

APPENDIX 2F

OUTLINE HEALTH AND SAFETY PLAN

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ROADSTONE DUBLIN LIMITED

**REMEDICATION OF UNAUTHORISED LANDFILL SITES
AND DEVELOPMENT OF ENGINEERED LANDFILL,
BLESSINGTON, CO. WICKLOW**

OUTLINE HEALTH AND SAFETY PLAN

December 2004



Prepared by :
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Prepared for :
Roadstone Dublin Ltd.
Fortunestown
Tallaght
Dublin 24

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1.0 NATURE OF PROJECT

1.1 Introduction

This document is a Pre-Construction Safety Plan, required by the Safety, Health Welfare at Work (Construction) Regulations (SI No. 138 of 1995), in respect of the construction of the containment cell at Blessington, County Wicklow.

1.2 Employer

Roadstone Dublin Limited
Fortunestown
Tallaght
Dublin 24

Contact: Mr Pat Martin / Mr Mark Prendergast
Telephone: (01) 404 1200 Fax: (01) 404 1356

Site Contact: Mr Paddy Murphy
Telephone: (045) 865175 Fax:

1.3 Project Supervisor

SLR Consulting Limited
Building 1
Meadowbank Way
Eastwood
Nottingham
NG16 3TT

Contact: John Cole
Telephone: 0044 1773 766020
Fax: 0044 1773 766021

1.4 Designer

SLR Consulting Limited
Building 1
Meadowbank Way
Eastwood
Nottingham
NG16 3TT

Contact: John Cole
Telephone: 01773 766020
Fax: 01773 766021

1.5 Contractor

To be appointed

1.6 Location of Site

The site is situated off the N81 National Secondary Road, approximately 1.5km north-west of the town of Blessington, County Wicklow.

1.7 Construction Works to be Carried Out

The works involve the construction of a non-hazardous engineered landfill including the installation of both a basal lining and capping systems.

Construction of the lining system shall generally involve:

- Excavation and filling to achieve formation preparation;
 - Installation of a low permeability clay liner of maximum permeability 1×10^{-9} m/s;
 - Installation of a geosynthetic clay liner;
 - Installation of a 2mm thick HDPE geomembrane;
 - Installation of a geotextile protector and 300mm thick granular leachate drainage blanket;
- and
- Installation of leachate collection pipework and extraction risers.

Construction of the site capping system shall generally involve:

- Installation of the leachate recirculation system pipework;
 - Preparation of final waste levels to receive the capping system;
 - Installation of the gas venting system including a gas collection layer and gas wells
 - Installation of a geosynthetic clay liner;
 - Installation of 1mm VFPE welded cap;
 - Installation of a 500mm thick drainage layer;
 - Installation of a Geotextile Protector;
- and
- Placement of restoration soils.

1.8 Timescale for Completion of the Construction Work

Commencement Lining Works – Late 2005 : Completion – Early 2006

Commencement Capping Works – Mid-Late 2006 : Completion – Late 2006

2.0 THE EXISTING ENVIRONMENT

2.1 The Site

The site is located within an active sand and gravel quarry at Blessington. The proposed works involve construction of a new containment cell for the disposal of unauthorised waste historically disposed of at the site. The works will involve the installation of both lining and capping systems.

The boundaries to the waste licence applications site are as indicated on Drawing No. 2 of the Specification. They essentially comprise :

- a private road (Darker's Lane) to the north, beyond which lies sand and gravel extraction works and an area of agricultural land.
- a private haul road to the east, beyond which lies another sand and gravel pit (Hudson Brothers)
- Glen Ding ridge to the west
- new mixed use commercial / residential development to the south, beyond which lies the town of Blessington.

2.2 Existing Services

Existing site services are indicated on the services drawing (Attachment B2.3 to waste licence application)

2.3 Existing Traffic Systems

The site is accessed from the public road network by turning west off the N81 National Secondary Road approximately 1.5km north-west of the town of Blessington, into the site on to the site access road. The access road leads to the site compound, from which the works are accessed via a haul road. The internal road system is indicated on Drawing No. 2 of the Specification.

The Contractor shall arrange his operations such that trafficking of heavy construction plant does not interfere with the Clients undertakings.

2.4 Existing Structures

There are three derelict structures within the works area, in the centre of the Roadstone Dublin landholding. There is also a small temporary structure (portacabin) which serves as a site office in the same area

2.5 Drawings

DRAWING NO.	TITLE
1	Site Location
2	General Site Layout
3	Formation Levels and Surface Water Management
4	Top of Liner Levels and Construction Details
5	Leachate Collection and Extraction System Construction Details
6	Capping and Restoration and Leachate Recirculation System
7	Landfill Gas Management System

All drawings listed above are included within the Specification / Contract Documents.

2.6 Existing Security

Parts of the waste licence application area are currently surrounded by post wire fencing, but this is not continuous. Beyond this area however, the boundary of Roadstone Dublin's landholding is generally surrounded by post wire fencing, although this is not secure.

3.0 THE DESIGN

3.1 Introduction

The significant hazards which have so far been identified, which cannot be avoided, and which will be a risk to the health and safety of construction workers, visitors to the site and members of the public are listed below. This list excludes commonplace hazards which should be controlled by good site management and safe working practices.

- Works in proximity to active quarry
- Works in proximity to waste
- Works in proximity to steep slopes
- Installation of geosynthetic materials
- Use of 240V electrical equipment to weld geomembrane
- Installation of leachate collection and extraction pipework
- Works in the proximity of landfill gases

3.2 Action by the Principal Contractor

The Principal Contractor shall identify in writing before construction commences, the precautions and sequences of work that will be adopted in order to address the significant hazards stated above. The Principal Contractor may be required to explain to the Planning Supervisor his proposals for managing any of the potential hazards which may be anticipated during construction.

The Principal Contractor shall ensure that all sub-contractors employed by him, on or about the site, are made aware in writing of all hazards which exist or arise as a result of construction works. Approval shall not be granted to any sub-contractor until documentary evidence that the sub-contract to be entered into contains a clause setting out all known hazards.

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4.0 CONSTRUCTION MATERIALS

Some commonplace materials and substances used during the construction will present health and safety hazards, requiring the Principal Contractor to carry out health and safety risk assessments and to introduce control measures. These have been deemed within the normal experience of a competent Contractor and have therefore not been listed.

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5.0 SITE WIDE ELEMENTS

5.1 Site Access and Egress points

Access to the site is via the access road leading off the N81 National Secondary Road, approximately 1.5km north-west of Blessington. Upon entering the site, the works area is accessed off the existing internal roads indicated on the general site layout drawing (Drawing No. 2 of the Specification).

5.2 Location of Temporary Site Accommodation

Suitable locations for temporary site accommodation and Contractor's compounds have been identified by the Employer and are indicated on the general site layout drawing (Drawing No. 2 of the Specification).

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6.0 OVERLAP WITH EMPLOYER'S UNDERTAKINGS

The works are located within an active sand and gravel pit operated by the Employer. The Principal Contractor shall arrange the landfill construction operations to safeguard existing installations and prevent any interruptions to the ongoing quarrying activities at the site.

Materials and construction plant shall not be stored or positioned overnight or at other times, when work is not in progress so as to cause blockage to any of the Employer's operations.

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7.0 SITE RULES

Roadstone Dublin's site rules and emergency procedures to be followed by everyone at, or visiting the site, including sub-contractors, suppliers and the public. These are displayed prominently within Roadstone Dublin's existing site offices. All Contractor's staff and sub-contractors shall sign that they have read and understood Roadstone Dublin's site rules.

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8.0 CONTINUING LIASION

8.1 Updating the Plan

The Contractor is required to produce a Safety Plan for submission to the Employer prior to work commencing on site. This plan need only address hazards / risk assessments / control measures within the initial work operations to allow the contract to commence. Hazards / risk assessments / control measures for subsequent operations can be addressed as work commences.

8.2 Unforeseen Eventualities

In the event of any unforeseen eventualities arising during the project excavation resulting in significant design changes or affecting the resources required, the Principal Contractor shall:

- Report the matter to the Project Supervisor as soon as possible.
- Advise the Project Supervisor of the health and safety issues arising from the eventuality as soon as possible.
- Update the Safety Plan before commencement of any construction according to the revised design.

The Principal Contractor is responsible for providing any sub-contractor with such information.

The Principal Contractor must inform the Employer's Site Representative of any specific hazards which may arise from his proposed methods of working.

The Contractor shall provide the Contract with a Safety Officer.

The Safety Officer shall be responsible for ensuring that all works comply with the Principal Contractor's Safety Policy, together with the relevant health and safety legislation and guidelines, including but not limited to :

- Health, Safety and Welfare at Work Act 1989
- Health, Safety and Welfare at Work (Construction) Regulations 1995 and 2001

The Safety Officer shall notify the Project Supervisor of any potential safety hazards or procedure as appropriate.

APPENDIX A
NOTIFICATION OF PROJECT

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APPENDIX B

LANDFILL GAS

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1.0 GENERAL

This document forms an addendum to the Principal Contractor's health and safety plan and covers the specific tasks associated with welding the seams / patches along the tie in between new and existing geomembrane liner. Please also refer to an attached risk assessment for the project and the Principal Contractor's health and safety plan. The items associated with the normal activities of liner placement (handling, electrocution, laceration, heat burns, wind, plant movements and slipping have been included within the main plan).

The nature and extent of the gases produced by the landfill has been previously documented under a separate cover. For the purpose of this plan, it is sufficient to assume that gas readings in excess of 1% Gas (20% of the Lower Explosive Limit for methane) may occur both underneath the liner prior to welding and in the ambient atmosphere, directly above the seams prior to welding.

2.0 RELEASE OF LANDFILL GASES

The principle risk not associated with normal activities is due to the potential uncontrolled and random nature of the release of landfill gas from the nearby unauthorised landfill. Certain features within the existing and proposed landfills will act as preferential pathways for landfill gases, these include: monitoring wells, extraction wells, side slope risers and the perimeter of the lining system. Whilst it is possible that such features will give rise to elevated gas levels, waste composition will also influence the presence of pathways and therefore the whole of the waste surface must be considered to be at risk.

Reliance on Personal Protective Equipment (PPE) as a primary control measure in order to minimise the fire/flash risk exposure to site staff is not acceptable. However, additional PPE will be worn to mitigate the potential injuries that could occur.

3.0 GAS ACTION THRESHOLDS

Lower Threshold: If a level in excess of 1% LEL (500ppmv) is recorded external to the liner, work will cease. The full control measures outlined herein will be introduced and the area ventilated until the level drops below 1%.

Higher Threshold: If an explosive level of 10% LEL (5000ppmv) is recorded anywhere, then the Safety Officer will immediately stop the works. The area under the liner will be continually forced vented until and after the reading drops below 10% and at this point a review will be carried out before the work will be allowed to continue.

A Fire Watcher will undertake full time monitoring of the works. The Fire Watcher will measure gas concentration (using a Gasurveyor, calibrated annually by the manufacturer against methane) in three locations:

1. Underneath the liner, prior to the initial patch being placed
2. Within 1cm of the weld point immediately before every weld is undertaken
3. At nose level.

4.0 SAFETY EQUIPMENT

Basic Equipment: The Principal Contractor will provide:

- First aid equipment available on-site. A Qualified First Aider will be available on-site throughout the works;
- A site office and washing facilities will be available for the duration of the Contract, this will be located at Roadstone Dublin's discretion;
- The Principal Contractor shall inform the emergency services of the nature of the works, including provision of a site location plan;

- In the event of an emergency, a spare mobile phone will be made available within the Contractor's vehicle for use to call 999;.
- PPE: Coveralls, Gloves / gauntlets, Protected Boots, Goggles, Hi-vis jackets, Hard Hats

Lower Threshold Exceeded Additional equipment will be provided:

- Basic fire fighting facilities. Three dry powder extinguishers (6kg) will be available at the work site, with two backup extinguishers in the Contractor's vehicle. Should a small fire occur within, the application of dry powder to smother the flames will be most appropriate;
- A water bowser and hose. The bowser would be placed at the top of the slope, with a sufficient hose; water to be available from the landfill water supply;
- A daily safety meeting, comprising of a review of the day's activities, will be undertaken by the Contractor and Site Engineer between 7.30am and 8.30am each morning, prior to the start of activities. The meetings will be minuted; minutes to be placed in the site health and safety file;
- Any plant used in the immediate vicinity of the works fitted with spark arrestor;
- The hot air gun to be used on low temperature setting (NB: open flame burners are not to be used on site at any time);
- Vacuum testing of the welds only to be used, no spark testing;
- The Contractor will undertake continuous gas monitoring of the work area during the welding process. The monitoring will be undertaken by a separate Fire Watcher, who will be not be involved with the welding process but will be in a position to spot an ignition in the unlikely event (given the other control measures planned) that it should occur;
- A backup instrument (a second Gasurveyor) will be available together with a backup battery unit. The banksman will maintain direct contact with the welding foreman;
- Additional Personal Protective Equipment, as follows:
 - Clean Fire Retardant coveralls
 - Fire Retardant Balaclava (with open face)
 - Transparent anti glare glass full face mask, capable of withstanding a flash flare
 - Fire Retardant gloves/gauntlets
- Air movers, as needed.

5.0 HEALTH AND SAFETY RESPONSIBILITIES

The Principal Contractor will be primarily responsible for the health, safety and welfare of all of its on-site employees, sub-contractors and suppliers. It will:

- Be responsible for the Health, Safety and Welfare of all staff in the demarked work area, including visitors and for all the activities during the course of the works;
- Be responsible for ensuring the Rules and Procedures are implemented;
- Maintain and implement all required Health and Safety requirements;
- Should the *Lower Threshold* be exceeded not undertake any works, without the presence of the Principal Contractor's safety representative and the Site Engineer;
- Inspect all works and provide a daily record of personnel, equipment and site progress on a daily basis;
- Ensure that no smoking is allowed on the site at all times;
- Report to Roadstone Dublin and appropriate authorities all Accidents and Near Misses as soon as is practicable;
- Monitor Contractors compound and offices each day prior to any activities involving a naked flame (including smoking) or electrical sparking.

The Employer, or its professional advisors, will be responsible for notification of the commencement of the project to the Local Authority.

6.0 TRAINING AND INDUCTION OF SAFETY PLAN

Prior to the initiation of site works, each member of the staff will be fully briefed on the Safety Plan. This induction will involve a review of this document and associated risk assessments, PPE usage. A register of all attendees will be held on site. Any additional staff entering the site will be fully briefed prior to the participation on any work.

The Principal Contractor shall hold a daily review of the day's activities at the start of each day in order to ensure that each member of the site team is aware of the safety risk and that appropriate measures can be implemented.

The Principal Contractor shall be aware of all the Health and Safety implications of this project and have scheduled the project and left sufficient time to ensure that works proceed in a safe manner.

The Principal Contractor shall have designated a Health and Safety Officer to implement, monitor and enforce the Safety Plan. Any identified hazards or unsafe conditions must be immediately addressed to protect site personnel and the environment. The Contractor shall immediately contact Roadstone Dublin and Site Engineer should such a situation should arise.

7.0 EMERGENCY PROCEDURES AND FIRST AID

The following outlines the emergency procedure in the event of a gas ignition:

- Prior to the works, the emergency services will be contacted and a location map provided.
- In the event of an emergency, the Fire Brigade will be immediately notified.
- If there is a fire and if it is safe to do so, the use of dry powder extinguishers and water will be used to quench the flames and remove the source of ignition.
- All persons are to evacuate the site and muster at the site entrance.
- Access to a mobile telephone will be maintained and kept in the vehicles.
- The Principal Contractor's Safety Officer, Employer and Site Engineer must be called to review the situation and for advice on the procedures to follow.
- All accidents and 'near misses' will be recorded in a site safety book.
- A suitably equipped first aid kit will be held on site.
- A First Aider will be available on-site.
- A daily programme of work will be agreed in a daily pre-work meeting to ensure any provisions will be made for the scheduled work to be achieved within the Health and Safety Policy.

APPENDIX C

RISK ASSESSMENTS

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RISK ASSESSMENT

Definitions and Methodology

HAZARD	Something with the potential to cause harm
SEVERITY CATEGORY	Degree of harm which may be caused
PROBABILITY LEVEL	Likelihood that an event will occur
CURRENT RISK RATING	The severity of the risk after current controls have been taken into account. The following equation is used to establish the risk rating: $\text{RISK RATING} = \text{SEVERITY} \times \text{PROBABILITY}$
RESIDUAL RISK RATING	The severity of the remaining risk once mitigating measures have been put into place

Severity Categories

The risk severity can be assessed on a scale of 1 to 5 as follows:

1. Nil No risk of injury or disease
2. Low Causing a minor injury which would allow the person to continue work after first aid treatment on site or at a local surgery. The duration of the stoppage or treatment would be such that the normal flow of work is not seriously interrupted.
3. Medium Causing injury or disease capable of keeping a person off work more than 3 days and more and reportable under RIDDOR.
4. Major Causing a major injury reportable under RIDDOR.
5. High Causing death to one or more people.

Probability Levels

The probability of an accident occurring is assessed as follows;

5. Likely If the work continues as it is, there is almost a 100% certainty that an accident will happen eventually (e.g. broken rung on a ladder, bare exposed electrical conductor, defective breaks on a vehicle).
4. Probable The effects of humans or other factors could cause an accident but one is unlikely without this additional factor (e.g. ladder not secured properly, oil spilled on floor).
3. Possible The accident may happen if additional factors precipitate it, but unlikely to happen without them (e.g. leaving a vehicle with the engine running, obstructing fire exists).
2. Remote If other factors were present, the incident or illness might occur but the probability is low and the risk minimal.
1. Improbable There is really no measurable risk present. Only under **freak** conditions could there be any probability of an accident or illness. All reasonable precautions have been taken as far as is reasonably practicable. This should be the normal state of the workplace.

Classification of Risk

The current Risk Rating can be determined as the product of the severity category and the probability category. It can then be classified as follows:

Risk Rating	1 - 10	Low
Risk Rating	11 - 15	Medium
Risk Rating	16 - 25	High

Those tasks with a Medium or High risk rating should then be re-examined using the assessment sheets to determine what additional action is reasonably practicable to mitigate the risk rating.

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RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																								
ASSESSMENT NUMBER : 1																									
ACTIVITY – Engineered Clay																									
Specific Risks	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%; text-align: center;">Severity</th> <th style="width: 20%; text-align: center;">Probability</th> <th style="width: 10%; text-align: center;">Risk Rating</th> </tr> </thead> <tbody> <tr> <td>1. Plant movements</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>2. Falling materials</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>3. Dust</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> <tr> <td>4. In-situ testing</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>5. Noise</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> </tbody> </table>		Severity	Probability	Risk Rating	1. Plant movements	5	3	15	2. Falling materials	5	3	15	3. Dust	2	2	4	4. In-situ testing	5	3	15	5. Noise	2	2	4
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Current Overall Risk Rating 15																									
Mitigating Actions																									
<ol style="list-style-type: none"> 1. Reversing sirens and/or cameras, banksmen when required, high visibility clothing and protective footwear, CITB certificates for all operators, identification of suitable access. 2. Access beneath and around machines limited, banksmen when required, hard hats. 3. Dust masks when required, dust suppression. 4. All vehicles to have flashing hazard beacon, test areas isolated from operational areas. Where possible, testing during breaks. Provision of movable bollards / cones to enclose testing area. Engineer / technician to be competent in the use of an NDG and be aware of actions to be taken in the event of damage to the radioactive source. 5. No excessive noise levels above 85 dbA, use of silencers on all plant and machinery and ear protectors where necessary. 																									
Action By: Contractor/Supervisor	Final Risk Rating: Medium	Pass/Fail: Pass																							

RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																																				
ASSESSMENT NUMBER : 2																																					
ACTIVITY – Geomembrane Installation																																					
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Current Overall Risk Rating 16																																					
Mitigating Actions																																					
<ol style="list-style-type: none"> 1. Reversing sirens and/or cameras, banksmen when required, high visibility clothing and protective footwear, CITB certificates for all operators, identification of suitable access. 2. Access beneath and around machines limited, banksmen when required, hard hats, all lifting equipment to have current test certificate, personnel to remain clear of lift. Backactors used for lifting should only be operated by suitable persons. Straps and chains to be correctly hung from arm of excavator. 3. Dust masks when required, dust suppression. 4. Welding equipment to be operated by experienced, trained personnel only with use of gloves and protective clothing. 5. No excessive noise levels above 85 dbA, use of silencers on all plant and machinery and the use of ear defenders where necessary. 6. Equipment to have residual current breaker, work in wet weather to be kept to a minimum. Equipment not in use to be removed from the electricity supply. Generator to be correctly earthed and all cables shall be armoured. Equipment shall be checked and certified annually as a minimum. 7. All material to be weighted down with the appropriate loads and quantity, where possible do not place nor work on liner in high winds. Anchor trenches shall be back filled and leachate drainage blanket installed as soon as possible. All debris shall be removed from the working area and tidiness maintained. Any material retained for patching shall be adequately weighted down 8. Use of hooked stanley knife blades, cutting motion to be away from the body. 																																					
Action By: Contractor/Supervisor	Final Risk Rating: High	Pass/Fail: Pass																																			

RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																												
ASSESSMENT NUMBER : 3																													
ACTIVITY – Leachate Drainage																													
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Specific Risks</th> <th style="text-align: center;">Severity</th> <th style="text-align: center;">Probability</th> <th style="text-align: center;">Risk Rating</th> </tr> </thead> <tbody> <tr> <td>1. Plant movements</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>2. Falling materials</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>3. Dust</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> <tr> <td>4. Welding</td> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">6</td> </tr> <tr> <td>5. Noise</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> <tr> <td>6. Electrocution</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">12</td> </tr> </tbody> </table>	Specific Risks	Severity	Probability	Risk Rating	1. Plant movements	5	3	15	2. Falling materials	5	3	15	3. Dust	2	2	4	4. Welding	3	2	6	5. Noise	2	2	4	6. Electrocution	3	4	12	<p style="text-align: right;">Current Overall Risk Rating 15</p>
Specific Risks	Severity	Probability	Risk Rating																										
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Mitigating Actions																													
<ol style="list-style-type: none"> 1. Reversing sirens and/or cameras, banksmen when required, high visibility clothing and protective footwear, CITB certificates for all operator, identification of suitable access. 2. Access beneath and around machines limited, banksmen when required, hard hats, all lifting equipment to have current test certificate, personnel to remain clear of lift. 3. Dust masks when required, dust suppression. 4. Welding of pipework to be undertaken by trained, experienced personnel, using protective equipment. 5. No excessive noise levels above 85 dbA, use of silencers on all plant and machinery and the use of ear defenders where necessary. 6. Equipment to have residual current breaker. Work in wet weather to be kept to a minimum. Equipment not in use to be removed from the electricity supply. Generator to be correctly earthed and all cables shall be armoured. Equipment shall be checked and certified annually as a minimum. 																													
Action By: Contractor/Supervisor	Final Risk Rating: Medium	Pass/Fail: Pass																											

RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																												
ASSESSMENT NUMBER : 4																													
ACTIVITY – Geotextile Protection Layer																													
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Specific Risks</th> <th style="text-align: center; border-bottom: 1px solid black;">Severity</th> <th style="text-align: center; border-bottom: 1px solid black;">Probability</th> <th style="text-align: center; border-bottom: 1px solid black;">Risk Rating</th> </tr> </thead> <tbody> <tr> <td>1. Plant movements</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>2. Falling materials</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>3. Wind lift</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> <td style="text-align: center;">9</td> </tr> <tr> <td>4. Seaming</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">6</td> </tr> <tr> <td>5. Noise</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> <tr> <td>6. Electrocution</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">12</td> </tr> </tbody> </table>	Specific Risks	Severity	Probability	Risk Rating	1. Plant movements	5	3	15	2. Falling materials	5	3	15	3. Wind lift	3	3	9	4. Seaming	2	3	6	5. Noise	2	2	4	6. Electrocution	3	4	12	<p style="text-align: right;">Current Overall Risk Rating 15</p>
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<ol style="list-style-type: none"> 1. Reversing sirens and/or cameras, banksmen when required, high visibility clothing and protective footwear, CITB certificates for all operators, identification of suitable access. 2. Access beneath and around machines limited, banksmen when required, hard hats, all lifting equipment to have current test certificate, personnel to remain clear of lift. Backactors used for lifting should only be operated by suitable persons. Straps and chairs to be correctly hung from arm of excavator. 3. All material to be weighted down with the appropriate loads and quantity, where possible do not place nor work on liner in high winds. Anchor trenches shall be back filled and leachate drainage blanket installed as soon as possible. 4. Welding equipment to be operated by experienced, trained personnel only with use of gloves and protective clothing. 5. No excessive noise levels above 85 dbA, use of silencers on all plant and machinery and the use of ear defenders where necessary. 6. Equipment to have residual current breaker. Work in wet weather to be kept to a minimum. Equipment not in use to be removed from the electricity supply. Generator to be correctly earthed and all cables shall be armoured. Equipment shall be checked and certified annually as a minimum. 																													
Action By: Contractor/Supervisor	Final Risk Rating: Medium	Pass/Fail: Pass																											

RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																																
ASSESSMENT NUMBER : 5																																	
ACTIVITY – Geosynthetic Clay Liner																																	
Specific Risks	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 15%; text-align: center;">Severity</th> <th style="width: 15%; text-align: center;">Probability</th> <th style="width: 10%; text-align: center;">Risk Rating</th> </tr> </thead> <tbody> <tr> <td>1. Plant movements</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>2. Falling materials</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>3. Wind lift</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> <td style="text-align: center;">9</td> </tr> <tr> <td>4. Seaming</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">6</td> </tr> <tr> <td>5. Noise</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> <tr> <td>6. Electrocutation</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">12</td> </tr> <tr> <td colspan="3" style="text-align: right;">Current Overall Risk Rating</td> <td style="text-align: center;">15</td> </tr> </tbody> </table>		Severity	Probability	Risk Rating	1. Plant movements	5	3	15	2. Falling materials	5	3	15	3. Wind lift	3	3	9	4. Seaming	2	3	6	5. Noise	2	2	4	6. Electrocutation	3	4	12	Current Overall Risk Rating			15
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Mitigating Actions																																	
<ol style="list-style-type: none"> 1. Reversing sirens and/or cameras, banksmen when required, high visibility clothing and protective footwear, CITB certificates for all operators, identification of suitable access. 2. Access beneath and around machines limited, banksmen when required, hard hats, all lifting equipment to have current test certificate, personnel to remain clear of lift. Backactors used for lifting should only be operated by suitable persons. Straps and chairs to be correctly hung from arm of excavator. 3. All material to be weighted down with the appropriate loads and quantity, where possible do not place nor work on liner in high winds. Anchor trenches shall be back filled and leachate drainage blanket installed as soon as possible. 4. Material to be installed by experienced, trained personnel only with use of gloves and protective clothing. 5. No excessive noise levels above 85 dbA, use of silencers on all plant and machinery and the use of ear defenders where necessary. 																																	
Action By: Contractor/Supervisor	Final Risk Rating: Medium	Pass/Fail: Pass																															

RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																				
ASSESSMENT NUMBER : 6																					
ACTIVITY – Leptospirosis																					
Specific Risks	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 15%;">Severity</th> <th style="width: 15%;">Probability</th> <th style="width: 10%;">Risk Rating</th> </tr> </thead> <tbody> <tr> <td>1. Contact with waste</td> <td style="text-align: center;">5</td> <td style="text-align: center;">2</td> <td style="text-align: center;">10</td> </tr> <tr> <td>2. Contact with contaminated materials</td> <td style="text-align: center;">5</td> <td style="text-align: center;">2</td> <td style="text-align: center;">10</td> </tr> <tr> <td>3. Contact with stagnant water</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="3" style="text-align: right;">Current Overall Risk Rating</td> <td style="text-align: center;">10</td> </tr> </tbody> </table>		Severity	Probability	Risk Rating	1. Contact with waste	5	2	10	2. Contact with contaminated materials	5	2	10	3. Contact with stagnant water				Current Overall Risk Rating			10
	Severity	Probability	Risk Rating																		
1. Contact with waste	5	2	10																		
2. Contact with contaminated materials	5	2	10																		
3. Contact with stagnant water																					
Current Overall Risk Rating			10																		
Mitigating Actions																					
<ol style="list-style-type: none"> 1. Movement on or around waste to be restricted to absolute minimum. Rodent control by competent pest control company. 2. Protective clothing and training, issue leptospirosis cards to those employees at risk. 3. Washing facilities to be provided for all employees on site. No food to be consumed outside of canteen area. 																					
Action By: Contractor/Supervisor	Final Risk Rating: Low	Pass/Fail: Pass																			

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RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																												
ASSESSMENT NUMBER : 7																													
ACTIVITY – Working in close proximity to waste																													
Specific Risks	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 15%; text-align: center;">Severity</th> <th style="width: 15%; text-align: center;">Probability</th> <th style="width: 10%; text-align: center;">Risk Rating</th> </tr> </thead> <tbody> <tr> <td>1. Leptospirosis</td> <td style="text-align: center;">5</td> <td style="text-align: center;">2</td> <td style="text-align: center;">10</td> </tr> <tr> <td>2. Landfill gas</td> <td style="text-align: center;">5</td> <td style="text-align: center;">2</td> <td style="text-align: center;">10</td> </tr> <tr> <td>3. Leachate outbreak</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> <tr> <td>4. Dust</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> <td style="text-align: center;">9</td> </tr> <tr> <td>5. Contact with stagnant water</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="3" style="text-align: right;">Current Overall Risk Rating</td> <td style="text-align: center;">10</td> </tr> </tbody> </table>		Severity	Probability	Risk Rating	1. Leptospirosis	5	2	10	2. Landfill gas	5	2	10	3. Leachate outbreak	2	2	4	4. Dust	3	3	9	5. Contact with stagnant water				Current Overall Risk Rating			10
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Current Overall Risk Rating			10																										
Mitigating Actions																													
<ol style="list-style-type: none"> 1. Movements on and around waste to be restricted to absolute minimum. Rodent control by competent pest control company. Protective clothing and training, issue Leptospirosis cards to employees at risk. Maintain good personal hygiene practice. No smoking on site. 2. Monitor gas levels throughout landfill, including anchor trenches and landfill interfaces. No smoking on site. 3. Check leachate monitoring points regularly. Careful extraction of leachate from collection sumps. 4. Dust masks when required, dust suppression. 5. Washing facilities to be provided for all employees on site. No food to be consumed outside of canteen area. 																													
Action By: Contractor/Supervisor	Final Risk Rating: Medium	Pass/Fail: Pass																											

RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																								
ASSESSMENT NUMBER : 8 ACTIVITY – Bulk Excavation																									
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 60%;">Specific Risks</th> <th style="text-align: center; width: 15%;">Severity</th> <th style="text-align: center; width: 15%;">Probability</th> <th style="text-align: center; width: 10%;">Risk Rating</th> </tr> </thead> <tbody> <tr> <td>1. Plant movements</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>2. Falling materials</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>3. Dust</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> <tr> <td>4. Excavated faces</td> <td style="text-align: center;">4</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>5. Noise</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> </tbody> </table>	Specific Risks	Severity	Probability	Risk Rating	1. Plant movements	5	3	15	2. Falling materials	5	3	15	3. Dust	2	2	4	4. Excavated faces	4	3	15	5. Noise	2	2	4	<p style="text-align: right;">Current Overall Risk Rating 15</p>
Specific Risks	Severity	Probability	Risk Rating																						
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3. Dust	2	2	4																						
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Mitigating Actions <ol style="list-style-type: none"> 1. Reversing sirens and/or cameras, banksmen when required, high visibility clothing and protective footwear, CITB certificates for all operators, identification of suitable access. 2. Access beneath and around machines limited, banksmen when required, hard hats. 3. Dust masks when required, dust suppression. 4. Preferred walkways identified to minimise plant personnel interface, fencing to mark edge of excavation, battered faces on excavations, where trenches greater than 1.2m and access is required, trench boxes or supports must be used. 5. No excessive noise levels above 85 dbA, use of silencers on all plant and machinery and the use of ear defenders where necessary. 																									
Action By: Contractor/Supervisor	Final Risk Rating: Medium	Pass/Fail: Pass																							

RISK ASSESSMENT

Project : Roadstone Dublin Limited		Job Number : 2901/10	
Blessington Landfill Cell Lining and Capping Works			
ASSESSMENT NUMBER : 9			
ACTIVITY – General Site (Trespassers)			
Specific Risks	Severity	Probability	Risk Rating
1. Access to plant operating area.	4	2	8
2. Open holes / excavations	4	2	8
3. Access to exposed waste	4	2	8
4. Access to onsite chemicals	4	3	12
			Current Overall Risk Rating
			12
Mitigating Actions			
1. Installation of perimeter fencing to works area			
2. Fence off all excavations / open holes. Where trenches greater than 1.2m and access is required, trench boxes or supports must be used. Contractor to submit temporary works design.			
3. Cover any exposed waste at the end of each day with suitable cover.			
4. Hazardous chemicals to be stored on site should be stored securely with a lockable door. Only to be retrieved immediately before use and stored immediately after use.			
Action By:	Final Risk Rating:	Pass/Fail:	
Contractor/Supervisor	Medium	Pass	

RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																
ASSESSMENT NUMBER : 10 ACTIVITY – Filling Over Soft Ground/Waste																	
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Specific Risks</th> <th style="text-align: center; border-bottom: 1px solid black;">Severity</th> <th style="text-align: center; border-bottom: 1px solid black;">Probability</th> <th style="text-align: center; border-bottom: 1px solid black;">Risk Rating</th> </tr> </thead> <tbody> <tr> <td>1. Plant movements</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>2. Failure of ground beneath plant</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>5. Noise</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> </tbody> </table>	Specific Risks	Severity	Probability	Risk Rating	1. Plant movements	5	3	15	2. Failure of ground beneath plant	5	3	15	5. Noise	2	2	4	Current Overall Risk Rating 15
Specific Risks	Severity	Probability	Risk Rating														
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Action By: Contractor/Supervisor	Final Risk Rating: Medium	Pass/Fail: Pass															

RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																																				
ASSESSMENT NUMBER : 11																																					
ACTIVITY – EXCAVATION IN CONTAMINATED/UNCONTAMINATED SOIL																																					
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Action By: Contractor/Supervisor	Final Risk Rating: 10 Medium	Pass/Fail: Pass																																			

RISK ASSESSMENT

Project : Roadstone Dublin Limited Blessington Landfill Cell Lining and Capping Works	Job Number : 2901/10																												
ASSESSMENT NUMBER : 12 ACTIVITY – Working in Proximity to Live Services																													
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Specific Risks</th> <th style="text-align: center; border-bottom: 1px solid black;">Severity</th> <th style="text-align: center; border-bottom: 1px solid black;">Probability</th> <th style="text-align: center; border-bottom: 1px solid black;">Risk Rating</th> </tr> </thead> <tbody> <tr> <td>1. Plant movements</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>2. Excavation</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>3. Hot Works</td> <td style="text-align: center;">4</td> <td style="text-align: center;">4</td> <td style="text-align: center;">16</td> </tr> <tr> <td>4. Electrocutation</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">15</td> </tr> <tr> <td>5. Leptospirosis</td> <td style="text-align: center;">5</td> <td style="text-align: center;">2</td> <td style="text-align: center;">10</td> </tr> <tr> <td>6. Leachate outbreak</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> </tbody> </table>	Specific Risks	Severity	Probability	Risk Rating	1. Plant movements	5	3	15	2. Excavation	5	3	15	3. Hot Works	4	4	16	4. Electrocutation	5	3	15	5. Leptospirosis	5	2	10	6. Leachate outbreak	2	2	4	<p style="text-align: right;">Current Overall Risk Rating 16</p>
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Mitigating Actions <ol style="list-style-type: none"> 1. All live services to be clearly marked and located, reversing sirens and/or cameras, banksmen when required, high visibility clothing and protective footwear, CITB certificates for all operators, identification of suitable access. 2. Banksmen to be deployed during an excavation in proximity to live services, services to be accurately located, use of cat scan prior to excavation. 3. Welding equipment to be operated by experienced, trained personnel only with use of gloves and protective clothing, gas levels monitored during all hotworks or while using electrical equipment. 4. Equipment to have residual current breaker, work in wet weather to be kept to a minimum. Equipment not in use to be removed from the electricity supply. Generator to be correctly earthed and all cables shall be armoured. Equipment shall be checked and certified annually as a minimum. 5. Rodent control by competent pest control company. Protective clothing and training issue Leptospirosis cards to employees at risk. Maintain good personal hygiene practice. No smoking on site. 6. Check leachate monitoring points regularly. Careful extraction of leachate from collection sumps, isolation of leachate from working areas where possible. 																													
Action By: Contractor/Supervisor	Final Risk Rating: High	Pass/Fail: Pass																											