



global environmental solutions

**Huntstown Inert Waste Recovery Facility
North Quarry, Huntstown
Finglas, Dublin 11**

*For inspection purposes only.
Consent of copyright owner required for any other use.*

**ENVIRONMENTAL LIABILITY
RISK ASSESSMENT (ELRA)**



August 2015
SLR Ref: 501.00180.00111 ELRA Rev A

CONTENTS

EXECUTIVE SUMMARY	1
1.0 INTRODUCTION AND BACKGROUND	3
1.1 Huntstown Soil Recovery Facility.....	3
1.2 Site Description	3
1.3 Surrounding Land Use	6
1.4 Classes of Licensed Waste Activities	7
1.5 Licence Requirements.....	7
1.6 Scope of this ELRA.....	8
2.0 CHARACTERISATION OF LOCAL ENVIRONMENT	9
2.1 Site Operation	9
2.2 Operator Performance.....	9
2.3 Environmental Sensitivity	10
3.0 RISK ASSESSMENT	13
3.1 Introduction.....	13
3.2 Risk Identification.....	13
3.3 Risk Analysis	15
3.4 Risk Evaluation.....	19
3.5 Risk Treatment.....	20
4.0 IDENTIFICATION OF PLAUSIBLE WORST CASE SCENARIO	25
5.0 QUANTIFICATION AND COSTING	26
6.0 CONCLUSIONS.....	30
6.1 Environmental Liabilities.....	30
6.2 Financial Provision for Environmental Liabilities.....	30
7.0 CLOSURE.....	31

TABLES

Table 3-1 Potential Risks Identified for Recovery Activity	14
Table 3-2 Risk Classification Table – Likelihood	15
Table 3-3 Risk Classification Table – Consequence.....	15
Table 3-4 Risk Analysis	16
Table 3-5 Risk Evaluation Table.....	19
Table 3-6 Risk Matrix	20
Table 3-7 Risk Reduction due to Existing Mitigation Measures	21
Table 5-1 Quantification and Costing of Plausible Worst Case Scenario	28

FIGURES

Figure 1 Site Location.....	4
Figure 2 Waste Recovery Facility : Existing Site Layout.....	4
Figure 3 Surrounding Land Use.....	7

PLATES

Plate 1 Aerial View of Site from Google Earth (July 2013)	5
Plate 2 View of Northern Quarry Void in December 2013.....	6

APPENDICES

Appendix A Details of Roadstone Limited Current Insurances

EXECUTIVE SUMMARY

Activity Details

Name	Huntstown Soil Recovery Facility
Address	North Quarry, Huntstown, Finglas, Dublin 11
Licence No.	WO277-01
Activities Licensed	<p><i>Class R5 (P):</i> Recycling / reclamation of other inorganic materials, which includes soil cleaning resulting in recovery of the soil and recycling of inorganic construction materials (Principal Activity).</p> <p><i>Class R3 :</i> Recycling / reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes) which includes gasification and pyrolysis using the components as chemicals.</p> <p><i>Class R13 :</i> Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage (being preliminary storage according to the definition of 'collection' in Section 5(1)), pending collection, on the site where the waste is produced).</p>

Report Preparation

This Environmental Liability Risk Assessment has been independently prepared on behalf of Roadstone Ltd. by SLR Consulting Ireland, 7 Dundrum Business Park, Windy Arbour, Dublin 14.

Comparison with Previous Plans

This plan updates a draft Environmental Liability Risk Assessment previously submitted to the EPA by Roadstone Ltd. in September 2013 in support of the its waste licence application. However, no financial provision was formally agreed with the EPA on foot of the draft plan at that time.

Overview of the Plan

This Environmental Liability Risk Assessment has had regard to the requirements outlined in Condition 12 of the Waste Licence and was prepared in accordance with the EPA publication, *Guidance on Assessing and Costing Environmental Liabilities (2014)*.

Cost Summary

As a result of this assessment, and based on a plausible worst case scenario, a requirement for financial provision of **€1,584,300** (including 20% contingency) has been calculated for the waste facility at Huntstown. This amount is deemed to be the maximum liability which could arise from the operation of the facility.

Financial Provision

Arising out of this assessment, Roadstone Ltd. is prepared to make the required financial provision in respect of closure and aftercare costs by means of a financial bond submitted under separate cover to the EPA.

Review

This ELRA will be reviewed annually and updated where necessary to take account of any facility or process changes, technology changes and costing changes (inflation). Details of the review and updates (if any) shall be included in the Annual Environmental Report (AER) submission to the EPA.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

1.0 INTRODUCTION AND BACKGROUND

1.1 Huntstown Soil Recovery Facility

The Environmental Protection Agency (hereinafter '*the Agency*' or '*EPA*') issued a waste licence to Roadstone Ltd. (hereinafter '*Roadstone*') in respect of an inert waste recovery facility at Huntstown Quarry, Finglas, Dublin 11 on 11th February 2015 (Ref. W0277-01). The principal waste activity at the site is backfilling an existing quarry void (North Quarry) using imported inert soil and stone. It is anticipated that waste activities will commence in the late spring / early summer of 2015.

The waste licence provides for

- Backfilling of up to 7,295,000 tonnes (approximately 3,840,000m³) of inert material, of which approximately 7,200,000 tonnes must be imported. Inert materials to be placed and recovered at the facility will be sourced from construction and/or demolition sites where testing has indicated that no soil or material contamination is present. The inert material will consist principally of excess soil, stones and/or broken rock excavated on construction sites;
- Separation of any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) unintentionally imported to site prior to removal off-site to appropriately licensed waste disposal or recovery facilities;
- Restoration of the backfilled void (including placement of cover soils and seeding) and return to use as agricultural grassland and
- Environmental monitoring of noise, dust, surface water and groundwater for the duration of the site restoration works and for a short period thereafter.

1.2 Site Description

The licenced inert waste recovery facility is located entirely within the townlands of Huntstown and Kilshane, Co. Dublin, approximately 2.5km north-west of the Dublin suburb of Finglas and 2km north-west of the interchange between the N2 Dual Carriageway and the M50 Motorway. The plan extent of the lands owned by Roadstone Ltd. is outlined in blue on an extract from the Discovery Series map of the area, reproduced as Figure 1.

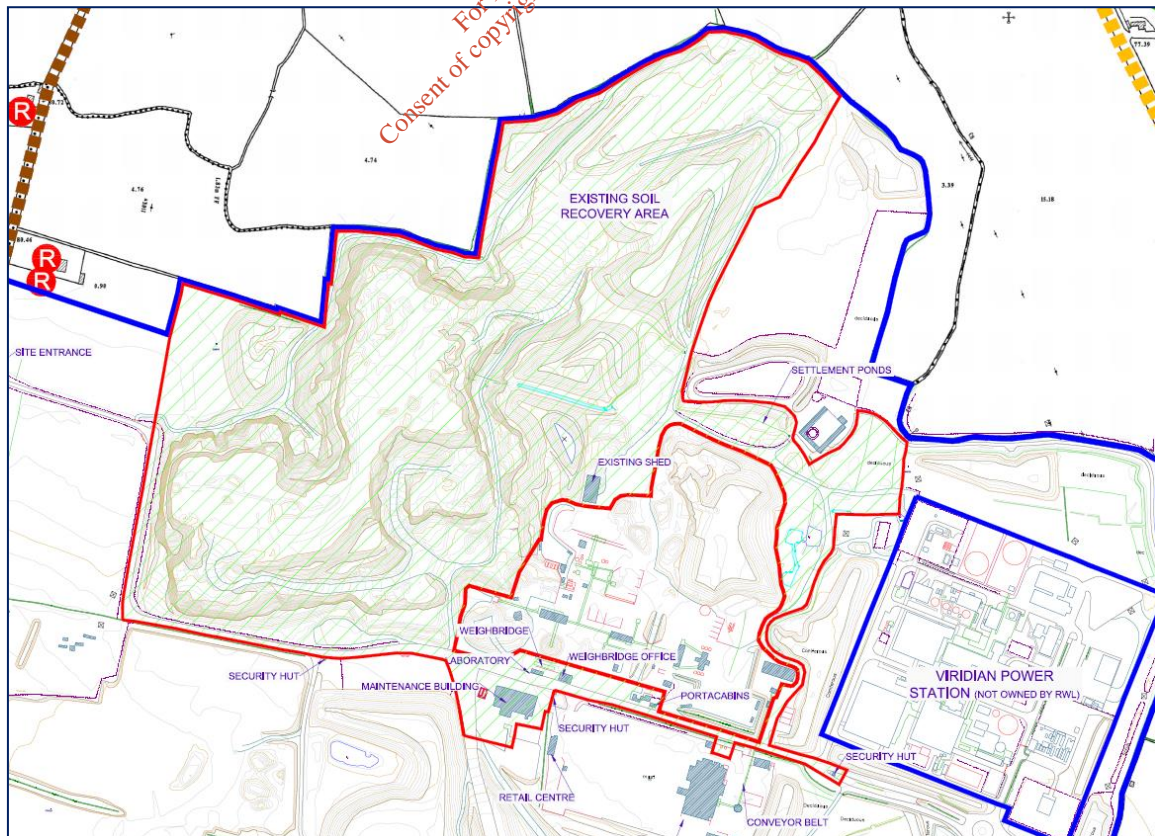
The waste licence facility is located entirely within a large active quarry complex and adjoins concrete and asphalt production facilities operated by Roadstone Ltd. The waste facility covers an area of approximately 36.1 hectares (87.0 acres) and comprises a largely worked-out limestone quarry with perimeter screening / overburden mounds, together with established site infrastructure required to operate the inert waste / soil recovery facility. The existing site layout, together with additional infrastructure required to support waste recovery activities, is shown in Figure 2.

Ground levels across the licensed facility have been significantly disturbed by previous quarrying activities. The original ground levels around the worked-out quarry vary between approximately 62mOD and 66mOD (Malin) along the eastern face and between 80mOD and 85mOD along the western face. Existing ground levels immediately behind the quarry faces are locally 5m to 10m higher than surrounding ground due to the presence of perimeter screening mounds.

Figure 1
Site Location



Figure 2
Waste Recovery Facility : Existing Site Layout



The existing floor level in the quarry lies at approximately 38mOD to 39mOD and its depth from the original (surrounding) ground level therefore varies from 24m to 28m along its eastern face and 42m to 47m along its western face.

Some restoration work was undertaken at the northern end of the licensed site in the period from late 2002 to the end of 2003. At that time, a large volume of inert excavation spoil arising from construction of the Dublin Port Tunnel was imported to site and used to backfill the quarry void in that area. Since that time there has been only minor progress in the site restoration works. The future restoration and backfilling work in this area will proceed in accordance with the terms of the waste licence issued by the Agency.

The existing quarry void covers an area of approximately 11.2 hectares (27.0 acres) within the licensed site area and is shown on Plate 1 below, in an aerial view from Google Earth dated July 2013.

Plate 1
Aerial View of Site from Google Earth (July 2013)



The proposed recovery of inert soils at the North Quarry will provide for complete backfilling of a large open void above the groundwater table, facilitate the restoration of the lands to agricultural use and improve protection to the underlying groundwater resource, which is currently classified as 'extremely vulnerable' due to the absence of any protective soil cover. Plate 2 overleaf shows the quarry void in December 2013.

Plate 2
View of North Quarry Void in December 2013



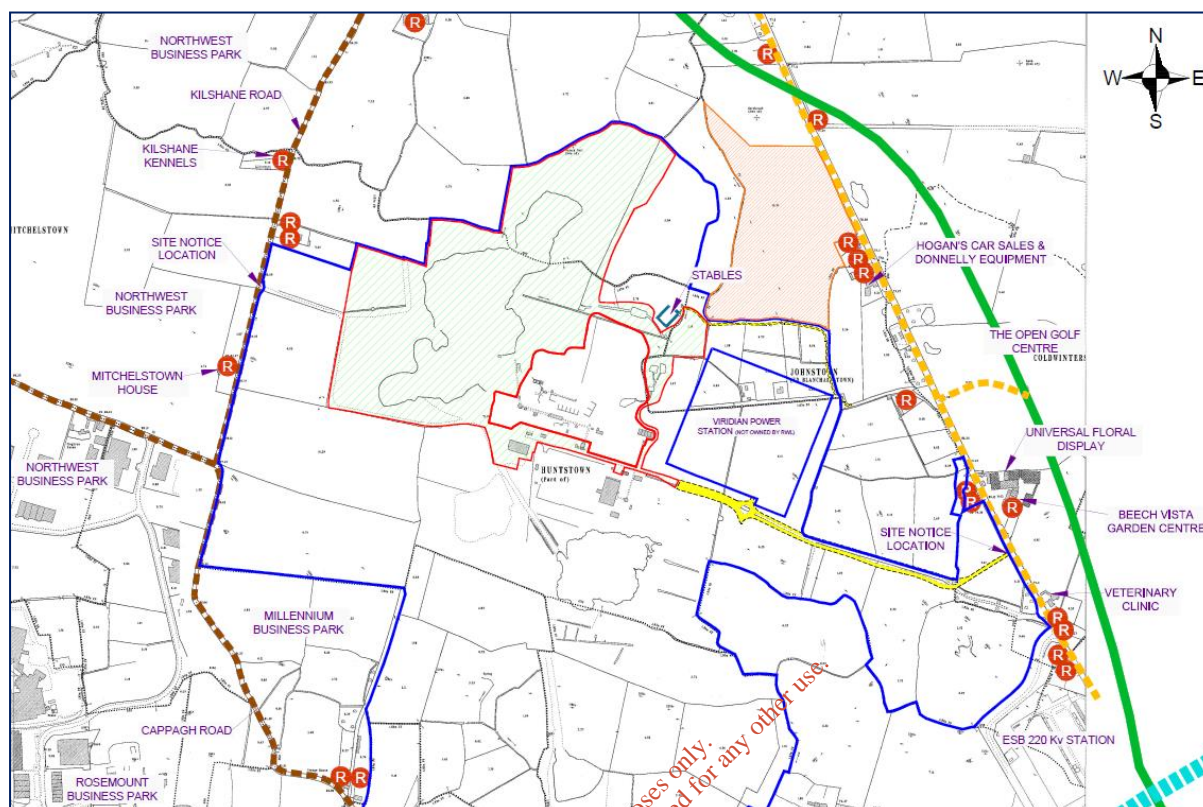
1.3 Surrounding Land Use

The licensed waste site is located entirely within an existing active quarry complex. The land immediately south-east of the backfill and restoration area is used for the processing of aggregates and manufacture of concrete and asphalt products. The lands immediately to the south of the licensed site are currently used, or intended to be used, for aggregate extraction, while the lands to the immediate west, north and north-east of the site are primarily used for agricultural grassland.

Beyond the Roadstone property boundary, the Huntstown Power station (operated by Viridian), North Road and the N2 Dual Carriageway all lie to the east of the licensed site. The M50 motorway and the proposed alignment for the Metro West light rail line both lie to the south, while the lands to the south west and west have been developed as light industry and science and technology parks (Ballycoolin Business Park, Rosemount Business Park, Millennium Business Park and Northwest Business Park). The lands to the north are still used predominantly as agricultural grassland.

Existing land-use in the vicinity of the licensed waste site, including residential, commercial and industrial development, is shown on the land-use map in Figure 3.

Figure 3
Surrounding Land Use



1.4 Classes of Licensed Waste Activities

The waste licence issued to Roadstone by the Environmental Protection Agency (EPA) provides for the following licensed activities (as per the Fourth Schedule of the Waste Management Acts 1996-2014).

- Class R5 (P): Recycling / reclamation of other inorganic materials, which includes soil cleaning resulting in recovery of the soil and recycling of inorganic construction materials (Principal Activity).
- Class R3 : Recycling / reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes) which includes gasification and pyrolysis using the components as chemicals.
- Class R13 : Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage (being preliminary storage according to the definition of 'collection' in Section 5(1)), pending collection, on the site where the waste is produced).

1.5 Licence Requirements

This Environmental Liability Risk Assessment (ELRA) is prepared in compliance with Condition 12 of the waste licence for an inert soil waste recovery facility at Huntstown Quarry, Finglas, Dublin 11 (Waste Licence Register Number W0277-01).

12.2 Environmental Liabilities

- 12.2.1 *The licensee shall, as part of the AER provide an annual statement as to the measures taken or adopted at the site in relation to the prevention of environmental damage, and the financial provisions in place in relation to the underwriting of costs for remedial actions following anticipated events (including closure) or accidents / incidents, as may be associated with the carrying on of the activity.*
- 12.2.2 *The licensee shall arrange for the revision, by an independent and appropriate qualified consultant, of a comprehensive and fully costed Environmental Liabilities Risk Assessment (ELRA) which addresses the liabilities from past and present activities. The assessment shall include those liabilities and costs identified in Condition 10 for execution of the CRAMP. A report on this assessment shall be submitted to the Agency and agreed in advance of commencement of the activity. The ELRA shall be reviewed and updated as necessary to reflect any significant change on site, and in any case every three years following initial agreement. Review results are to be notified as part of the AER.*
- 12.2.3 *In advance of the commencement of the activity, the licensee shall, to the satisfaction of the Agency, make financial provision to cover any liabilities associated with the operation (including closure, restoration and aftercare) of the facility. The amount of indemnity held shall be reviewed and revised as necessary, but at least annually. Proof of renewal or revision of such financial indemnity shall be included in the annual 'Statement of Measures' report identified in Condition 12.2.1.*
- 12.2.4 *The licensee shall revise the cost of closure, restoration and aftercare annually and any adjustments shall be reflected in the financial provision made under Condition 12.2.3.*
- 12.2.5 *The licensee shall have regard to the Environmental Protection Agency Guidance on Assessing and Costing Environmental Liabilities (2014) and, as appropriate, Guidance on Environmental Liability Risk Assessment, Residuals Management Plans and Financial Provision (2006) when implementing Conditions 12.2.2 and 12.2.3 and 12.2.4 above.*

1.6 Scope of this ELRA

In preparing this plan, regard has been had to requirements outlined in Condition 12.2 of the Waste Licence (reproduced above). This plan identifies and addresses any potential risks to the environment and associated liabilities arising from past and planned future activities at the waste recovery facility at Huntstown.

Planned liabilities associated with the closure of the facility are not considered in this Environmental Liabilities Risk Assessment (ELRA) and have been identified and costed separately in the Closure, Restoration and Aftercare Management Plan (CRAMP) prepared in accordance with the requirements of Condition 10.2 and 10.3 of the waste licence.

2.0 CHARACTERISATION OF LOCAL ENVIRONMENT

2.1 Site Operation

As previously noted, the soil waste recovery facility at Huntstown is located entirely within a working quarry and construction materials production facility operated by Roadstone Ltd. The licensee's waste facility covers an area of approximately 36.1 hectares, with a worked-out rock quarry area of approximately 11.2 hectares and existing site infrastructure on the lands immediately surrounding it.

Some restoration work was undertaken at the northern end of the waste recovery facility in the period from late 2002 to the end of 2003. At that time, a large volume of inert excavation spoil arising from construction of the Dublin Port Tunnel was imported to site and used to backfill the quarry void in that area. Since that time there has been only minor progress in the site restoration works. It is envisaged that future restoration and backfilling work in this area will proceed in accordance with the terms of a waste licence issued by the Agency.

Although the footprint of the licensed waste facility seeks to avoid conflict with other established activities around the quarry void, including concrete, asphalt and block production areas, it includes access roadways and all shared infrastructure required to operate the inert waste / soil recovery facility (including offices, wheelwash, weighbridge, maintenance sheds, hardstand areas etc.)

2.2 Operator Performance

2.2.1 Environmental Management Systems

Roadstone implements an Environmental Management System (EMS) at all its facilities in respect of its core quarrying and construction material production activities. In recent years it has extended the scope of the EMS to encompass inert soil / C&D waste recovery activities. As part of its EMS, Roadstone has developed standard procedures to address waste acceptance and handling activities, as well as an emergency response plan.

2.2.2 Compliance History

Excavation and blasting of limestone has been undertaken at the Huntstown Quarry Complex for the past four decades, following grant of planning permission in or around 1973.

Neither Roadstone Ltd. nor any of its predecessor companies (which includes Roadstone Dublin, Roadstone Provinces and John A. Wood), has ever been convicted of any offence under the Waste Management Acts 1996-2014, the Environmental Protection Agency Act 2003 or the Air Pollution Act 1987.

The Huntstown quarry complex has been operated in compliance with all permits and planning consents and Roadstone has not been subject to any enforcement action by the Local Authority. A number of complaints and warning letters in respect of compliance with planning conditions were received by the company between 2007 and 2010 were subsequently addressed and/or resolved by the company.

2.2.3 Incident History

A fuel leak / spill occurred during filling of diesel tanks in early 2013, overflowed at a downstream interceptor and impacted a lagoon to the south of the central infrastructure area (outside the proposed waste licence area). A specialist contractor was called to site to remove spilled fuel in lagoons or sumps of ponding at the ground surface. It also pumped out the ground around the fuel tank and interceptor outflow pipe.

Subsequent groundwater sampling and testing and a follow up site inspection and audit undertaken by AWN Consulting revealed that, following the site clean-up, there was no evidence of ground, surface water or groundwater contamination by hydrocarbons. A qualitative risk assessment undertaken by AWN also indicated that the spill presented a low risk to groundwater quality directly beneath the site and negligible risk to water supply boreholes, surface water bodies and site based personnel or visitors.

2.2.4 Environmental Monitoring

There is an established programme of environmental monitoring in connection with ongoing rock extraction, aggregate processing and concrete / asphalt production activity across the Huntstown Quarry Complex. This environmental monitoring programme complies with the requirements of existing planning permissions, waste permits and discharge licences issued by Fingal County Council in respect of established activities.

2.3 Environmental Sensitivity

2.3.1 Geology

Topsoil was previously stripped from the site in order to facilitate the development of the North Quarry and is currently stockpiled in mounds across and around the existing quarry site. Soil mapping suggests that the lands surrounding the Huntstown Quarry complex comprise well-drained soils which are suitable for a wide range of agricultural activity, generally grassland or tillage. There is also some poorly drained soil which has more restricted uses, principally seasonal grassland.

Site inspections indicate that the subsoil profile comprises a significant amount of Made Ground (soil disturbed or placed by human activity) over limited thickness of glacial till and/or rock. No evidence of soil contamination was identified at the site.

Most of the Made Ground arises from historical and ongoing extractive activity, principally overburden removal and stockpiling or installation of fixed plant and infrastructure. The effect of this is that few areas of undisturbed soil or subsoil remain across the Huntstown Quarry complex.

The most recent geological map of the local area published by the Geological Survey of Ireland (GSI) indicates that rock around the licensed facility comprises limestones of the Lucan, Feltrim, Malahide and Tober Colleen Formations.

The GSI maps indicate that the geological contact between the Waulsortian Limestones of the Feltrim Limestone Formation and the Tober Colleen Formation is exposed in the roadway leading into the Central Quarry, to the south of the licensed facility and it has identified this feature for future designation as a Natural Heritage Area (NHA) on geomorphological / geological grounds.

2.3.2 Hydrology

The inert soil recovery facility to be located in the North Quarry lies entirely within the Ward River catchment. Rain falling across the licensed facility either

- runs over unsealed ground into the existing quarry void and the pond on the eastern side of the quarry floor;
- percolates down through the existing soil / rock at the ground surface as recharge to groundwater, at which point it joins groundwater flow toward the quarry face;
- collects in surface water drainage infrastructure installed across the central infrastructure area where aggregate processing and concrete production activities are currently concentrated.

Groundwater levels at the North Quarry are lowered by means of sumps in the quarry floor. Surface water falling across the quarry and dewatered groundwater are collected in a sump on the north-western side of the quarry floor and pumped to an existing drainage channel at original ground surface level via an existing pipe network. Water pumped to this channel is routed via existing settlement lagoons to discharge to a tributary stream which runs northwards out of Roadstone's property, toward the Ward River. This discharge is currently regulated by way of a discharge licence issued by Fingal County Council (Ref. WPW/F/008-01).

The northern portion of the Ward River (known as the Ballystrahan sub-catchment) is classified in the latest EPA assessment of Ireland's rivers (for years 2010-2012) as being of 'poor' status. The Ward River has a median quality which is generally deemed to be unsatisfactory. Siltation by agriculture and urban wastewater discharges are likely to be the principal contributors to reduced water quality in the stream.

2.3.3 Hydrogeology

Bedrock aquifer maps indicate that the Huntstown Quarry complex straddles bedrock formations which are generally considered to be locally important karstified aquifers. Of the three bedrock formations exposed at Huntstown, both the Waulsortian and Malahide Formations are classified by the GSI as locally important aquifers, while the Tober Colleen Formation is classified a poor aquifer.

While there is groundwater seepage into the North Quarry, volumes vary seasonally and are typically low to moderate.

Groundwater vulnerability maps published by the EPA on its website (www.epa.ie) indicate that the licensed site is located in an area with high to extreme groundwater vulnerability status where rock is close to the surface. Groundwater vulnerability reflects the potential for rapid groundwater movement through subsurface deposits into the underlying bedrock aquifer. It is generally high or extreme where subsurface deposits are thin or absent and provide little or no attenuation for potential pollutants or contaminants.

Recent groundwater sampling and testing indicate that groundwater quality at the site is generally good, with established on-site activities shown to have had no significant impact on existing groundwater quality.

2.3.4 Sensitive Receptors

The principal sensitive receptors in the vicinity of the licensed facility comprise a number of private residential properties along the western property boundary, along Kilshane Road. For the purposes of this risk assessment, site users, operatives and visitors are also considered as receptors.

The receptor locations considered for ecological exposure are those which might be adversely affected by any form of environmental emission. For the purposes of assessment, the most sensitive ecological receptor is deemed to be the locally important aquifers beneath the site. Other receptors could include the tributary to the Ward River. There are no designated nature conservation sites within 2km radius of the licensed facility.

2.3.5 Pathways

The only surface water emission / monitoring point at the licensed facility is the discharge point downstream of the settlement ponds and hydrocarbon interceptor located to the east of the North Quarry. All surface water run-off across the licensed facility is collected and passed through existing settlement ponds and drainage infrastructure prior to its ultimate discharge to the Ballystrahan stream, a tributary of the Ward River. The quality of this run-off can be adversely impacted if it comes into contact with loose sediment, hazardous materials or contaminated ground. Water quality is a key indicator of environmental performance and

as such, the surface water management infrastructure is a critical environmental pathway for the licensed facility.

As noted previously, some rainfall across the licensed site percolates down through the existing unsaturated zone (in soil / rock close to the ground surface) and recharges to the underlying locally important aquifer. In the event that some contamination of near-surface soil or ground occurs, this recharge can introduce contaminants to the groundwater body and have an adverse impact on its quality and resource potential. As such, groundwater recharge through the ground is another critical environmental pathway for the licensed facility.

Potential noise and dust emissions from the waste recovery facility may be generated by HGV truck movements and by earthworks equipment (bulldozer) engaged in haulage and backfilling activities. There are no fixed (point) noise or dust emission sources at the facility. Air borne emissions of dust and noise transmission from the waste recovery facility have the potential to impact on the occupants of the nearest residential properties.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

3.0 RISK ASSESSMENT

3.1 Introduction

The methodology for undertaking the Environmental Liability Risk Assessment (ELRA) in respect of the soil recovery facility at Huntstown comprises a number of discrete elements as outlined below:

- (i) Risk Identification : A list of plausible risks for the waste activity is prepared, including all potential impacts on surface water, groundwater, atmosphere, land, human health, natural habitats and protected species;
- (ii) Risk Analysis : The risk analysis stage comprises establishment of risk classification criteria, followed by a risk analysis based on the selected criteria. Risk classification tables are used in order to evaluate and rank the risks relative to each other.
- (iii) Risk Evaluation : The risk evaluation stage is used to assist in making decisions, using the outcomes of the risk analysis, in identifying and prioritising the identified risks for development of measures to minimise potential environmental impacts.
- (iv) Risk Treatment: The risk treatment stage comprises identification and prioritisation of management and mitigation measures to reduce the risks identified in the risk evaluation process.

3.2 Risk Identification

Risks associated with the operation of the waste recovery facility were identified on foot of site visits and inspections by personnel from SLR Consulting Ireland undertaken in prior to February 2011 and more recently in November 2013. On these occasions, personnel met site management to review the potential environmental hazards and related environmental management issues arising at the site.

The waste handling processes to be undertaken at the waste recovery facility will inevitably generate noise and dust at and across the licensed area.

Normal site operations, undertaken in accordance with procedures contained in the established on-site Environmental Management System (EMS), are not expected to generate any leachate or effluent, as all wastes imported, handled and placed and recovered at the facility will be inert. The Licensee is required to actively monitor and manage incoming wastes to confirm that only inert materials are accepted at the facility. Notwithstanding this, there is potential for discovery of non-inert or potentially hazardous materials, hidden within incoming loads of inert compliant waste.

The on-site storage of fuels / hydrocarbons in mobile and/or static tanks, principally the existing 40,000 litre road diesel tank and 53,000 litre marked diesel (gasoline) tank, is a potential hazard. The on-site storage of hazardous substances used in the operation and maintenance of plant and equipment (including hydraulic oil, transmission fluid, hydrocarbon fluids and gels) at the maintenance shed, as well as the storage of waste oils in the shed, is another potential hazard.

A leak from fuel tanks or pipelines, or spillage of hazardous substances, were they to arise, would most likely run-off over ground and if unimpeded, would either discharge to ground or flow overground and be picked up by surface water drainage infrastructure. Failure to contain such leaks and spills could result in contamination of the groundwater beneath the site and possibly some off-site discharge of contaminated run-off, with the Licensee responsible for clean-up costs in this scenario.

All potential risks of environmental incidents or accidents are summarised in Table 3-1 below.

**Table 3-1
Potential Risks Identified for Recovery Activity**

Risk ID	Process	Potential Risk
1	Stockpiling or Placement of Imported Non-Inert Materials	Excessive dust emissions from stockpiles, placed materials and site activities
2		Excessive noise emissions from site activities
3		Stockpiling or placement of non-inert non-compliant waste; contamination of ground or groundwater / surface water
4	Fuel Storage and Handling	Leaks from pipelines; discharges to ground and groundwater / surface water
5		Spill of stored hydrocarbons; discharges to ground and groundwater / surface water
6	Storage and Handling of Hazardous Materials	Spill or leak of hazardous materials stored on site (gas-oil, hydraulic oil, engine oil, transmission oil, waste oil etc.); discharges to ground and groundwater / surface water
7	Leakages from Mobile Plant and Equipment	Spillage or leakage of fuel from HGVs, tipper trucks, bulldozers and other mobile site equipment; discharges to ground and groundwater / surface water
8	Weather	Flooding on site causing uncontrolled discharge

3.3 Risk Analysis

A list of plausible risks has been identified, which include abnormal but possible and plausible incidents occurring that could give rise to environmental liabilities. The risk analysis is based on the following likelihood and consequence risk classification tables, as outlined in Table 3.2 and Table 3.3 below. The risks identified are tabulated in Table 3.4 and assessed in terms of likelihood and consequence using the risk classification tables.

Table 3-2
Risk Classification Table – Likelihood

RATING	LIKELIHOOD	
	Category	Description
1	Very Low	Very low chance of hazard occurring
2	Low	Low chance of hazard occurring
3	Medium	Medium chance of hazard occurring
4	High	High chance of hazard occurring
5	Very High	Very high chance of hazard occurring

Table 3-3
Risk Classification Table – Consequence

RATING	LIKELIHOOD	
	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 3-4
Risk Analysis**

Risk ID	Process	Potential Risks	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
1	Stockpiling or placement of imported non-inert materials	Dust generation from stockpiles or placed materials	Reduction in air quality; inhalation of dust particles Potential health or nuisance impact	3	Slight increase in dust inhalation, principally by site users. Prolonged increase potentially damaging to health	2	Impact attenuated by separation distance, dust suppression, intervening vegetation and frequent seasonal rainfall. Standard dust suppression mitigation measures will ensure no reduction in air quality	6
2	Stockpiling or placement of imported non-inert materials	Noise generation by moving plant and equipment	Increase in ambient noise on site and at nearby properties Potential health or nuisance impact	3	Existing raised ambient noise level. Slight increase in noise exposure, principally for site users. Prolonged increase potentially damaging to health	2	Noise impact attenuated by separation distance and measures to limit emissions at source or screen over intervening distance.	6
3	Stockpiling or placement of imported non-inert materials	Contamination from non-inert non-compliant waste	Potential contamination of ground or locally important aquifer. Potential contamination of surface water.	3	Finite volume of contaminated materials. Placed materials surrounded by low permeability clay.	2	Licensee applies measures to ensure all waste accepted at facility is inert, including establishing origin of incoming wastes Interceptor and silt trap installed	6

Risk ID	Process	Potential Risks	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
4	Fuel Storage and Handling	Leaks from pipelines; discharge to ground or groundwater / surface water	Potential contamination of ground or locally important aquifer. Potential contamination of surface water.	4	Potential for large volume loss.	2	Plant and equipment regularly maintained and inspected. Interceptor and silt trap installed. Pipelines regularly inspected and tested.	8
5	Fuel Storage and Handling	Spill of hydrocarbons stored on site in fuel tanks / drums to ground or groundwater / surface water	Potential contamination of ground or locally important aquifer. Potential contamination of surface water.	4	Potential for large volume loss.	2	Plant and equipment regularly maintained and inspected. Interceptor and silt trap installed. Static tanks are fully bunded. Tanks and containment bunds regularly inspected and tested.	8
6	Storage and Handling of Hazardous Materials	Spill or leak of hazardous materials stored on site (gas-oil, hydraulic oil, engine oil, waste oil etc.); discharge to ground and groundwater / surface water	Potential contamination of ground or locally important aquifer. Potential contamination of surface water.	4	Loss of hazardous and persistent material. Finite volumes stored.	2	Materials stored in maintenance shed. Storage containers and drums placed on bunded pallets. Tanks, drums and pallets regularly inspected and tested. Interceptor and silt trap installed.	8
7	Traffic	Spillage or leakage of fuel from HGVs, trucks and mobile site equipment. Spillage during refuelling discharge to ground and groundwater / surface water.	Potential contamination of ground or locally important aquifer. Potential contamination of surface water.	3	Losses finite (low volume) and dispersed.	2	Plant and equipment regularly maintained and inspected. Interceptor and silt trap installed. Pipelines regularly inspected and tested.	6

Risk ID	Process	Potential Risks	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
8	Weather	Flooding on site causing uncontrolled discharge	Potential contamination of ground or locally important aquifer. Potential contamination of surface water.	3	Potential for large volume loss and impact due to elevated suspended solids	1	No history of flooding at the site. The OPW has a record of one historic flood event in the vicinity of Huntstown, at Kilshane Cross in November 2002. This flood was attributed to 'runoff from adjacent grasslands', and was not related to quarrying activities at Huntstown.	3

For inspection purposes only.
Consent of copyright owner required for any other use.

3.4 Risk Evaluation

The environmental risks identified above are re-tabulated below in Table 3-5 to assist in the prioritisation for risk treatment purposes

**Table 3-5
Risk Evaluation Table**

Risk ID	Process	Potential Risks	Consequence Rating	Likelihood Rating	Risk Score (Consequence x Likelihood)
4	Fuel Storage and Handling	Leaks from pipelines; discharge to ground and groundwater / surface water	4	2	8
5	Fuel Storage and Handling	Spill of hydrocarbons stored on site in fuel tanks to ground and groundwater / surface water	4	2	8
6	Storage and Handling of Hazardous Materials	Spill or leak of hazardous materials stored on site (gas-oil, hydraulic oil, engine oil, transmission oil, waste oil etc.), discharge to ground and groundwater / surface water	4	2	8
1	Stockpiling or placement of imported non-inert materials	Dust generation from stockpiles or placed materials	3	2	6
2	Stockpiling or placement of imported non-inert materials	Noise generation by moving plant and equipment	3	2	6
3	Stockpiling or placement of imported non-inert materials	Contamination of ground or groundwater by non-inert non-compliant waste	3	2	6
7	Traffic	Spillage or leakage of fuel from HGVs, tipper trucks, bulldozers and other mobile site equipment, Spillage during refuelling discharge to groundwater / surface water.	3	2	6
8	Weather	Flooding on site causing uncontrolled discharge	3	1	3

The risk matrix is displayed in Table 3-6 below. In line with the EPA Guidance, the risks have been colour coded in the matrix to provide a broad indication of the critical nature of each risk to facilitate prioritisation of risks for treatment. The matrix allows risks to be easily displayed and prioritised.

**Table 3-6
Risk Matrix**

Likelihood	Very High	5					
	High	4					
	Medium	3					
	Low	2			1, 2, 3, 7	4, 5, 6	
	Very Low	1			8		
			Trivial	Minor	Moderate	Major	Massive
			1	2	3	4	5
Consequence							

The risk matrix indicates that the bulk of the identified risks lie in the green zone, indicating the need for continuing awareness and regular ongoing monitoring. Three of the risks lie within the amber zone, requiring treatment through mitigation or management action. These are ID4 – Leaks from pipelines, ID 5 – Spill of hydrocarbon stored on site at static and mobile fuel tanks and ID 6 – Spill or leak of hazardous materials stored on site.

3.5 Risk Treatment

The output of the risk treatment process is the development of a statement of measures to be taken to minimise the environmental risk of the activity. The risk reduction due to existing mitigation measures is indicated in Table 3.7.

Table 3.7 allocates identified mitigation measures to a 'risk owner'. Roadstone will maintain and update a version of this table to inform its Risk Reduction Programme for the recovery facility. The responsibility may differ from that indicated below, depending on the staffing complement and activities / outputs from the adjoining quarry operations.

The Risk Reduction Programme is a dynamic process that will be regularly reviewed and updated to reflect changes that occur at the facility. New risks may emerge with new processes or new methods of working. Additional hazards can arise from the use of new materials for maintenance or fuelling at the facility. Additional mitigation measures can become available or better techniques developed. The staff structure can change and new responsibilities allocated to the site management team.

**Table 3-7
Risk Reduction due to Existing Mitigation Measures**

Risk ID	Potential Risk	Risk Score	Mitigation Measures to be Taken	Outcome	Action	Date for Completion	Owner / Contact Person
4	Leaks from pipelines; discharge to ground and groundwater / surface water	8	Spill kits comprising containment booms and absorbent materials readily accessible on site. Regular visual inspection and integrity testing of mobile plant and equipment undertaken to identify small or undetected leaks	Reduced likelihood of leaks to ground or groundwater / surface water	Ongoing inspection and monitoring	Ongoing	Location Manager
5	Spill of hydrocarbons stored on site in fuel tanks ; discharge to ground and groundwater / surface water	8	Regular tank and bund integrity assessments undertaken. Tank and bund are visually inspected annually. Bund integrity test undertaken every three years. Bunded fuel tanks are separated from traffic by large tyres to protect bunds from mobile plant. Level alarm installed in storage tank. Fuel storage drums and containers to be inspected at least quarterly Re-fuelling to take place over concrete paved surfaces (including adjacent to fuel storage tank) Sub-surface drainage at these areas and existing downstream treatment infrastructure (interceptor) reduce the scale and impact of a potential fuel leak or spill Spill kits available in workshop for the purpose of containing minor leaks or spills Emergency Response Procedures and Plans are in place detailing the actions should a major leak or spillage event occur.	Reduced likelihood of spills to ground or groundwater / surface water	Ongoing inspection and monitoring	Ongoing	Location Manager

Risk ID	Potential Risk	Risk Score	Mitigation Measures to be Taken	Outcome	Action	Date for Completion	Owner / Contact Person
6	Spill or leak of hazardous materials stored on site	8	<p>All hazardous fluids and materials are stored at the on-site maintenance garage in accordance with regulations until they are either recovered (treated) or disposed of at an appropriate off site waste management facility.</p> <p>All tanks, drums and containers will be subject to routine inspection and maintenance as part of scheduled site Inspections (at least quarterly).</p> <p>Hydraulic oil, transmission fluid and hydrocarbon fluids and gels etc. to be stored on bunded pallets in workshop with concrete floor to prevent infiltration to ground if materials spill.</p> <p>Material Safety Data Sheets are held for all hazardous liquids stored on site. Spill kits available in workshop for the purpose of containing minor spills.</p> <p>Emergency Response Procedures and Plans are in place detailing the actions should a spillage event occur. Emergency Response Training is carried out as part of Environmental Awareness Training for all members of staff.</p> <p>Material storage procedure in place and integrated into Environmental Awareness Training outlines how hazardous materials are to be stored to prevent environmental pollution.</p> <p>Site inspection checklist calls up checks on spill containment measures, content of spill kits, hazardous materials storage, bunds, spill trays, surface water infrastructure, hydrocarbon interceptor, etc.</p>	Reduced likelihood of spills to ground or groundwater / surface water	Ongoing inspection and monitoring	Ongoing	Location Manager

Risk ID	Potential Risk	Risk Score	Mitigation Measures to be Taken	Outcome	Action	Date for Completion	Owner / Contact Person
1	Dust generation from stockpiles or placed materials	6	<p>Employees and visitors are issued with dust masks, if warranted.</p> <p>Surfaces damped down during prolonged dry spells to keep yards and roads dust free.</p> <p>Wheelwash / vehicle wash provided at exit from facility maintained in working order.</p> <p>All traffic movements after the wheelwash will be over paved surfaces to minimise mud pick-up.</p>	Reduced likelihood of excessive dust emissions	Ongoing inspection and monitoring	Ongoing	Location Manager / Waste Facility Manager
2	Noise generation by moving plant and equipment	6	<p>Employees and visitors are issued with ear protectors, if warranted.</p> <p>Where monitoring indicates that noise emissions from the facility are excessive, the Licensee will employ further mitigation in the form of improved working practices, noise screening and/or reduced sound output from (or improved performance of) plant and machinery.</p>	Reduced likelihood of excessive noise emissions.	Ongoing inspection and monitoring	Ongoing	Location Manager / Waste Facility Manager
3	Contamination from non-inert non-compliant waste	6	<p>Licensee designs and implements robust waste acceptance procedures which ensure that all wastes accepted at the recovery facility are inert.</p> <p>Licensee confirms customer's business activities and credentials prior to issuing authorisation to deliver waste to facility</p> <p>Licensee will also establish site of origin and its development history for each waste consignment accepted at the facility.</p>	Reduced likelihood of contaminated waste import	Ongoing inspection and monitoring	Ongoing	Location Manager / Waste Facility Manager

Risk ID	Potential Risk	Risk Score	Mitigation Measures to be Taken	Outcome	Action	Date for Completion	Owner / Contact Person
7	Spillage or leakage of fuel from HGVs, tipper trucks, bulldozers and other mobile site equipment.	6	Re-fuelling to take place over concrete paved surfaces (including adjacent to fuel storage tank) Sub-surface drainage at these areas and existing downstream treatment infrastructure (interceptor) reduce the scale and impact of a potential fuel leak or spill.	Reduced likelihood of spills to ground or groundwater / surface water	Ongoing inspection and monitoring	Ongoing	Location Manager / Waste Facility Manager
7	Spillage during refuelling; discharge to ground and groundwater / surface water.	6	Large tyres have been placed around the fuel tanks to prevent mobile plant from colliding into / impacting with it. Spill kits comprising containment booms and absorbent materials readily accessible on site. Regular visual inspection and integrity testing of mobile plant and equipment undertaken to identify small or undetected leaks.	Reduced likelihood of spills to ground or groundwater / surface water	Ongoing inspection and monitoring	Ongoing	Location Manager / Waste Facility Manager
8	Flooding on site causing uncontrolled discharge	3	Monitoring of extreme weather events. Revise emergency response procedures as required.	Increased awareness of response procedures and reduced impact.	Revision of emergency response procedures.	Ongoing	Location Manager / Waste Facility Manager

4.0 IDENTIFICATION OF PLAUSIBLE WORST CASE SCENARIO

The ELRA for the waste recovery activity at Huntstown has identified a small number of risks with a major consequence and these formed the basis of further assessment to identify the plausible worst case scenario.

This assessment determined that the most plausible worst-case environmental scenarios relate to the spill / leak of hydrocarbons stored on site in fuel tanks impacting on groundwater and surface water (ID 4 and ID 5) and spillage / leakage of hazardous materials stored on site that could also impact on groundwater and surface water (ID 6).

Under the worst case scenario, it is assumed that existing / proposed mitigation measures are either:

- (a) not in place, or
- (b) in place, but are either not implemented or fail to function as intended.

If this scenario was to transpire, it is considered that it would not precipitate any other environmental incidents, nor would it increase the likelihood that any other identifiable environmental risks would occur.

It is noted that given the nature of the wastes being handled and the location and configuration of office and existing storage facilities on site, the risks associated with a fire outbreak are considered to be minimal. Risk of injury or death to employees or the public as a result of a fire would be covered by Employer's Liability and Public Liability insurance cover. Any fire affecting plant / equipment or the office would be covered by general insurance.

It is considered that any potential injuries or illnesses caused to site employees or the public by dust or noise emissions would be covered under Employer's Liability and Public Liability insurance cover. The risk of occurrence of these problems is considered very low, provided mitigation measures outlined above are fully implemented.

5.0 QUANTIFICATION AND COSTING

This assessment determined that the most plausible worst-case environmental scenarios relate to the spillage / leakage of hydrocarbons (ID 4 and ID 5) and/or hazardous materials (ID 6) stored on site that could impact on groundwater and surface water. Given the potential for a large volume loss, it is considered that loss of fuel from a filled fuel storage tank (ID 5) presents the greatest level of environmental risk for the waste recovery activity.

The plausible worst case scenario with the highest cost (Risk ID 5) is quantified and costed in this Section and in particular, in Table 5-1 below. For the purposes of this exercise, it is assumed that failure of the largest tank occurs when full. This is a 53,000 litre fuel tank holding diesel (gasoil). As the area around the fuel storage is generally paved and in good condition, it is considered that **at least** 80% of the fuel release would run over ground, as the paved surface would largely impede any percolation or recharge to groundwater. Although it is likely that a higher proportion could run-off over the ground surface to the surface water drainage network / system, it is considered prudent in costing up a worst case scenario to recognise that there could also be some infiltration to ground via unpaved ground (hardstanding) surrounding this area and to incorporate some financial provision for remediation of ground and/or groundwater contamination. Coupled with this, it is conservatively assumed that 100% of the released fuel is discharged to on-site drainage systems and/or surface waters

It is further assumed, for costing purposes that under this scenario, up to 50% of the spilled hydrocarbons would be discharged off-site past the existing discharge point to the Ballystrahan Stream. This stream merges with the Ward River over 5km to the north-east of the discharge point. As previously noted, the Ward River (Ballystrahan sub-catchment) is currently classified as being at 'Poor Status'. Siltation by agriculture and urban wastewater discharges are believed to be the principal contributors to reduced water quality in the river.

The Ward River eventually discharges at the Malahide Estuary, a further 7.5km downstream, a designated Special Area of Conservation (SAC) and Special Protection Area (SPA). The transitional waters of this estuary are currently classified as 'Potentially Eutrophic' principally on account of agricultural and industrial / wastewater discharges.

In view of the significant separation distance (12.5km) between the SAC / SPA and the licensed area, the volume of potential fuel discharge off-site (relative to overall quarry discharge volume and baseline flow) and the current 'Poor' status of both the Ward River and Malahide Estuary, it is considered unlikely that the SAC / SPA will be impacted by any spillage originating at the licensed area. For the purposes of this CSM therefore, the SAC / SPA is not identified as a receptor.

The area surrounding the licensed area is served by Local Authority mains water supply. There is no known abstraction of potable water (for human consumption) from the Ballystrahan Stream. There is also unlikely to be any from the Ward River, given its current 'Poor Status' classification.

In the event that the worst case scenario was to transpire, the associated land and groundwater remediation costs which are likely to be incurred are identified, quantified and costed in Table 5-1 in order to establish an appropriate level of financial provisioning to be made in respect of the recovery facility.

The remediation response to a large fuel spill is likely to comprise the following:

- (i) mobilisation of emergency response contractor to site for immediate spill containment and site clean-up;

- (ii) collection and removal off-site (as contaminated waste) of captured fuels, absorbent materials, impacted soils and contaminated surface waters (from settlement lagoons), all of which are assumed to be hazardous;
- (iii) construction of a temporary bunded facility to store any excavated materials prior to removal off-site;
- (iv) the cost of ground investigation to delineate the extent of the area affected by the spill;
- (v) the cost of constructing and commissioning any abstraction well(s) into the bedrock;
- (vi) installation and commissioning of an on-site treatment system to pump contaminated groundwater out of ground and pass it through oil interceptor and carbon filter and discharge back to ground;
- (vii) maintenance costs for product recovery system, to include consultancy costs, regular daily visits, laboratory analyses, emptying and disposal of recovered products, changing and disposal of carbon filter material.
- (viii) provision for placement of booms across the Ballystrahan Stream for an extended period, river bank clean up, restocking, remediation / replanting and any consequential losses to cattle.

The cost of excavating and removing / remediating contaminated soil or groundwater material is very much dependent on the volume and degree / nature of any contamination which might occur or be encountered.

As a worst-case scenario, we have accordingly recommended provision of **€1,584,300** for remediation / evacuation of contaminated groundwater in the event of a large scale fuel spillage (inclusive of 20% contingency). It should however be recognised that following implementation of all mitigation measures (principally provision of a bunded containment area), the probability of such an occurrence materialising is considered low.

For inspection purposes only.
Consent of copyright owner required for any other use.

Table 5-1
Quantification and Costing of Plausible Worst Case Scenario

Task	Description	Quantity (No.)	Measurement Unit	Unit Rate (€)	Cost (€)	Source of Unit Rates
Response to: Risk ID 5 Spill of gasoil stored from on-site 53,000L fuel tanks	Mobilising emergency response contractor to site for spill containment and site clean-up	5	Days	3,750	18,750	Enva / Verde / Rilta
	Trial pits	20	No.	150	3,000	SLR Consulting Ireland
	Soil quality testing (incl. leachate tests)	50	Sample	150	7,500	Jones Environmental Laboratory
	Drill and install groundwater monitoring wells around affected area to average depth of 30m	8	No.	1,000	8,000	Causeway Geotech Ltd
	Purging and sampling of wells over five years, with following frequencies: Year 1 –monthly : Year 2 – bimonthly Years 3-5 - quarterly	30	Visit	1,000	30,000	SLR Consulting Ireland
	Testing of groundwater samples (8 No.) from wells over 30 rounds	240	Sample	150	36,000	Jones Environmental Laboratory
	Construction of temporary lined contaminated soil holding area	1,000	m ³	50	50,000	SLR Consulting Ireland
	Excavation of contaminated soil	3,000	Tonne	5	15,000	EPA Unit Cost guidance (upper bound)
	Removal and disposal off site (as hazardous waste) of up to 3,000 tonnes of contaminated soil, interceptor sludge, captured fuel and absorbent materials	3,000	Tonne	150	450,000	Rilta / EPA Unit Cost Guidance (upper bound)
	Transport of contaminated soil of up to 2,500 tonnes of contaminated soil, captured fuel and absorbent materials	3,000	Tonne	15	45,000	Rilta

Task	Description	Quantity (No.)	Measurement Unit	Unit Rate (€)	Cost (€)	Source of Unit Rates
Response to: Risk ID 5 Spill of gasoil stored from on-site 53,000L fuel tanks	Excavation of on-site materials from bunds on site and placement of uncontaminated soil to backfill excavated voids	3,000	Tonne	8	24,000	NRA Rates Database
	Removal and treatment of captured fuel / waters at settlement ponds upstream of discharge point	600	m ³	150	90,000	Rilta / EPA Unit Cost Guidance (upper bound)
	Drain Jetting / CCTV survey	500	m	5	2,500	USSR / Boyne Waste/EPA Guidance
	Installation, operation and maintenance of booms at stream over extended period	1	Year	100,000	100,000	Regenesis Remediation SLR Consulting – estimate based on previous experience
	Allowance for remedy of any consequential losses arising from impact to stream (eg ecological survey, restocking, river bank clean-up / remediation / replanting, compensate for livestock impact)	1	Unit	200,000	200,000	SLR Consulting - estimate based on previous experience of fuel discharge to river
	Inspection and testing of river daily for one week following spill and as follows: - Weekly for 11 weeks - Monthly for 9 months - Biannually for 4 years	33	Visit	500	16,500	SLR Consulting
	Installation, operation and maintenance of pump and treat system for groundwater contamination	1	Year	200,000	200,000	Regenesis Remediation costs
	Environmental Consultancy Costs (reporting, supervision and surrender application)	40	Days	600	24,000	SLR Consulting Ireland
Total (€)					€1,320,250	
20%Contingency					264,050	
Final Total (€)					€1,584,300	

6.0 CONCLUSIONS

6.1 Environmental Liabilities

An Environmental Liabilities Risk Assessment has been carried out for the planned soil waste recovery facility at Huntstown Quarry, Dublin 11. The ELRA has been prepared in accordance with the EPA publication *Guidance on Assessing and Costing Environmental Liabilities (2014)*.

Fuel / hazardous materials storage and handling (Risk ID 4, ID 5 and ID6) have been identified as the highest environmental risks at the Huntstown soil waste recovery facility. Due to the potential for large volume loss for Risk ID5, it is assumed for the purposes of assessing potential environmental liability that the worst case scenario would involve a leak or spill from the existing 53,000 litre fuel storage tank with potentially major consequences for surface water quality in the adjoining Ward River catchment and/or underlying groundwater aquifer.

If this scenario was to transpire, it is considered that it would not precipitate any other environmental incidents, nor would it increase the likelihood that any other identifiable environmental risks would occur.

The environmental liability has been assessed on the basis of the worst case scenario outlined above. Were it to materialise, the maximum environmental liability which could be incurred is estimated to be of the order of **€1,584,300** (inclusive of 20% contingency)

6.2 Financial Provision for Environmental Liabilities

Roadstone Ltd. has the following insurance cover in place by way of provisioning for potential environmental liabilities in respect of the planned waste recovery facility at Huntstown;

- (i) Employers Liability Insurance – indemnified for up to €22.7 million.
- (ii) Public Liability Insurance – indemnified for up to €13 million.

Details of Roadstone's current employers liability insurance and public liability insurance are provided in Appendix A.

Should the Agency raise any concerns in respect of any clauses or provisions of these insurances (such as limits on cover, policy exclusions or deductibles), Roadstone will endeavour to modify the policy terms to satisfy the Agency's specific requirements in respect of provision for potential environmental liabilities (provided it is practicable and cost effective to do so).

Roadstone will make the financial provision necessary to cover the amount of the assessed environmental liability by lodging an insurance company bond with the Agency, coupled with an agreement which will empower it to apply such security (or part thereof as may be required) in the event that a liability event materialises at the waste recovery facility at Huntstown.

The initial amount of the bond will be agreed with the Agency and adjusted as necessary each year thereafter to take account of ongoing review and revisions of the CRAMP.

7.0 CLOSURE

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

This report is for the exclusive use of Roadstone Ltd; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

APPENDIX A
Details of Roadstone Limited Current Insurances

*For inspection purposes only.
Consent of copyright owner required for any other use.*



XL Group
Insurance
Reinsurance

XL Insurance Company SE

XL House
70 Gracechurch Street
London EC3V 0XL
United Kingdom
Phone +44 (0)20 7933 7000
Direct +44 (0)20 7933 7944
Fax +44 (0)20 7469 1025

Certificate of Employers and Public/Products Liability

Name of Insured Roadstone Ltd

Address 42 Fitzwilliam Square
Dublin 2
Ireland

Insurers XL Insurance Company SE
XL House
70 Gracechurch Street
London
EC3V 0XL

Policy Number GB00002926LI15A (Employers Liability)
GB00002928LI15A (Public/Products Liability)
GB00010400LI15A (Public/Products Liability Excess)

Period Liability 1st February 2015 to 31st January 2016

Business: Activities of the Insured as advised to the Company

Limits of Indemnity Employers Liability €22,700,000 each and every event unlimited per Policy Year
Public Liability €13,000,000 each and every event unlimited per Policy Year
Products Liability €13,000,000 each and every event and in the aggregate per Policy Year
Further Excess Layers are in place with other Insurers
Financial Loss €800,000 in the aggregate per Policy Year

Clauses (PL/Products) Indemnity to Principals
Contractual Liability
Cross Liabilities

Excesses €10,000 Property Damage
€35,000 Financial Loss



SIGNED

For and on behalf of XL Insurance Company SE

Subject to the terms and conditions of the policies currently in force, issued by XL Insurance Company SE and corresponding with the aforementioned policy numbers.

DATED 28th January 2015