

At a minimum, a Closure Plan is required which, as per the Guidance Document, must address:

- Introduction
- Site Evaluation
- Closure Considerations
- Criteria for Successful Closure
- Closure Plan Costing
- Closure Plan Update and Review
- Closure Plan Implementation
- Closure Plan Validation

A Closure Plan has been prepared herein which was informed primarily by information prepared and submitted as part of the planning and waste licence application processes.

It is considered difficult to fully identify the requirements of a Restoration, Aftercare and Management Plan for the facility at this juncture when detailed design has not been undertaken and operations have not commenced. Thus, a Restoration, Aftercare and Management Plan has not been full developed. However, an assessment of costs associated with potential restoration/aftercare activities has been identified.

Step 3: Environmental Liability Risk Assessment (ELRA) for Unknown Liabilities

An ELRA has particular regard to accidents, emergencies, past activities or other incidents, which might occur at a facility and their effect on the environment, on the neighbours of the facility and on adjoining land-uses. Information gathered during a desk based review of proposed operations and through operational experience was used to determine potential environmental risks.

The risk assessment identifies:

- any historical environmental liabilities related to the site
- potential environmental liabilities arising from the proposed activities at the site
- potential environmental liabilities arising from ceasing to carry out these activities
- financial provisions required for the site

This report contains a matrix identifying potential areas of risk, probability of an incident occurring and the consequences of such an incident. Worst-case scenarios for each incident or potential incident have been evaluated.

The risk assessment includes a costed environmental liabilities risk assessment for the facility. Based on this, the financial provisions that should be put in place are calculated. The financial provisions include the costs entered into or incurred in the carrying on of the activities to which this licence relates including decommissioning and closure of the facility.

Step 4: Identification of Financial Provision (FP) and Instruments

The main objective of Financial Provision is to ensure that sufficient financial resources are available to cover:

- known environmental liabilities that will arise at the time of facility closure
- known environmental liabilities that are associated with the aftercare and maintenance of the facility until such time as the facility is considered to no longer pose a risk to the environment, if applicable
- unknown environmental liabilities that may occur during the operating life of the facility

The amount of financial provision required for the Waterford City Anaerobic Digestion Facility has been determined using the CRAMP (Step 2) and ELRA (Step 3) processes as outlined in the guidance document.

1.3 Status of Document

It must be stated at the outset that the preparation of an ELRA and Closure Plan/CRAMP, with identification of appropriate financial provision, at the application stage for a waste licence can only result in an ELRA and Closure Plan/CRAMP that can be considered preliminary in nature. This is due to the fact that, at this juncture and specific to the Waterford City Anaerobic Digestion Facility:

- detailed design of the facility has not been undertaken nor has the facility been constructed
- no operations have commenced at the facility

In the past, the preparation of ELRA and CRAMP has typically been a condition of a waste licence granted, therefore allowing the licence holders to have a full appreciation of issues that may result in potential unknown liabilities during operations and to allow consideration of plans and requirements for closure and restoration and aftercare (if required).

Thus, this document will aim to identify known and unknown liabilities as best as possible based on the current understanding of the development proposal. It is suggested that, in the event of the award of a licence under register number W0224-02, a review of this document be undertaken at a frequency identified by the Agency to reflect the operational realities that present themselves at the time.

It is understood at the time of writing that this approach is considered acceptable to the Agency.

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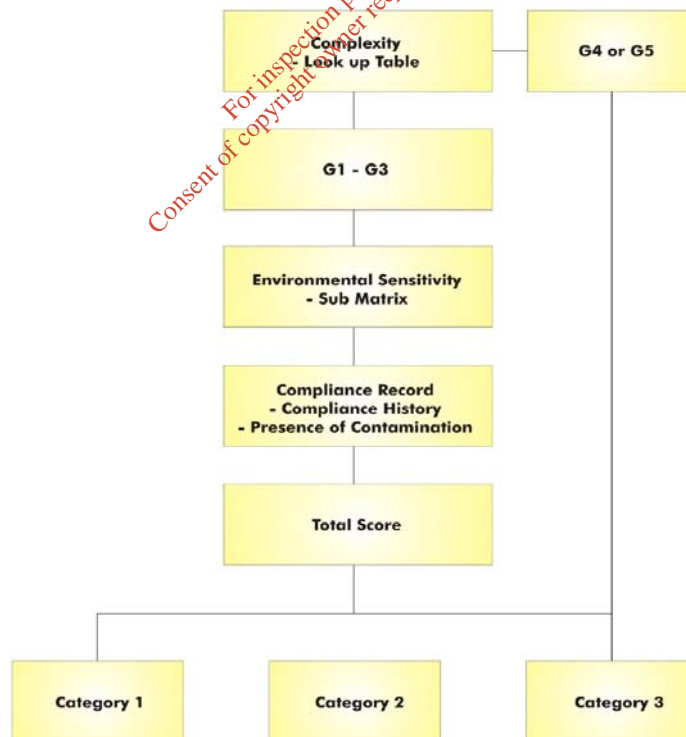
2 STEP 1: INITIAL SCREENING AND OPERATIONAL RISK ASSESSMENT

The initial screening and operational risk assessment of the Waterford City Anaerobic Digestion Facility was carried out to establish if the facility is of Low, Medium or High risk. The risk assessment criteria are as follows:

- Complexity** – the extent and magnitude of potential hazards present due to the operation of the facility (e.g. a function of the nature of the activity, the volumes of hazardous materials stored on site etc.). A Complexity Band (G1 least complex to G5 most complex) for each class of activity has been assigned and included in a Look-Up Table (Appendix B of the EPA Guidance Document). For activities with complexity G4 or G5, these facilities are automatically classified as Risk Category 3. For activities with complexity of G1, G2 or G3, these facilities must consider and evaluate their score using the Environmental Sensitivity and Compliance record
- Environmental Sensitivity** – the sensitivity of the receiving environment in the vicinity of the facility, with more sensitive locations given a higher score (e.g. the presence of aquifers below the site, groundwater vulnerability, the proximity to surface water bodies and their status, the proximity to sensitive human receptors, etc). The Environmental Sensitivity is calculated on a site-specific basis using a sub-matrix
- Compliance Record** – the compliance history of the facility and whether soil and/or activities carried on are in compliance with licence requirements and emission limits.

Each aspect is multiplied to give the Total Score for the facility, and this can be used to place the facility into an appropriate Risk Category (1-3). Once this has been completed, the licensee proceeds through the relevant steps of CRAMP, ELRA and FP that are considered appropriate for the Risk Category. Figure 2.1 shows the overall Step 1 process.

Figure 2.1: Flow chart of Initial Screening and Operational Risk (EPA, 2006)



2.1 Complexity

The Guidance Document was used to determine the initial screening and operational risk assessment of the Waterford City Anaerobic Digestion Facility. There are five possible complexity bands for a facility, G1 to G5, G5 being the most complex. The bands are used to determine the value used in the Operational Risk Assessments. Table 2.1 is based on Appendix 2 of the Guidance Document.

Table 2.1: Complexity Rating

Complexity	Complexity Band	Complexity Score
Waste Recovery Activity		
Recycling or reclamation of organic substances which are not used as solvents; where:		
<ul style="list-style-type: none"> < 5,000 tonnes per annum 	G2	
<ul style="list-style-type: none"> 5,000 – 25,000 tonnes per annum 	G3	3
<ul style="list-style-type: none"> > 25,000 tonnes per annum 	G4	
<ul style="list-style-type: none"> mushroom composting 	G4	

The principal activity to be carried out at Waterford City Anaerobic Digestion Facility will be the “recycling/reclamation of organic substances”, as per R3 of the Fourth Schedule of the Waste Management Acts 1996 to 2010, with a facility capacity of 22,000 tonnes per annum. Therefore, the Complexity Band for Waterford City Anaerobic Digestion Facility is **G3** with a corresponding complexity score of **3**.

As per Figure 2.1, a site with a Complexity Band of G3 must undergo an Environmental Sensitivity and Compliance Record assessment to determine an appropriate ‘score’ to determine its risk category, as shown in Table 2.2, taken from the Guidance Document.

Table 2.2: Risk Category Scoring

Category	Risk Score
Category 1	<5
Category 2	5 – 23
Category 3	>23

2.2 Environmental Sensitivity Assessment

The Guidance Document presents a sub-matrix for environmental sensitivity which considers 6 key potential environmental receptors and assigns individual scores that are added together to arrive at a total environmental attribute score. The total environmental attribute score is then used to look up the environmental sensitivity classification of the development.

Based on the environmental sensitivity sub matrix, Table 2.3 presents the environmental sensitivity assessment for the proposed development.

Table 2.3: Environmental Sensitivity Assessment

Environmental Sensitivity	Description	Attribute Score
Human Occupation	The proposed development is located directly adjacent to the Six Cross Roads Business Park and within 350 – 400m of private residences.	5
Groundwater Protection	The GSI classifies the Duncannon Group underlying the site as a 'Regionally Important Aquifer with fissured bedrock (Rf)'. The GSI distribution of vulnerability for the area is generally 'Moderate' to 'High' for the site, with increasing vulnerability from east to west.	<i>1 (Regionally important Aquifer)</i> <i>2 (Vulnerability – High)</i> 3 (total)
Sensitivity of Receiving Waters	Receiving water in Knockeen Tributary, indicated by the EPA as being of 'Moderate' overall status and overall risk classification of being 'Probably at Risk' (1b). Assumed to equate to Class B of Guidance Document sub-matrix.	2
Protected Ecological Sites	There are 25 designated sites located within 15 km of the proposed development. The closest designated site is the Kilbarry Bog located approximately 2 km to the east of the proposed development. This site is identified as a pNHA (Natural Heritage Area).	0
Air Quality & Topography	The topography of the site is mostly flat lying or sloping gently to the north. Potential receptors located 350 – 400 m north of the site are at a slight elevation of approximately 10 – 20 m.	1
Sensitive Agricultural Receptors	All lands in the vicinity of the site location are zones as industrial or open spaces (football fields). The nearest agricultural lands are located approximately 100 m to the south west of the site.	1
Total Environmental Attributable score		12

A Total Environmental Attributable score of 12 is therefore assigned to the proposed development. As per the Guidance Document, an attributable score of 12, which is considered moderate, equates to an Environmental Sensitivity Classification of 2.

2.3 Compliance Record Assessment

After the identification of the Environmental Sensitivity Classification, it is necessary to determine the Compliance Record for the facility. The waste licence application to which this assessment relates is for the review of an existing waste licence, W0234-01, which applied to a previous composting operation at the development location but which has not been operational since 2009.

The Guidance Document lists and scores facilities according to their number of compliances over a 12 month period and any degree of contamination resulting at the site. The Guidance Documents states:

*“For newly licensed facilities and those operating without non-compliance of emission limits, then these are classified as **Compliant/New Facility** and have a score of 1.”*

To this end, this application is considered as a new facility and/or complaint as the facility is not operational and has not been since 2009 and has not been in a position to be compliant, or non-compliant, with emission limits.

Thus, a compliance record score of **1** is assigned.

2.4 Overall Risk Assessment

The overall risk assessment is determined and identified as per Table 2-4.

Table 2.4: Overall Risk Score

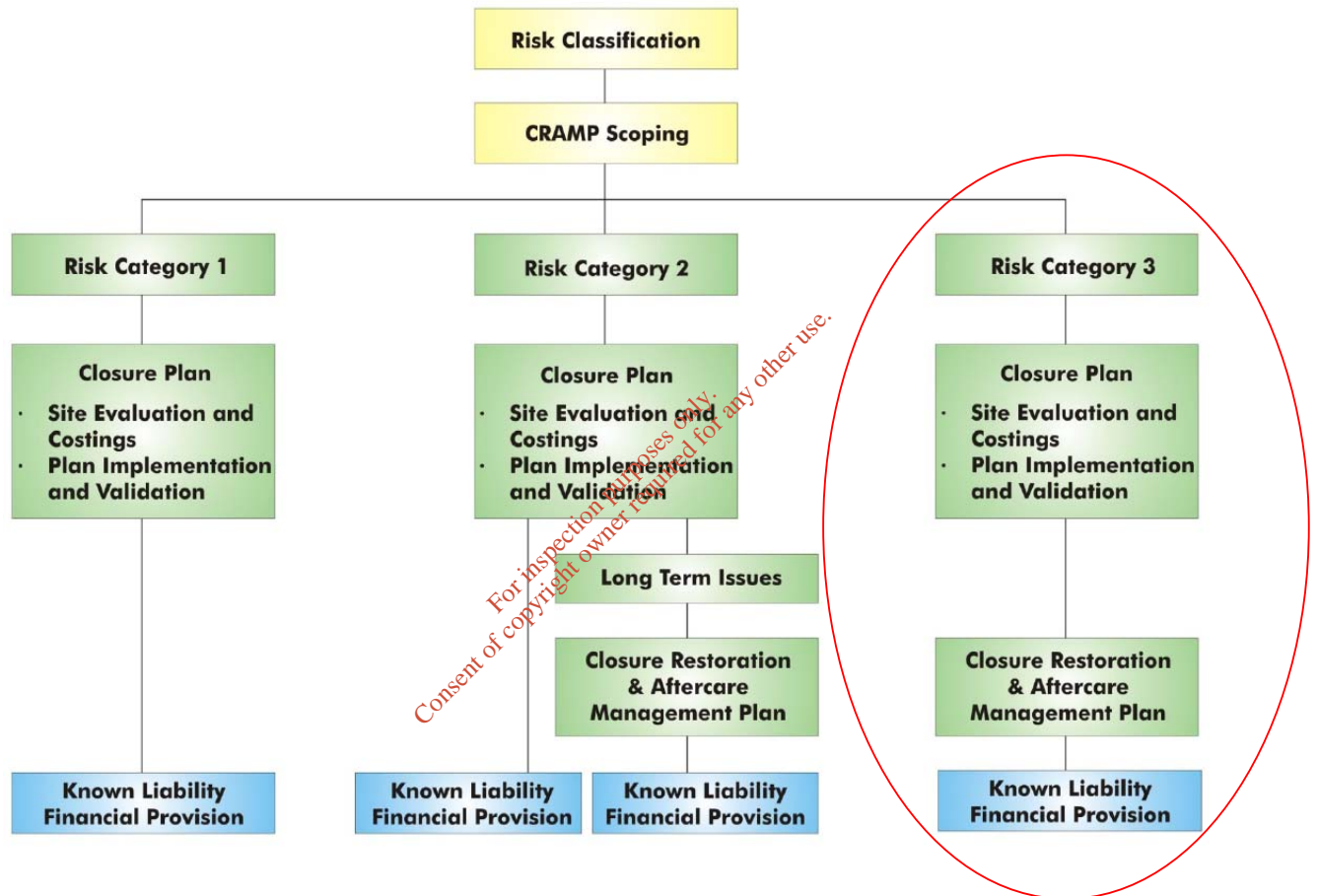
Overall Risk Score	
Complexity x Environmental Sensitivity x Compliance Record	3 x 12 x 1 = 36
Risk Category (as per Table 2-2)	Category 3

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3 STEP 2: CLOSURE, RESTORATION AND AFTERCARE MANAGEMENT PLAN (CRAMP) - KNOWN LIABILITIES

As a result of the Initial Screening (previous Step 1), the Waterford City Anaerobic Digestion Facility is deemed to be a Category 3 facility. Therefore, a Closure Plan and Restoration and Aftercare Plan (CRAMP) are required.

Figure 3.1: Closure, Restoration and Aftercare Management Plan Process (CRAMP) (EPA, 2006)



3.1 Closure Plan for Waterford City Anaerobic Digestion Facility

The closure plan for the Waterford City Anaerobic Digestion Facility includes the following sections (as set out in Table 3.2 of the EPA guidance document):

- Introduction
- Site Evaluation
- Closure Considerations
- Criteria for Successful Closure
- Closure Plan Costing
- Closure Plan Update and Review
- Closure Plan Implementation
- Closure Plan Validation

3.1.1 Introduction

Facility & Licence Details

A 22,000 tonnes per annum anaerobic digestion (AD) facility is proposed for development on the site of the former composting facility at Six Cross Roads, Kilbarry, Waterford. The development site is located on the north eastern corner of the Six Cross Roads Business Park, adjacent to the Greenstar Materials Recovery Facility.

A composting facility was previously operated at this site on behalf of WCC by Veolia Environmental Ltd. The composting facility ceased operations in 2009 and the site remains currently unused. The majority of the composting facility infrastructure remains in place. A waste licence (W0234-01) from the Environmental Protection Agency (EPA) for the previous composting activities currently pertains to the site.

Facility Closure Scenarios Covered in the Plan

Closure scenarios that could potentially be encountered at the facility are as follows:

- Planned closure over an identified time period in consultation with all relevant bodies
- Unexpected closure due to an unforeseen or emergency event

It should be noted that once operational, it will be intention of the operator to operate the facility for the full duration of its design lifespan.

3.1.2 Site Evaluation

Facility Description & History

As identified, the existing site formerly operated as a composting facility under waste licence W0234-01 until it ceased accepting waste in 2009. The overall site area is c.1.85 ha and the main composting facility infrastructure was:

- Waste reception building
- Composting storage lean-to building
- Tarmacadam site roads
- Concrete composting pads
- Concrete yard area for location of mobile composting units
- Biofilter units
- Portacabin site offices and welfare facilities
- Site serviced by mains water, electricity and sewer

While a closure process was undertaken after the cessation of waste acceptance, most of this infrastructure remains onsite. The Kilbarry site is located on the northern edge of the Six Cross Roads Business Park and is directly adjacent to a waste transfer facility, operated by Greenstar Ltd. under waste licence W0177-03. The Ballybeg housing estate is located approximately 350 m directly north of the site.

Facility Compliance Status

As previously identified, the facility is not currently operational and hence current facility compliance is not applicable.

Facility Processes and Activities

It is proposed to develop an anaerobic digestion facility for the generation of c. 1200 kW of renewable electricity for export to the grid. A similar quantity of usable heat will be produced at the plant also. The plant will accept and process up to 22,000 tonnes per annum of industrial organic waste and food waste. This material will be processed through a series of stages in enclosed tanks to produce a solid and liquid digestate by-product, which is intended to be used as a fertiliser/soil improver.

The facility will use proven anaerobic digestion technology for the processing of material accepted.

The principal plant components are:

- A fully enclosed waste reception building
- Site offices and welfare buildings
- Concrete hardstanding and marshalling area
- Access roads
- A fully enclosed digestate separation building
- 3 no. balancing tanks
- 2 no. primary digesters
- 1 no. after digester tank
- 2 no. after storage tanks
- 1 no. combined heat and power (CHP) gas engine with control container
- 1 no. enclosed flare
- Odour abatement system incorporating 15 m stack
- Wood drying & digestate storage building

The waste accepted at the facility will be pre-treated, stored and digested and the biogas produced will be fed to a CHP plant where it will be burned to produce electricity.

Food waste will be delivered to the facility in enclosed vehicles where it will be discharged inside the fully enclosed waste reception building. Prior to digestion, the food waste will be pre-treated to remove contaminants, then macerated and transferred to a storage tank. Liquid wastes will be delivered to the site by tanker and discharged into a storage vessel using sealed hosing. All of these activities will occur indoors.

Access to the waste reception building will be via fast acting roller shutter doors. Mechanical ventilation within the building will be provided using variable speed fans to ensure increased inward air flows when doors are opened, thereby operating under 'negative pressure'. Air extracted from within the waste reception building will pass through an inorganic clay based biofiltration system to ensure treatment of the potentially odorous building air.

Waste material is pumped to the balancing tanks which have a nominal storage capacity of 7 days to allow for any fluctuations in delivery of waste. Stored waste will be fed from the balancing tanks directly to the two sealed digester tanks, where the organic matter degrades over a period of c. 45 days. Biogas generated during the digestion process will be contained in double membrane gas holders on the top of the digester and storage tanks prior to desulphurisation and delivery to the CHP unit where it will be thermally oxidised to produce heat and electricity.

The digestate will then be pasteurised in accordance with Animal By-Products Regulations (ABPR) and then separated into a liquid and solid fraction using a screw press separator. The two fractions will then be stored in storage tanks (liquid fraction) and a designated building (solid fraction) prior to removal from site (or other disposal where necessary).

For safety reasons, an enclosed flare is provided as back up capacity to the CHP, if necessary. The enclosed flare will be used infrequently during times when the CHP plant is offline i.e. for maintenance or replacement.

Drying facilities for wood chip material imported to the site will be provided in the renovated existing compost storage building, thereby utilising heat produced from the combined heat and power (CHP) engine, delivered via radiator pipes, to demonstrate a beneficial use of the CHP heat.

Inventory of Site Buildings, Plant, Raw Materials & Wastes

Principal plant components are described in the preceding section. Raw materials and Wastes will be confirmed during facility operations. The proposed facility layout is identified in Drawing LW12-193-01_200-005 in Appendix 1 of this document.

3.1.3 Closure considerations

Clean or Non Clean Closure Declaration

It is expected that a **clean closure**¹ will occur upon cessation of operations at the facility. Given the nature of activities proposed at the facility, it is not considered that there will be any remaining environmental liabilities post closure.

No further processing operations will be carried out post closure of the facility. Office activities may be carried out for a period of time to be determined.

Plant or Equipment Decontamination Requirements

Waterford City Anaerobic Digestion Facility will not require significant decommissioning or decontamination of plant, buildings or other infrastructure at the closure point due to the nature of site operations.

The most significant elements of site infrastructure to be decommissioned will be the:

- 4 no. pre-storage tanks
- 3 no. balancing tanks
- 2 no. primary digester tanks
- 1 no. after digester tank
- 2 no. after storage tanks

These tanks will be emptied of all of their contents and desludged by suitably qualified operators, using appropriate desludging equipment, with material removed and treated at an appropriate treatment facility. In addition, the Class 1 full retention interceptor will also be desludged.

Mobile and stationary plant, such as the CHP engine, flare, the odour abatement system and the separation plant will be appropriately cleaned, if required, and disconnected from gas/electricity supply.

The dust filtration unit will be cleaned and emptied of its filters and these will be disposed of at an authorised facility in an appropriate manner.

Procedures for plant and equipment decommissioning will be developed as part of the environmental management system (EMS) for the facility.

Plant Disposal or Recovery

Mobile and stationary plant will be cleaned and decommissioned upon cessation of facility operations. A commercial decision will then be taken as to the re-use, sale or recovery (as scrap) potential of this equipment.

Similarly, once cleaned, a decision will be made as to whether the identified tanks have a commercial value for re-use, sale or recovery.

Waste Disposal or Recovery

As identified, closure of the facility may be planned or unplanned. In either event, waste acceptance will cease at the facility and will be directed to another authorised facility in the region for appropriate treatment.

Waste material previously accepted at the facility will be transported offsite to another authorised facility in the region for appropriate treatment. In the event of an unplanned closure of the site, the emergency plan developed as part of the EMS will outline the procedures to be followed to ensure appropriate management and removal of waste materials at the site.

¹ Clean Closure – upon cessation of operations and subsequent decommissioning at the facility, there are no remaining environmental liabilities.

3.1.4 Criteria for Successful Closure

The following criteria will be used to determine whether successful closure of the facility has been achieved.

- All plant safely to be decontaminated using standard procedures and authorised contractors
- All wastes handled and/or stored to be disposed or recovered in a manner which complies with regulatory requirements
- All relevant records relating to waste and materials movement and transfer or disposal to be managed and retained throughout the closure process.
- No soil or groundwater contamination at the site to be verified using monitoring data and a soil /groundwater assessment at the time of closure (if required).
- The Environmental Management System to remain in place and be actively implemented during the closure period.

3.1.5 Closure Plan Costing

Table 3.1 shows a matrix of decommissioning and closure tasks and associated costs.

3.1.6 Closure Plan Update and Review

Proposed Frequency of Review

This closure plan will be reviewed and updated as per the requirements of the Agency.

Proposed Scope of Review

The updated plan will take into account any site process changes, technology changes and costing changes. Updates will be included as part of the relevant AER and submitted to the EPA for approval.

3.1.7 Closure Plan Implementation

EPA Notification

Upon cessation of waste acceptance at the Waterford City Anaerobic Digestion Facility, the EPA will be notified. In the event of a planned closure, the operators will liaise with the EPA 3 months in advance of closure to ensure that any Agency requirements are satisfied. Should closure result from an unexpected event, the Agency will be informed at the earliest possible time and in keeping with any licence requirement.

Closure Plan Programme

In the event of a planned closure, it is envisaged that the closure plan will be implemented over a 'ramp down' period of time associated with the anaerobic digestion process undertaken i.e. over an approximate 2 -3 months period to allow material complete the AD process. However, in the event of an unplanned closure, it may be necessary to interrupt the AD process and implement a shorter closure programme dependent on circumstance.

Test Programme

It is not envisaged that a dedicated test programme will be required during the implementation of the closure plan, given the nature of activities and expected duration of the closure period. However, it is expected that environmental monitoring will be undertaken at the facility for a duration agreed with the Agency, such that baseline/background environmental conditions can be demonstrated.

Table 3.1: Decommissioning and Closure Tasks and Associated Costs and Responsibilities

Element of Facility	Plant Removal	Decontamination	Waste Disposal/Recovery	Decommissioning Supervision	Demolition	Environmental Monitoring	Verification audit/certification
Plant							
Macerating unit, conveyor, metals detection unit, in-feed separator press, digestate separator press, loading shovel, pumps, motors,	Some Instances (3rd party)	Washdown only – internal staff	n/a	3rd Party	No	n/a	3rd Party
Other site infrastructure							
Waste Reception Building	No	Washdown only – internal staff	As per documented procedure (from annual operational budget)	3rd Party	No	n/a	3rd Party
Facility Tank Infrastructure	No	3 rd Party	3 rd Party	3 rd Party	3 rd Party (if applicable)	No	3 rd Party
Weighbridge	No	No	n/a	No	No	n/a	n/a
CHP Unit	3 rd Party	No	n/a	3 rd Party	No	n/a	3 rd Party
Flare	3 rd Party	No	n/a	3 rd Party	No	n/a	3 rd Party
Odour abatement system	3 rd Party	No	n/a	3 rd Party	No	n/a	3 rd Party
Site fencing and gates	No	n/a	n/a	n/a	No	n/a	n/a
Monitoring infrastructure	No	n/a	n/a	Facility personnel	No	Yes (for limited period)	3rd Party
Roadways, carpark	No	n/a	n/a	n/a	No	n/a	n/a
Surface Water Management							
Surface water pond	No	3 rd party	3 rd party	n/a	No	n/a	3rd Party
Full Retention Oil Interceptor	No	3 rd party	3 rd party	n/a	No	n/a	3rd Party
Surface water collection pumps & pipework	No	3 rd party	3 rd party	Facility personnel	No	n/a	3rd Party
Other Facility Buildings							
Administration building	No	n/a	n/a	n/a	No	No	n/a
Wood Drying/Digestate Storage Building & Separation Building	No	Washdown only – internal staff	As per documented procedure (from operational budget)	3rd Party	No	No	3rd Party
<i>Subtotals</i>	€15,000	€5,000	€5,000	(included in Verification)	No	€2,000	€10,000
Estimated Total Cost							€37,000

Local or other Statutory Authority Notifications

In the event of a planned or unplanned closure, the operators will liaise with other elements of Waterford City Council as required.

Full or Partial Closure Considerations

Given the nature of the facility operations, it is not considered that a partial closure of the facility would be applicable or feasible. In the event of closure, it is envisaged that closure will be a full closure in terms of waste processing operations.

3.1.8 Closure Plan Validation

Audit, Report and Certificate

Upon closure of the facility, Waterford City Council will retain the services of a suitably qualified independent auditor to certify the closure process to determine the success of the closure against the criteria identified in Section 3.1.4, and who will report their findings and certify same.

It is understood by the operator that this validation relates solely to the physical closure of the facility and that any formal acceptance of closure and ultimate surrender or transfer of a licence is a separate process that must be formally agreed with the EPA.

3.2 **Restoration and Aftercare Management Plan for Waterford City Anaerobic Digestion Facility**

The Guidance Document identifies that *"some Risk Category 2 and the majority of Category 3 facilities will require a restoration and aftercare management plan"*

The elements to be addressed in a restoration and aftercare management plan are:

- Restoration and Remediation Proposals
 - Site Investigation Findings
 - Qualitative and/or Quantitative Risk Assessment
 - Remediation and/or Restoration proposals
- Aftercare Management
 - Proposed Short term Aftercare Monitoring and Maintenance
 - Proposed Long term Aftercare Monitoring and Maintenance
- Site Restoration & Aftercare Management Costs
 - Restoration and/or Remediation Costing
 - Aftercare Costings

The Guidance Document also identifies that *"there are two main circumstances in which site restoration and aftercare management plans will be required....."*

- *Significant soil and groundwater contamination including brownfield redevelopment*
- *Landform changes – landfill and mine sites"*

As "landform changes" are not applicable to the proposed development, the requirement for a restoration and aftercare management plan for the Waterford City Anaerobic Digestion Facility can only be linked to any potential for "significant soil and groundwater contamination".

Given that, at time of writing, detailed design of the facility has not been undertaken and no operational phase has commenced, it is difficult to assess what likely restoration and/or remediation requirements may be applicable in the event of significant soil and groundwater contamination.

The design of the facility will incorporate impermeable surfaces in all waste acceptance, processing and storage areas with the intention of eliminating any potential for soil and/or groundwater contamination at the facility. In addition, leak detection system will be incorporated into all tanks constructed as a monitoring measure for tank integrity.

However, the Guidance Document also states that *"where there is evidence of soil and groundwater contamination or there have been spills in the past, facilities will be required to undertake some level of soil and groundwater investigation and risk assessment"*.

Therefore, at this time, and given the intention to undertake a clean closure at the site, a restoration and aftercare management plan is not fully developed.

However, an allowance for undertaking exploratory soil and groundwater investigation is presented, in the event of any significant spills or evidence of contamination being observed.

Table 3.2 presents estimated costs for aftercare management post clean closure. This table can be amended in future iterations of this report, when information regarding detailed design of the facility and ground condition at the site location are more fully understood.

Table 3.2: Estimated Restoration & Aftercare Costs

Activity	Estimated Cost
Exploratory Site Investigation Works	€25,000
EPA monitoring (and potential licence surrender)	€15,000
Estimated Total	€40,000

3.3 Conclusion – Known Liabilities

With regard to the known liabilities of Waterford City Anaerobic Digestion Facility, this section has attempted to identify, insofar as possible at this juncture, the provisions required for the closure, restoration and aftercare of the facility.

Estimated costs of **€77,000** are identified to account for closure, restoration and aftercare actions in the event of a clean closure event at the facility.

4 STEP 3: ENVIRONMENTAL LIABILITIES RISK ASSESSMENT (ELRA) - UNKNOWN LIABILITIES

The objectives of a detailed ELRA, as identified in the EPA guidance document, are:

- to identify and quantify environmental liabilities at the facility focusing on unplanned but possible and plausible events occurring during the operational phase
- to calculate the value of financial provisions required to cover unknown liabilities
- to identify suitable financial instruments to cover each of the financial provisions and
- to provide a mechanism to encourage continuous environmental improvement through the management of potential environmental risks

This section addresses:

- Risk Scope
- Risk Classification
- Risk Identification
- Risk Assessment
- Risk Prevention/Mitigation
- Costs

4.1 Risk Scope

As per the Guidance Document, environmental risks addressed in this ELRA will be deemed to cover all risks to surface water, groundwater, atmosphere, land and human health.

4.1 Risk Classification and Identification

In order to identify and quantify the degree of risk the following are required:

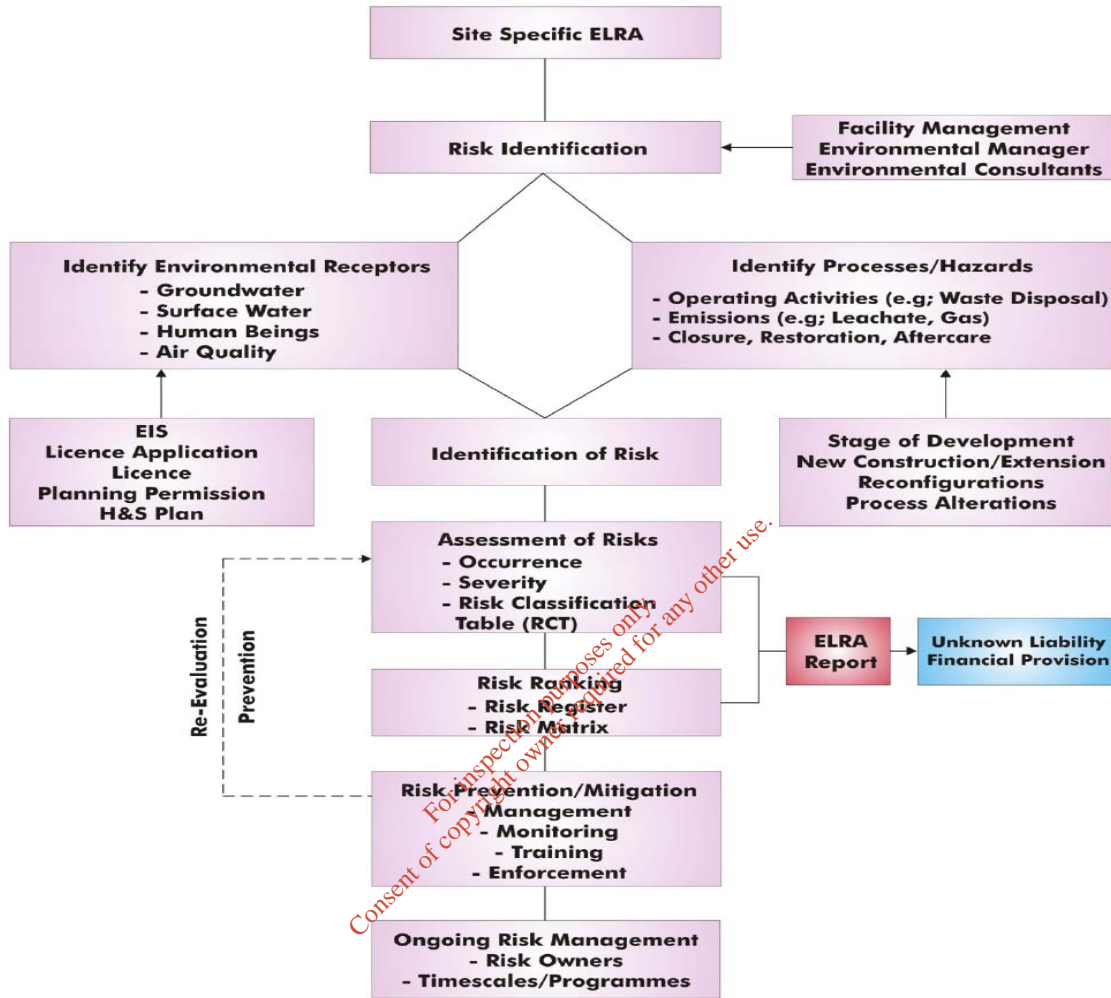
- the establishment of risk classification and
- the identification of risks

A flow chart summarising the process for Category 3 sites is shown in Figure 4.1 (extracted from the Guidance Document). The risk classification is based on an assessment of the probable occurrence of an event and following on from that, the likely severity if an event does occur. The combination of probable occurrence and likely severity determines the Risk Score and consequently the amount of financial provision required.

$$\text{Probable Event Occurrence} \times \text{likely Event Severity} = \text{Risk Score}$$

A 'Risk Classification Table – Occurrence' and 'Risk Classification Table – Severity', as per the Guidance Document, are included in Tables 4.1 and 4.2. Estimated costs have been inserted into Table 4.2.

Figure 4.1: Environmental Liability Risk Assessment – Risk Category 3 Facilities (EPA, 2006)



A list of potential risks has been identified, based on the current proposed operation and the knowledge and experience of the operator, Waterford City Council, the proposed technology providers FLI Energy, and the consultant FTC.

Table 4.3 presents these risks in a Risk Register.

Table 4.1: Risk Classification Table – Occurrence (EPA, 2006)

Rating	Occurrence		
	Category	Description	Likelihood of Occurrence (%)
1	Very Low	Very low chance (0-5%) of hazard occurring in 30yr period	0-5
2	Low	Low chance (5 - 10%) of hazard occurring in 30yr period	5-10
3	Medium	Medium chance (10 -20%) of hazard occurring in 30yr period	10-20
4	High	High chance (20 -50 %) of hazard occurring in 30yr period	20-50
5	Very High	Very high chance (>50%) of hazard occurring in 30yr period	>50

Table 4.2: Risk Classification Table – Severity (EPA, 2006)

Rating	Severity		
	Category	Description	Cost of Remediation €
1	Trivial	No damage or negligible change to the environment	500-1,000
2	Minor	Minor impact/ localised or nuisance	1,000-5,000
3	Moderate	Moderate damage to environment	5,000-50,000
4	Major	Severe damage to local environment	50,000-300,000
5	Massive	Massive damage to a large area, irreversible in medium term	300,000-1,500,000

**The facility specific cost estimates are based on expert opinion*

The identified risks were classified in accordance with Tables 4.1 and 4.2.

4.2 Assessment of Risks

The risks are scored in accordance with the severity rating and the occurrence rating as presented in Table 4.3.

4.3 Risk Matrix

Based on the risks identified in Table 4-3, a risk matrix has been developed to allow the risks to be easily displayed and prioritised.

The risks are colour coded to provide a broad indication of the critical nature of each task, using the following colour code:

- Red – risks highlighted in red are considered to be high level risks requiring priority attention
- Amber – these risks are considered medium level risks requiring mitigation and/or management
- Green – (light and dark) these are identified as low level risks, however, they still require continuing awareness and monitoring on a regular basis.

Table 4.3: Risk Register for potential Unknown Risks

Risk ID	Potential Hazard	Potential Impact on Environment (inc Human health)	Mitigation Measures	Occurrence	Basis of Occurrence	Severity Rating	Basis of Severity	Risk Score	Likelihood of Occurrence, %	Cost Range, €	Median Probability	Median Severity	Most Likely Cost Scenario
1	Breach in integrity of facility tanks	Contamination of soil, groundwater and/or surfacewater	Construction Quality Assurance Validation	2	Low occurrence if properly constructed	4	Cost of repair of system and remediation of soil, groundwater or surfacewaters	8	5 - 10	50,000 – 300,000	7.5	175,000	13,125
2	Failure of Full retention interceptor	Contamination of receiving surface waters with hydrocarbons	Maintenance contract to be put in place	2	Low occurrence if properly installed and maintained	3	Cost of repair of system and potential remediation of surfacewaters	6	5 - 10	5,000 – 50,000	7.5	27,500	2,062.50
3	Under or Non performance of surface attenuation lagoon	Contamination of receiving surface waters with suspended solids	Detailed design considering appropriate hydrological conditions	2	Low occurrence if properly designed	3	Cost of repair of system and remediation of surfacewaters	6	5 - 10	5,000 – 50,000	7.5	27,500	2,062.50
4	Explosion associated with biogas collection/storage/ utilisation	Air Pollution; contaminated surface water runoff during fire fighting; fatality	Design and construction to incorporate appropriate safety standards; Construction Quality Assurance Validation; Development of operational and maintenance SOPs	1	Very low occurrence if properly designed, installed and maintained	5	Cost of repair of system, compensation and/or fines	5	0 - 5	300,000 – 1,500,000	2.5	900,000	22,500
5	Leak from onsite diesel storage	Contamination of soil, groundwater and/or surfacewater	Bund integrity testing as per licence conditions	2	Low occurrence if properly installed and maintained	2	Cost of repair of system and remediation of groundwater/ surfacewaters	4	5 - 10	1,000 – 5,000	7.5	3,000	225
6	Fire in the Control building	Air Pollution; contaminated surface water runoff during fire fighting	Fire control and fighting SOPs to be developed	1	Very low occurrence if SOP adhered to	3	Cost of repair of building repair and remediation of surfacewaters/disposal of firewater	3	0 - 5	5,000 – 50,000	2.5	27,500	687.50
7	Fire in the Waste Reception Building	Air Pollution; contaminated surface water runoff during fire fighting	Fire control and fighting SOPs & waste acceptance SOPs to be developed	1	Very low occurrence if SOP adhered to	4	Cost of repair of building repair and remediation of surfacewaters/disposal of firewater	4	0 - 5	50,000 – 300,000	2.5	175,000	4,375
8	Fire in the Wood drying/Digestate Storage building	Air Pollution; contaminated surface water runoff during fire fighting	Fire control and fighting SOPs to be developed	1	Very low occurrence if SOP adhered to	4	Cost of repair of building repair and remediation of surfacewaters/disposal of firewater	4	0 - 5	50,000 – 300,000	2.5	175,000	4,375
9	Site works: welding, excavations, machinery movement, lagoons	Electrocution; asphyxiation; burial; struck by vehicles; drowning	SOP for facility operations; Method statements for onsite works	1	Very low occurrence if SOP adhered to	5	Cost of compensation and/or fines	5	0 - 5	300,000 – 1,500,000	2.5	900,000	22,500
10	Failure of dust extraction and uncontrolled release of dust during operations	Potential nuisance in the localised area	Maintenance contract to be put in place	2	Low occurrence if properly installed and maintained	2	Cost of system repair, minor clean up costs	4	5 - 10	5,000 – 50,000	7.5	27,500	2,062.50
11	Failure of odour abatement system and uncontrolled release of odour during operations	Potential nuisance in the localised area	Maintenance contract to be put in place	2	Low occurrence if properly installed and maintained	2	Cost of system repair	4	5 - 10	5,000 – 50,000	7.5	27,500	2,062.50
												Total	€76,037.50

Table 4.4: Risk Matrix

Occurrence	V. High	5					
	High	4					
	Medium	3					
	Low	2		2, 3, 5, 10, 11	1,		
	V. Low	1			6	7, 8,	4, 9
		1	2	3	4	5	
		Trivial	Minor	Moderate	Major	Massive	
		Severity					

There are no risks identified in the red or amber zones that would require attention and/or mitigation. All risks currently identified require ongoing monitoring and awareness on an ongoing basis. Regular risk reviews will examine the status of the identified risks on an ongoing basis.

4.4 Risk Prevention & Mitigation

Upon development of the facility and commencement of operations, standard operation procedures (SOPs) will be developed for all activities at the site. When available, these SOPs can be integrated into the Risk Register as identified mitigation measures and used to reduce the level of risks identified, as part of any review procedure of this document.

4.5 Quantification of Unknown Environmental Liabilities

The Risk Register in Table 4.3 identified and assessed the median probability and the median severity of the identified risks to identify a 'most likely scenario cost'. A cost scenario of **€76,037.50** was identified.

4.6 Reviews of Risk Assessment

In the event of grant of a licence under register number W0234-02, the risk assessment may be reviewed as part of the overall review of the ELRA and CRAMP, to reflect any changes in environmental risks.

In particular, the reviews will include:

- an update of the risk register through the addition of new risks or the omission of redundant ones
- verification of continued management systems in place, i.e. mitigation measures
- ensure that the financial provision continues to cover the environmental liabilities at the site
- verification that the financial instruments continue to effectively provide the financial provision

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5 STEP 4: FINANCIAL PROVISION

Financial provision ensures that an available source of funding is maintained for:

- known environmental liabilities that will arise at the time of facility closure
- known environmental liabilities that are associated with the aftercare and maintenance of the facility until such a time as the facility is considered to no longer pose a risk to the environment
- unknown environmental liabilities that may occur during the operating life of the facility

The EPA Guidance Document indicates that unknown environmental liabilities are costed only for the operational phase of a facility and that the likelihood of unknown environmental liabilities occurring during the aftercare phase and post surrender of the licence should be extremely low if all significant environmental liabilities are identified and addressed during closure, restoration and aftercare phases.

As applicant, Waterford City Council will ensure that critical environmental management systems during the operational phase which will include any closure period. The likelihood of liability is considered to be low as the facility will be actively managed in accordance with the conditions of the waste licence and in accordance with the various management plans and procedures to be developed when operations commence.

The amount of financial provision required for known liabilities associated with the CRAMP have been costed in Section 3 of this report.

The financial provision for unknown liabilities associated with the ELRA that may occur during the operating life of the facility are presented in Section 4 of this report.

Table 5.3 of the Guidance Document suggests the following appropriate measures as appropriate financial provision instruments:

- Site specific, unknown Category 3 environmental liabilities:
 - Insurance
 - Bonds
 - Letters of Credit
 - Parent Company Guarantee
 - 'Self' insurance
 - Overdrafts
- Short term, closure & restoration known liabilities:
 - Cash Deposits (lump sum or accumulating fund)
 - Escrow accounts

As applicant, Waterford City Council commits to the provision of adequate and agreed methods of financial provision to reflect potential known and unknown liabilities identified in this document (and subsequent revised versions).

It is not possible at this stage, in the absence of a granted waste licence, to provide detail on the means of financial provision as the specific provisions cannot be put in place for a non operational facility without a granted licence. However, WCC will comply with any condition placed in a reviewed licence (if granted) in terms of providing detail on said provisions.

Table 5.1 summarises the financial provision measure to be put in place by Waterford City Council to address the known and unknown liabilities associated with the Waterford City Anaerobic Digestion Facility.

Table 5.1: Financial Provision for Waterford City Anaerobic Digestion Facility

Liability Type	Description	Method of Quantification	Amount of Provision	Financial Instrument
Known Liability – Closure	Clean Closure of the facility	Closure Plan – Section 3.1	€37,000	Method of provision to be agreed
Known Liability – Restoration and Aftercare Management	Restoration and aftercare management of the facility post closure	Restoration, Aftercare & Management Plan – Section 3.2	€40,000	Method of provision to be agreed
Unknown Liability (Operational Phase)	Risk of unplanned/unknown events occurring at the facility	ELRA – Section 4	€76,037.50	Method of provision to be agreed

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Appendix 1

Drawings

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Facility
 Grid Reference: E 2582 N 1096

Address:
 Green Road,
 Kildarry,
 Six Cross Roads Business Park
 Waterford City

ITEM	DESCRIPTION	CHARACTERISTICS
1	WASTE RECEPTION BLDG	27m x 20m EXT
2	PRIMARY DIGESTERS	Ø24m x 6m HIGH
3	AFTER DIGESTER	Ø24m x 6m HIGH
4	AFTER STORAGE TANK(S)	Ø33m x 6m HIGH
5	CONTROL CONTAINER	-
6	CHP ENGINE	1 x 1200 kW
7	ENCLOSED FLARE	TBC n/A
8	CHP PRE-STORAGE TANKS	Ø3.5m x 10m HIGH
9	BALANCING TANK	Ø8m x 5m HIGH
10	ODOUR ABATEMENT SYS	25.5m x 6m HIGH
11	ODOUR STACK	Ø1.1m x TBC HIGH
12	DIGESTATE SEPARATION	5.5m x 2m HIGH
13	RAINWATER HARVESTING	3.5m x 2m x 1.5m HIGH
14	BUNDLED RIG TANK	3.5m x 2m x 1.5m HIGH
15	CAN PARKING	15m x 4.5m
16	PASTEURISATION UNIT	-

Rev.	By	CHK	Appr	Date	Description
A	SI	SI	SI	19.07.12	ISSUE FOR WASTE LICENCE



Name of Job
 WATERFOOD ANAEROBIC DIGESTION FACILITY
 WASTE LICENCE REVIEW APPLICATION

Title of Drawing
 SITE LAYOUT PLAN

Scale Used	This Drawing was prepared to
1:1000	A3

Dwg. No. **LW12-193-01-200-005**

FEHILY TIMONEY & COMPANY
 CONSULTANTS IN ENGINEERING & ENVIRONMENTAL SCIENCES
 W. www.fehilytimoney.ie E. info@ft.ie
 16, The Parade, Rock, Co. Kerry, Ireland.
 T. +353(0)964139 F. +353(0)21-456444
 11, St. John's Street, Waterford, Ireland.
 T. +353(0)5325826 F. +353(0)53258261

