

ATTACHMENT L1 – STATUTORY REQUIREMENTS

COMPLIANCE WITH SECTION 40(4) WASTE MANAGEMENT ACTS 1996-2008

In developing the planned inert waste recovery scheme, Roadstone Ltd. has had regard to the requirements of Section 40(4) of the Waste Management Acts 1996, as amended. These are addressed as follows: -

- a) *Any emissions from the recovery or disposal activity in question (“the activity concerned”) will not result in the contravention of any relevant standard, including any standard for an environmental medium, or any relevant emission limit value, prescribed under any other enactment.*

As the soil / C&D materials being recovered at the Huntstown facility are inert and non-biodegradable, they do not generate contaminated leachate or landfill gas. Accordingly, the waste recovery activities present only very low risk of groundwater contamination, no risk of landfill gas emissions and no risk of bird, litter, odour or vermin nuisance.

With established soil / C&D waste recovery activities, there is a small risk of potential groundwater pollution from the following sources:

- accidental spillage of fuels and lubricants from earthworks / processing / handling plant;
- increase in suspended solids and potential for contaminated run-off percolating down to the groundwater table as a result of recovery activities; and
- inadvertent importation, placement or processing of rogue loads of contaminated materials at the facility.

In order to minimise the risk of pollution to groundwater occurring as a result of waste recovery activities, a number of mitigation measures are implemented. These measures give effect to Council Directive 80/68/EEC on the protection of groundwater against pollution and are outlined in Attachment E4 of this waste licence review application and Chapter 6 of the Environmental Impact Statement.

In recent times, cumulative noise and dust levels from ongoing recovery activities and the adjoining quarrying, rock extraction and aggregate processing and concrete/masonry production activities were generally within recognised threshold emission limits for extractive industry.

Roadstone Ltd. implements its Environmental Management System (EMS) when undertaking recovery and quarrying activities at Huntstown Quarry. The continued implementation of the EMS in future will help to mitigate any environmental impacts and any emissions which may arise and ensure best practice for environmental management and control if adopted at this location.

- b) *The activity concerned, carried on in accordance with such conditions as may be attached to the licence, will not cause environmental pollution;*

The recovery through disposal of inert soil and stones on land is necessary for the backfilling and restoration of the existing (and planned) quarries at Huntstown in line with the existing planning permission (Fingal County Council Ref. No FW16A-0120). Increased recycling of inert C&D waste at the existing recovery facility at the Central Quarry and its planned replacement facility at the north-eastern corner of the quarry complex is regulated by way of a separate permission (Fingal County Council Ref. No FW17A-0012). Neither activity presents any significant risk to the natural environment, nor generates any contaminated leachate or landfill gas.

Inert soil. C&D waste testing, inspection and handling procedures are in place to ensure that only waste which is demonstrably inert is used in the backfilling and restoration of the quarry voids. Environmental Management Systems are in place to minimise the risk of environmental pollution arising in the course of the recovery operations.

Roadstone will continue to undertake all recovery activities at the licensed facility in accordance with all conditions to prevent environmental pollution attaching to the existing Waste Licence (or review thereof) issued in respect of ongoing recovery operations.

- bb) *If the activity concerned involves the landfill of waste, the activity, carried on in accordance with such conditions as may be attached on the licence, will comply with Council Directive 1999/31/EC on the landfill of waste.*

Not Applicable

- c) *The best available techniques will be used to prevent or eliminate or, where that is not practicable, to limit, abate or reduce an emission from the activity concerned;*

As the soil / C&D materials recovered at the waste recovery facility are inert, there is little or no risk of potentially contaminated emissions to ground, groundwater or the atmosphere. Consequently, there is little requirement to apply best available technologies to limit, abate and/or reduce ground and/or groundwater emissions. In operating the facility, emphasis is placed on implementation of robust waste acceptance and inspection procedures to ensure that only inert soil / C&D waste is imported and handled at the recovery facility.

The recovery activities at Huntstown will, for the most part, only require utilisation of conventional HGV trucks and earthmoving and crushing / screening equipment. Use of this plant and equipment generates noise and dust emissions. Noise and dust suppression techniques are employed at the facility as and when required (refer to Chapters 8 and 9 of the accompanying Environmental Impact Statement).

- cc) *The activity concerned is consistent with the objectives of the relevant waste management plan or the hazardous waste management plan, as the case may be, and will not prejudice measures taken or to be taken by the relevant local authority or authorities for the purposes of the implementation of any such plan.*

Fingal is one of several counties in the Eastern Midland waste region of Ireland which is covered by the Eastern Midland Waste Management Plan (2015-2021), published by Dublin City Council (the lead Local Authority for the plan) in May 2015.

Section 7.3 of the plan addresses 'priority waste' streams, including construction and demolition waste. It notes an increase in construction related activity during 2014 and emphasises the importance of ensuring that appropriate processing facilities are in place to facilitate increased reuse, recycling and recovery of all C&D waste streams.

Section 11.2.2 of the plan presents an overview of construction and demolition waste management activities within the region. It identifies that in 2012, the total of recorded C&D waste collected and managed in the region was 3.25 million tonnes. Of this, 59% (1.9 million tonnes) comprised concrete rubble and intermixed wastes (metal, timber etc.). This volume was generated at a time which corresponded with possibly the lowest point of the downturn in construction related activity following the Global Financial Crisis of 2008.

Section 11.2.2 also notes a sharp decrease in the number of operational landfills in recent years. It also highlights growing awareness of the ecological and biodiversity value of low-lying wetlands and marginal agricultural lands which were backfilled or reclaimed using construction and demolition wastes in the past and comments that at many of these sites, the primary activity appears to have been deposition of waste rather than land improvement (also known as 'sham recovery').

In view of these trends and the likelihood that fewer of these facilities or sites will be available as outlets for C&D waste than in the recent past, the plan identifies a requirement for alternative recovery options to facilitate the recovery of C&D wastes generated in the years ahead.

The plan further notes that concrete, stone and other masonry like waste can be crushed and screened and used as a substitute for virgin quarried stone material in a variety of engineering applications if the appropriate technical criteria have been met (eg. road construction, access tracks for agricultural or forestry holdings).

It is considered in light of the above that the intensification and relocation / upgrading of existing C&D waste recovery activity at Huntstown Quarry broadly complies with the waste management policy objectives for C&D waste outlined in the current Eastern Midland Waste Management Plan (2015-2021).

- d) *If the applicant is not a local authority, the cooperation of a borough that is not a country borough, or the council or an urban district, subject to subsection (8), he or she is a fit and proper person to hold a waste licence.*

Refer to Attachment L2.

- e) *The Applicant has complied with any requirements under Section 53.*

A Closure, Restoration and Aftercare Management Plan (CRAMP) and a fully detailed and costed Environmental Liabilities Risk Assessment (ELRA) for the existing inert soil waste recovery facility

at Huntstown Quarry was previously approved by the Environmental Protection Agency and a copy of both documents is provided under cover of this Attachment L1.

These documents assess facility closure costs and the cost of unplanned accidents or emissions in accordance with the requirements and methodologies set out by the EPA publication 'Guidance on assessing and costing environmental liabilities' 2014).

Should this waste licence review application to incorporate C&D waste recovery activities at the facility within the scope of the waste licence be successful, an updated CRAMP and ELRA will be prepared and will take due account of C&D recovery activities. The updated documents will be submitted as part of the Annual Environmental Report (AER) to be submitted in the year following the issue of the amended waste licence.

Roadstone Ltd. will ensure that such financial provisions as may be agreed with the Agency, will remain in place to provide for future implementation of the proposed closure plan and/or execution of environmental remediation works provided for under a worst-case scenario in the liabilities risk assessment.

f) *Energy will be used efficiently in the carrying on of the activity concerned.*

Small scale energy requirements for the existing site / weighbridge office and staff welfare facilities (lighting, heating, computers etc.) are provided by a connection to the electricity supply network. Plant and equipment required to undertake the proposed waste recovery activities are powered by diesel fuel. Energy use is minimised insofar as practicable.

g) *Any noise from the activity concerned will comply with, or will not result in the contravention of, any regulations under Section 106 of the Act of 1992.*

Noise emissions from HGV's, plant, earthmoving, crushing and screening equipment are controlled and monitored to comply with such limits and conditions imposed by the Waste Licence issued in respect of the waste recovery activities. Noise emissions from site activities are well below the recognised threshold average ambient noise level for licensed facilities of 55L_{Aeq} dB(A).

Potential future increases in noise generated by the planned additional waste recovery activity at Huntstown have been assessed in accordance with the EPA *Guidance Note for Noise : Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* and found to be minor and within permitted limits.

Frequent exceedences of ambient noise limits at the recovery facility and surrounding quarries are recorded around the Huntstown Quarry complex and are attributed to traffic movements along the nearby M50 Motorway, N2 Dual Carriageway and R135 Regional Road, as well as to overhead aircraft movements in and out of nearby Dublin Airport.

h) *Necessary measures will be taken to prevent accidents in the carrying on of the activity concerned and, where an accident occurs, to limit it's consequences for the environment.*

An assessment of the principal environmental hazards and risks associated with the ongoing recovery operations at Huntstown Quarry and the contingency measures to be implemented in the event of an incident are provided in the Outline Contingency Plan provided in Attachment J of this waste licence review application.

i) *Necessary measures will be taken upon the permanent cessation of the activity concerned (including such a cessation resulting from the abandonment of the activity) to avoid any risk of environmental pollution and return the site of the activity to satisfactory state.*

Details of the decommissioning and aftercare activities to be undertaken on cessation of recovery operations at Huntstown are provided in Attachment K of this waste licence review application. As the soil / C&D waste materials being recovered are inert, there will be no requirement to make provision for measures to monitor and/or prevent risk of long term pollution arising at or around the licensed facility.

j) *The intended method of treatment is acceptable from the point of view of environmental protection, in particular when the method is not in accordance with Section 32(1)*

As the soil / C&D waste materials being recovered at the Huntstown complex are inert; as the recovery facility is operated by a large, well-resourced and experienced company; as it is operated in accordance with an accredited Environmental Management System (EMS) and an existing waste licence; as imported waste is subject to prior approval and testing and only brought to site by authorised waste collectors (in possession of valid waste collection permits), it is

considered that intensification of C&D waste recovery activities at Huntstown Quarry (and its inclusion within the scope of the waste licence) presents a low risk to the environment and, as such, it is acceptable from the point of view of environmental protection.

APPROPRIATE ASSESSMENT SCREENING REPORT

An Appropriate Assessment Screening Report which addresses the intensification and proposed relocation of the C&D waste recovery activities at Huntstown Quarry is provided under cover of this attachment.

The assessment was prepared by SLR Consulting Ireland and submitted to Fingal County Council in February 2017 in support of the planning application for same (Ref. FW17A_0012).

The screening assessment concluded that neither existing nor planned future operation of the C&D waste recovery facility at Huntstown is likely to have any adverse effect on the integrity of any Natura 2000 site, or on any of the qualifying features for which these sites have been classified or designated, either as a stand-alone development or in-combination with other plans or projects within its zone of influence.

COMPLIANCE WITH BAT

The following sections describe how the soil / C&D waste recovery facility at Huntstown Quarry complies with the relevant requirements of BAT. In the absence of any specific BAT guidance in respect of C&D waste recovery activities, it is considered that BAT for this sector is best addressed by the guidance given in the Agency's *BAT Guidance Note for Waste Sector : Landfill Activities (December 2011)*, and specifically guidance presented therein in respect of inert waste landfills.

Environment impacts associated with waste recovery activities could include

- (i) Potential dust emissions arising from unloading, placement and handling of imported soil / C&D and trafficking of HGV's over unpaved haul roads;
- (ii) Potential carbon dioxide (CO₂) emissions from plant and equipment working at the facility;
- (iii) Potential noise emissions / noise nuisance associated with working plant and HGVs;
- (iv) Potential contaminant emissions to land, surface waters and groundwater, specifically from handling of non-inert waste, presence of suspended solids in surface water run-off and spills / leaks of fuel and oil;
- (v) Potential nuisance associated with transport of mud onto the regional and local road network;
- (vi) Inadequate planning and financial provision for potential environmental liabilities, closure, restoration and aftercare of the proposed facility;
- (vii) Poor environmental management and control of waste activities at the facility;

The waste materials imported to, managed and recovered at the Huntstown recovery facility are inert (physically, chemically and biologically unreactive) and will not alter or adversely affect any other matter in contact with it in a way which would give rise to environmental pollution or harm human health. As such, the waste will not generate contaminated leachate, landfill gas or odour emissions, nor will it give rise to litter nuisance or attract vermin or birds, which would also create further potential nuisance.

It is considered that each of the potential impacts of the facility can be addressed through the application of the following best available techniques to minimise emissions or to manage / control them.

Air (Dust) Emissions

A number of measures are in place to minimise and manage air (principally fugitive dust) emissions at Huntstown Quarry. The following BAT measures in respect of potential dust generation activities are implemented at the waste recovery facility in order to minimise and control dust emissions:

All Activities

- Use of mobile water bowsers to damp down particulate materials across the entire site, as and when required, principally in windy periods during extended dry spells.
- Undertake all C&D waste processing in the proposed processing shed.

Stockpiling

- Minimise external stockpiling of imported C&Ds ;
- Use of water sprays on C&D stockpiles when necessary;
- Site stockpiles to take advantage of shelter from wind;
- Minimise C&D mound heights at all times (to minimise emissions);

Traffic Movements

- Require traffic to adhere to defined haul routes within the facility;
- Regularly maintain unpaved road sections by grading hardcore to minimise particulate matter generation;
- Maximise travel over paved road sections within the facility;
- Maximise separation distances between internal haul roads and sensitive receptors;
- Implement and enforce speed controls on all paved and unpaved roads;
- Direct traffic through wheel cleaning equipment wherever practicable;
- Use road sweepers on paved road sections as and when required;

Monitoring

- Undertake dust deposition monitoring close to sensitive receptors around the facility / perimeter of the quarry complex
- Undertake reviews of ambient emissions at regular intervals to determine the effectiveness of dust management and control systems.

The BAT Guidance Note for the Waste Sector : Landfill Activities (2011) and the Environmental Management Guidelines for the Extractive Industry (2006), both published by the EPA, indicate that a total dust deposition limit of 350mg/m²/day measured close to sensitive receptors / at site boundaries is appropriate for waste recovery activity (and adjoining quarrying / aggregate processing activities).

Air (CO₂) Emissions

The waste recovery operations at Huntstown Quarry will, for the most part, entail use of conventional diesel powered HGV trucks, crushing and screening plant and earthmoving plant (mechanical excavators and/or front end loaders). There is only minor scope to increase the efficiency of HGV's, processing plant and earthworking equipment and to reduce emissions arising from their use and deployment at the recovery facility.

The following BAT measures are / will be implemented in order increase efficiency and to limit, abate and/or reduce carbon dioxide emissions generated by HGVs and plant at the waste recovery facility:

- Ensure all vehicles, plant and equipment based at the facility are regularly serviced and maintained and operating efficiently;
- Replace plant and/or vehicles at the end of their operational life;
- Ensure plant and equipment are switched off when not in use;
- Minimise, insofar as possible, vehicle movements across the facility
- Review opportunities to increase the proportion of sustainable biofuel used by HGVs travelling to and from the facility, and incentivising its use wherever practicable.

Noise Emissions

The following BAT measures in respect of potential noise generation activities are implemented at the waste recovery facility in order to minimise and control noise emissions:

Facility Layout / Design

- Retain / reinforce existing screening berms, banks and perimeter vegetation around the property boundary to provide acoustic as well as visual screening;
- Ensure plant and equipment at the facility work within the existing quarry void, below original ground level or the crest of any perimeter screening berm, in order that quarry faces or berms can be used to provide additional acoustic screening;

Management and Working Practices

- Ensure activities within the facility are undertaken in locations where noise attenuation from existing natural landforms would minimise the potential noise related impact at nearby noise-sensitive properties;
- Ensure that, wherever possible, internal haul roads are routed so as to maximise the separation distances to nearby noise-sensitive properties;

- Ensure all haul roads are kept clean and maintained in a good state of repair (i.e. any potholes would be filled and large bumps removed, to avoid unwanted rattle and “body-slap” from heavy goods vehicles);
- Ensure heavy goods vehicles entering and leaving the site have tailgates securely fastened;
- Ensure processing plant and all mobile plant and equipment used at the facility have noise emission levels that comply with the limiting levels defined in EC Directive 86/662/EEC and any subsequent amendments;
- Ensure plant is operated in a proper manner with respect to minimising noise emissions (e.g. minimisation of drop heights, no unnecessary revving of engines, plant used intermittently not left idling);
- Ensure all plant is subject to regular maintenance (i.e. all moving parts kept well lubricated, all cutting edges kept sharpened, the integrity of silencers and acoustic hoods maintained);
- Ensure all plant and equipment at the facility is fitted with effective exhaust silencers which are maintained in good working order to meet manufacturers’ noise rating levels. Defective silencers to be replaced immediately.

Monitoring

- Undertake noise monitoring close to sensitive receptors around the facility / perimeter of the quarry complex
- Undertake reviews of emissions at regular intervals to determine the effectiveness of noise management and control systems.

The *Guidance Note for Noise in Relation to Scheduled Activities (2007)* and the *Environmental Management Guidelines for the Extractive Industry (2006)*, both published by the EPA, indicate that a rated noise emission limit of 55dB(A) L_{Ar} during daytime working hours and 45dB(A) L_{Ar} during night-time hours is appropriate for the waste recovery facility.

Available baseline noise monitoring surveys and noise analyses in respect of future waste recovery activities indicate that exceedences in these threshold values will not arise on account of the proposed intensification of C&D waste recovery activities at Huntstown Quarry.

The available noise monitoring data indicates that exceedences of threshold noise limits do currently occur, and are likely to continue at this location. They can largely be attributed to the proximity of the facility to the M50 Motorway, N2 Dual Carriageway and R135 Regional Road, as well as to overhead aircraft movements in and out of nearby Dublin Airport.

Emissions to Land / Water

The Huntstown quarry complex straddles two river catchments, that of the Ward River to the north and the Tolka River to the south. In reality land drainage works and surface water managements systems at Huntstown have slightly altered the boundary between the Ward and Tolka catchments, such that all lands within the licensed waste facility (and proposed additions thereto) lie within the Ward catchment, with off-site discharges from the North, West and Central Quarries and proposed north-eastern recovery area all being directed to the Ballystrahan Stream which flows north from the north-east boundary of the Roadstone landholding.

Currently most rainfall at the recovery facility percolates down through the existing soil / rock at the ground surface and recharges to groundwater, at which point it joins groundwater flow toward quarry faces / floors. Surface water run-off falling over existing quarry voids and dewatered groundwater fall to sumps at temporary low points within the quarry floors. Surface water run-off falling over the proposed recycling facility in the northern-eastern corner falls to a pond at the corner of the facility and is ultimately routed into existing surface water management infrastructure

The temporary sumps on the quarry floors effectively function as primary settlement ponds and water collecting in them is pumped (causing minimum agitation to ponded water) to the existing drainage channels / watercourses on the eastern side of the North Quarry. Water pumped to these channels is routed via settlement ponds and existing treatment infrastructure (silt trap and hydrocarbon interceptor) prior to being discharged to the Ballystrahan Stream flowing northwards toward the Ward River.

Off-site discharges from the established waste recovery activities at the North Quarry and from the wider quarry complex are currently regulated by way of an EPA waste licence (Ref. W0277) and a discharge licence from Fingal County Council (Ref. No WPW/F/008-01) respectively. Discharge compliance is generally good, although there are occasional exceedences of water quality emission thresholds.

The bedrock formations underlying the application site and the wider Huntstown Quarry complex are generally considered to be Locally Important (LI) karstified aquifers. Maps published by the EPA indicate that the recovery facility is located in an area with high to extreme groundwater vulnerability status. This reflects the potential for rapid groundwater movement through thin (or non-existent) soil cover into the underlying (poor) bedrock aquifer. Previous sampling and testing of groundwater from monitoring wells across the Huntstown Quarry complex indicates that groundwater quality at the application site is generally good and that established recovery operations have had no significant impact on local groundwater quality.

Although the waste streams imported to the recovery facility at Huntstown Quarry are inert and expected to be free from contamination, there is a minor risk that the recovery activities could result in contaminant emissions to land, surface waters and groundwater, specifically from placement and/or handling of non-inert waste, presence of suspended solids in surface water run-off and spills / leaks of fuel and oil. The following BAT measures are implemented at the facility in order to minimise uncontrolled release of polluting materials or liquids / liquors to land, surface waters and groundwater:

Land

- Establish waste acceptance procedures and management systems to identify the source of imported soil / C&D waste materials in advance and to confirm that they are inert;
- Implement a multi-level soil testing regime for imported waste materials, comprising characterisation testing, compliance testing and on-site verification;
- Ensure that any imported waste which is suspected to be non-inert is transferred to the proposed waste inspection and quarantine area (a covered shed constructed over a concrete slab) and held there pending receipt of test results;
- Remove any quarantined materials that prove to be non-inert off-site, for disposal or recovery at an appropriately licensed waste facility.

Water

- Fully dewater or drain the quarry floor / working platforms prior to handling / processing of inert materials in order to minimise the mobilisation and migration of fines in groundwater;
- Collect surface water run-off from active recovery areas and pump it through settlement pond infrastructure, mobile silt traps and a hydrocarbon interceptor in order to reduce concentrations of suspended solids and remove any potential hydrocarbon contamination prior to discharging it to the Ballystrahan Stream;
- Ensure all fuels, oils, lubricants and other potentially hazardous chemicals held at the facility are stored in
 - (a) large tanks surrounded by protective concrete barriers / containment bunds in order to eliminate the potential for mobile plant to collide or impact with them;
 - (b) smaller drums or intermediate bulk containers (IBCs) on banded pallets surrounded by protective barriers;
 - (c) double skinned containers and/or mobile bowzers.
- Undertake regular visual inspection and testing of the integrity of tanks, drums, banded pallets and double skinned containers;
- Divert all domestic wastewater from the staff welfare facilities via the existing septic tanks and wastewater treatment facilities prior to discharging final effluent to ground;
- Ensure all vehicle re-fuelling is undertaken on sealed hardstand areas adjacent to the fuel storage tank (or from a mobile double skinned fuel bowser);
- Maintain and test the integrity of drainage infrastructure, including drainage pipework and the hydrocarbon interceptor at regular intervals ;
- Undertake maintenance of plant and machinery over paved surfaces (or off-site, if appropriate);
- Ensure all plant is regularly maintained and inspected daily for leaks of fuel, lubricating oil or other contaminating liquids / liquors
- Ensure spill kits (with containment booms and absorbent materials) are available on-site to contain / stop the migration of any accidental spillages, should they occur;

- Establish a traffic management system at the facility to reduce conflicts between vehicles, and the potential risk of collisions and associated fuel spills or oil leaks;
- Establish and enforce speed limits across the facility to further reduce the likelihood and significance of collisions;

Monitoring

- Continue regular monitoring of surface water discharges (at discharge point) and groundwater quality (at 5 No. groundwater wells);
- Undertake ongoing reviews of emissions at regular intervals to determine the effectiveness of water management systems.

It is expected that by implementing these measures, emissions to surface water will meet the quality threshold values for key indicator parameters (BOD, suspended solids, total ammonia, total nitrogen and total phosphorous set by the *BAT Guidance Note for Waste Sector : Landfill Activities (2011)* and/or the waste licence (or any review thereof).

Environmental Liabilities

Operation of the proposed waste recovery facility could give rise to both known and potentially unknown future liabilities, principally in respect of land, surface water and/or groundwater and also, to a lesser extent, to atmosphere. Some potential liabilities could also arise in respect of the future closure, restoration and aftercare of the facility. Failure to make adequate financial provision for these liabilities could give rise to adverse impacts on the environment.

In order to identify and quantify these prospective liabilities, Roadstone has previously prepared and submitted a Closure, Restoration and Aftercare Management Plan (CRAMP) and Environmental Liabilities Risk Assessment (ELRA), copies of which have been provided with this attachment. The amount of financial provision required in respect of unexpected facility closure or site remediation following significantly adverse environmental incident has previously been agreed with the EPA.

Transport of Mud onto Roads

The intensification and planned relocations of C&D waste recovery activities at Huntstown Quarry will result in additional traffic movements of HGV's over areas of unpaved ground within the waste recovery facility and as such, in unfavourable weather conditions, could result in mud being carried off-site and onto the public road network, giving rise to potential health and safety risks to other road users.

The following BAT measures are implemented in order to limit, abate and/or minimise deposition of mud on public roads by HGV's and other vehicles exiting the waste recovery facility.

- Direct all traffic exiting the facility through the existing wheelwash facility and over paved internal roads thereafter out to the public road network;
- Regularly clean and maintain the wheelwash facility;
- Use a road sweeper to clean local public roads as and when required
- Maximise travel over paved road sections within the facility;
- Regularly inspect and maintain any unpaved road sections within the facility so as to minimise potential accumulation of mud on wheels of HGV lorries.

Environmental Management Systems

Roadstone Ltd. implements its Environmental Management System (EMS) in respect of soil / C&D waste recovery, rock extraction and aggregate production activities at Huntstown Quarry. The EMS is subject to ongoing review and development and Roadstone proposes to update its existing EMS in due course to incorporate any additional mitigation measures and management procedures (outlined above) which may be necessary to

- (i) mitigate specific impacts and emissions arising from the intensification of C&D waste recovery activities and
- (ii) further implement best practice environmental management and control measures for waste activities at the site.

The existing environmental monitoring programme at the Huntstown quarry complex will continue in force for the duration of waste recovery operations. Emission limit values for recovery activity are generally consistent with those set by previous and/or existing planning permissions, licences and consents.

The environmental management measures and BAT techniques outlined above will be reviewed and revised in light of conditions attaching to any amended waste licence issued by the EPA in respect of the intensification of inert C&D waste recovery activities at this facility.

CONSIDERATIONS IN ANNEX IV OF COUNCIL DIRECTIVE 96/61/EC

In developing the recovery facility at Huntstown, Roadstone Ltd. has considered the requirement to use Best Available Techniques, where possible and practicable. The considerations referred to in ANNEX IV of Council Directive 96/61/EC on Integrated Pollution Prevention and Control are addressed as follows :

1. *The use of low waste technology*

The recovery operations at Huntstown will, for the most part, only require utilisation of conventional HGV trucks, processing (crushing / screening) plant and earthmoving equipment. As the materials accepted and handled at the facility are inert, there is little scope to apply best available technologies to limit, abate and/or reduce emissions. In controlling emissions from the site, greatest emphasis will be placed on implementing an effective Environmental Management System.

2. *The use of less hazardous substances.*

No hazardous or non-hazardous materials (other than diesel fuel and engine oils) will be used in undertaking waste recovery activities at Huntstown. There is currently no alternative to diesel fuel to power the processing plant / earthmoving equipment which will be in use at the facility.

3. *The furthering of recovery and recycling of substances generated and used in the process and of waste, where appropriate.*

Given that the waste materials imported to the recovery facility are effectively recovered or re-used for a beneficial purpose, and in place of naturally occurring non-waste materials, there is no scope for further material recovery and/or recycling.

4. *Comparable processes, facilities or methods of operation which have been tried with success on an industrial scale.*

No alternative successful soil / C&D waste recovery processes are known of.

5. *Technology advances and changes in scientific knowledge and understanding*

No alternative soil / C&D recovery technologies are known.

6. *The nature, effects and volume of the emissions concerned*

As the materials imported and recovered at the recovery facility are inert, there are no associated emissions of potentially contaminated substances to ground, groundwater and/or the atmosphere. Noise and dust emissions are controlled and monitored to comply with such limits and conditions as are (may) be imposed by the (amended) waste licence.

7. *The commissioning dates for new or existing installations*

There are only a limited number of high capacity authorised recovery facilities currently in operation in Counties Dublin, Meath, Kildare and Wicklow. Soil / C&D waste recovery facilities operate in a commercial environment and are currently struggling to meet demand for recovery capacity generated by the uplift in activity in the construction and development sectors around the Greater Dublin Area.

National news media, construction trade literature and/or professional journals have published articles in recent months identifying a looming shortage of C&D waste recovery capacity in the Greater Dublin area^{1,2}. These reports are consistent with, and corroborated by, a high level of trade enquiries about availability of recycling capacity and/or strong anecdotal evidence reported by Roadstone staff over the past 12 months.

¹ Irish Independent 'Builders warn of looming crisis over capital rubble', 7 October 2016

² Engineers Journal. 'Threat to infrastructure and major housing projects as major builders' waste crisis looms', Engineers of Ireland, 1 November 2016

Additional well managed, large scale authorised (licensed) facilities are required to replace closed or closing facilities and to provide the required additional recovery capacity for a growing construction and development sector.

8. *The length of time needed to introduce the best available technique*

As previously noted, the materials recovered at the Huntstown recovery facility are inert and existing soil / C&D recovery activities employ conventional, relatively low technology plant and equipment. As such there is little scope or requirement to develop new waste management technologies or techniques to provide enhanced environmental protection.

9. *The consumption and nature of raw materials (including water) used in the process and their energy efficiency*

The only materials consumed by waste recovery activities at the existing licensed facility are diesel fuel and engine oils used to power plant and equipment. No other hazardous or non-hazardous materials are required. The relatively small energy demands generated by the site office and staff welfare facilities (lighting, heating etc) are met by way of a connection to the local electricity distribution network. Energy use at the facility is minimised insofar as practicable.

10. *The need to prevent or reduce to a minimum the overall impact of the emissions on the environment and the risks to it.*

As previously noted, the waste materials recovered at the existing recovery facility are inert. The risk of potentially contaminated emissions to ground, groundwater and the atmosphere are therefore very low. Emissions of noise and dust are controlled and kept to a minimum during the recovery activities by applying best practice environmental management techniques.

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Huntstown Quarry, Finglas, Dublin 11

**APPLICATION FOR INCREASE IN PERMITTED RATE OF
CONSTRUCTION AND DEMOLITION (C&D) WASTE RECOVERY
AT EXISTING RECOVERY FACILITY AND RELOCATION OF ACTIVITY
TO NEW LOCATION WITHIN HUNTSTOWN QUARRY COMPLEX**

APPROPRIATE ASSESSMENT: STAGE 1 SCREENING REPORT

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1.0 INTRODUCTION

1.1 Background

This report provides information to inform an Appropriate Assessment: Stage 1 Screening Assessment of any likely significant effects on Natura 2000 sites from the proposed increase in the permitted recovery rate of inert waste at an existing construction and demolition (C&D) waste recovery facility at the Central Quarry and the relocation of the facility to a new site in the north-eastern part of the Huntstown Quarry Complex, Finglas, Dublin.

It is envisaged that once C&D wastes held at the existing recovery facility at the Central Quarry are processed (within a period of 2-3 years), recovery activity will be re-located to the new facility.

It has been prepared by SLR Consulting Ireland (SLR) on behalf of Roadstone Limited in support of its planning and waste licence applications in respect of the proposed development at Huntstown Quarry.

1.2 Appropriate Assessment Overview

The requirements for an Appropriate Assessment are set out under Article 6 of the EU Habitats Directive (92/34/EEC) transposed into Irish law through The European Communities (Birds and Natural Habitats) Regulations 2011 and 2013. These regulations require a Competent Authority to make an Appropriate Assessment of the implications for Natura 2000 sites in view of a site's conservation objectives, before deciding to undertake, or give consent, permission or other authorisation for, a plan or project which:

- i. is not directly connected with or necessary to the management of that site; and
- ii. is likely to have a significant effect thereon, either individually or in combination with other plans and projects in view of its conservation objectives.

The European Commission's methodological guidance¹ promotes a four stage process, as set out below, to complete an Appropriate Assessment:

- Stage 1 – Screening for Appropriate Assessment;
- Stage 2 – Appropriate Assessment;
- Stage 3 – Alternative Solutions; and
- Stage 4 – The 'IROPI Test' (Imperative Reasons of Overriding Public Interest).

A person applying for any such consent, permission or other authorisation must provide such information in Stage 1, as the Competent Authority may reasonably require, for the purposes of the assessment or to enable them to determine whether an Appropriate Assessment is required.

In considering whether a plan or project will adversely affect the integrity of any Natura 2000 site or sites, the Competent Authority should consider whether the effects of the proposal on the site or sites, either individually or in combination with other plans or projects, is likely to be significant in terms of the conservation objectives and in respect of each interest feature for which the site was designated a Special Area of Conservation (SAC) under the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive), or classified a Special Protection Area (SPA) under Council Directive 2009/147/EC on the Conservation of Wild Birds (The Birds Directive) that codifies Directive 79/409/EEC.

¹ European Communities (2002). *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites. Methodological Guidance on the Provision of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. European Communities, Luxembourg.

In the light of the conclusions of the assessment, and in consideration of Imperative Reasons of Overriding Public Interest (IROPI), the Competent Authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the Natura 2000 site.

1.3 Purpose of this Report

This report has been produced to provide a screening statement, as required under Stage 1 of the Appropriate Assessment process, and includes all relevant information to the Competent Authority (in this case the Fingal County Council and the Environmental Protection Agency (EPA)) in order for them to determine whether the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex is likely to have a significant effect on the integrity of any Natura 2000 site, or sites, within its zone of influence and whether there is a requirement for an Appropriate Assessment (Stage 2 Assessment) to be undertaken.

1.4 Ecologist and Experience

The Screening Assessment has been conducted by Steve Judge, an Associate Ecologist with SLR, with 16 years' experience in ecological consultancy and a member of the Chartered Institute of Ecology and Environmental Management (CIEEM). All work produced is subject to technical review and Quality Assurance.

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2.0 METHODOLOGY

2.1 Baseline Data Collection

Baseline information was gathered through a combination of desk-based study, a site visit on 30th November 2016 and technical assessments consistent with current standard methodologies and published best practice guidelines, in order to provide relevant data to allow an assessment of likely significant effects of the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex on any individual Natura 2000 site, or sites, within the zone of influence of this project.

The principal source of information on Natura 2000 sites and key qualifying features has been data collected through information publically available through the National Parks and Wildlife Service (NPWS)² and with other relevant sources used to provide data on current baseline conditions at the site of the proposed development and within its potential zone of influence.

2.2 Assessment Likely Significant Effects

Under the Habitats Directive, the first test that has to be considered is whether the development, either alone or in combination with other relevant projects and plans, would be likely to have a significant effect. Effects are judged to be significant where they affect the integrity of a Natura 2000 site with respect to the conservation objectives of the features for which a Natura 2000 site was designated / classified as being of European importance.

The purpose of Stage 1 is two parts, firstly to screen out those aspects of the proposal that can be considered not likely to have a significant effect, and secondly to screen the key qualifying features for which a site was designated / classified as being of European importance that are not likely to be significantly affected by the proposal.

A 'likely significant effect' (LSE) is one that cannot be ruled out on the basis of objective information³. Determining whether there will be a LSE does not imply that there will be such an effect or even that an effect is more likely than not. It would also not be correct to say that any effect is a likely significant effect, and the LSE test should be used to filter out effects that are clearly negligible or inconsequential.

In order to undertake an appropriate screening, the guidance produced by the NPWS in 2009⁴ has been followed in order to:

- characterise the potential impacts to the qualifying interests of any Natura 2000 site or sites that may result from the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex;
- assess the likely significance of potential impacts on the qualifying interests of any Natura 2000 site or sites within the zone of influence of the proposed development; and
- assess the risk of an adverse effect on the integrity of the site or occurring to a qualifying interest feature for which the site is of European interest.

² <http://www.npws.ie>

³ European Court of Justice (2004) Case C-127/02, ECR-I 7405 (Waddenzee case).

⁴ NPWS (2009 revised February 2010). *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. Department of the Environment, Heritage and Local Government, Dublin.

The methodology for the assessment of impacts is derived from the guidelines published by the CIEEM⁵. Impacts are characterised in terms of whether specific hazards emanating from the project are likely to have potential significant effects on the integrity of a defined ecosystem and/or conservation status of individual habitats or species for which a site is of European interest, and on site as a whole.

2.3 Ascertaining the Threat to Site Integrity

The Competent Authority will be required to determine whether the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex would adversely affect the integrity of any Natura 2000 site, or sites, in light of the conservation objectives for that particular site, or sites. The integrity of a site is defined as:

“The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was designated / classified.”

Further to the above, an adverse effect on integrity can also be defined as one that is likely to prevent the site from making the same contribution to favourable conservation status for the relevant features as it did at the time of its designation / classification.

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⁵ CIEEM (2016). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location and Setting

Huntstown Quarry is a large operational quarry that straddles the townlands of Kilshane Huntstown, Cappoge, Grange and Johnstown approximately 6km west of Dublin Airport. The quarry comprises four main extraction areas (i.e. north quarry, central quarry, south quarry and western quarry) within a total landholding of 211 hectares (ha).

The application site covers 8.27 hectares of land across each of the townlands identified above. The application site encompasses: the existing C&D waste recovery facility located at the Central Quarry (1.9 hectares), existing internal roads and an agricultural field under permanent pasture in the north-eastern part of Huntstown Quarry proposed as the site for the new, replacement C&D waste recovery facility (5.2 hectares), refer to Figure 1.

The surrounding land-use is a mixture of urban and commercial development with associated infrastructure including the M50, Dublin Airport and agricultural land and is a landscape typical of a rural-urban fringe.

3.2 Outline Description of the Project

The project relates to a planning application and waste licence application for the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex.

Planning permission for the existing C&D waste recovery facility in the Central Quarry was originally granted in April 2003 (Fingal County Council Planning Ref. No. F02A/0602 / An Bord Pleanála Ref. No. PL06F.200623) and the facility has operated under a waste facility permit issued by Fingal County Council since that time.

The planning and waste licence applications under review seek permission for the following:

- a proposed increase in the permitted intake of construction and demolition waste at the existing waste recovery facility at Huntstown Quarry, from a maximum of 24,950 tonnes per annum at the present time to a maximum of 95,000 tonnes per annum in future years;
- transfer of C&D waste recovery activities to a dedicated new long-term recovery facility on a 5.2ha site in the north-eastern corner of the Huntstown Quarry complex; and
- construction of a hardstanding area, waste processing shed, surface water management infrastructure and upgraded internal access road at the new waste recovery facility.

The existing and proposed replacement C&D waste recovery facility will process concrete (ready-mixed, blocks, slabs, reinforced), bricks and bituminous mixtures (principally hardened returns and road planings) for resale as secondary aggregates for the construction industry.

Waste materials are processed by crushing and screening and stored in stockpiles. At the present time, the waste processing at the Central Quarry takes place on the quarry floor in the open air. When recovery operations are established at the new facility, the crushing plant will be on a hardstanding surface within a proposed open-sided waste recovery shed. All processed material will then be moved to external stockpile areas.

Both the existing and proposed new facility will utilise existing infrastructure which is in service at Huntstown Quarry, except where detailed above. This includes internal roads, weighbridge, wheelwash, offices and welfare facilities, waste quarantine building, maintenance shed and fuel / oil storage facilities.

Rainfall and incidental surface water run-off in the Central Quarry is allowed to naturally percolate the ground or is directed to a sump in the quarry floor from where it can be pumped to an existing surface water management system servicing the northern part of the Huntstown Quarry complex. The wastewater passes through a series of settlement ponds before being discharged under licence from the quarry site via a hydrocarbon interceptor to the Ballystrahan Stream (Discharge Licence WPW/F008-01 issued by Fingal County Council in November 2011).

Rainfall and surface water run-off from the new replacement facility at a site in the north-eastern corner of the Huntstown Quarry Complex will be allowed to naturally percolate into the ground or directed to an attenuation pond in the south-west corner of the recovery facility, from where it will be pumped to the existing surface water management system servicing the northern part of the Huntstown Quarry complex. The wastewater will pass through a series of settlement ponds before being discharge from the quarry site via a hydrocarbon interceptor to the Ballystrahan Stream. The new C&D waste recovery facility will not require any changes or modifications to the existing discharge licence or to surface water management operations required under the existing waste licence (Ref. W0277-01).

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4.0 NATURA 2000 SITES

There are eleven Natura 2000 sites within a 15km radius of project site at Huntstown Quarry. These sites are listed Table 1 and their locations in relation to the project site shown in Figure 1.

Table 1: Natura 2000 Sites within a 15km of the Proposed Project Site

Natura 2000 Site	Site Code	Location at Closest Point to Project Site
South Dublin Bay and River Tolka SPA	004024	8.7km south east
Malahide Estuary SAC	000205	9.7km north east
Malahide Estuary SPA	004025	9.7km north east
North Dublin Bay SAC	000206	11.1km south east
North Bull Island SPA and Ramsar Site	004006	11.7km south east
South Dublin Bay SAC	000210	11.0km south east
Rye Water Valley/Carlton SAC	001398	11.4km south west
Baldoyle Bay SAC	000199	12.4km east
Baldoyle Bay SPA and Ramsar Site	004016	12.7km east
Rogerstown Estuary SAC	000208	12.5 km north east
Rogerstown Estuary SPA	004015	13.3km north east

4.1 Potential Zone of Influence of Project and Screening of Natura 2000 Sites

Based on the size and nature of the proposed project at Huntstown Quarry it is considered that the maximum distance for which the project should be evaluated in terms of Natura 2000 sites is up to a maximum radius of 2km from the application site, unless, there are any potential source-pathway-receptor links between the waste recovery facilities and any Natura 2000 site(s) outside this distance.

At a distance greater than 2km and in the absence of any potential source-pathway-receptor link it is considered that no Natura 2000 sites would be affected by any direct loss of habitat or impacted upon by any effects arising from disturbance (i.e. noise, vibration and human and visual disturbance), the effects of dust deposition or traffic emissions.

Given the distances of the Natura 2000 sites, the only potential source-pathway-receptor link between the waste recovery facilities at Huntstown Quarry and any of the Natura 2000 sites is via the hydrological pathways created through a discharge of surface water run-off and/or wastewater from the Central Quarry and relocated facility to the Ballystrahan Stream, a tributary of the River Ward that eventually outflows into the Malahide Estuary.

However, based on the nature and volume of the discharge from Huntstown Quarry and the overall contribution from the existing and proposed new C&D waste recovery facilities it is considered that in terms water quality, there is only a requirement to assess the potential implications of any such discharge up to a maximum of 5km downstream of the discharge point. The Malahide Estuary SAC and Malahide Estuary SPA are some 13.9km and 14.4km respectively downstream of the Huntstown Quarry discharge point.

Given the distance of these sites and that the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex will not require any changes or modifications to the surface water management system, it is considered that these sites can be screened out from any further assessment.

Based on the above, all the Natura 2000 sites within Table 1 above are screened out from any further assessment as they lie outside the potential zone of proposed project at Huntstown Quarry.

5.0 LIKELY SIGNIFICANT EFFECTS OF THE PROPOSED PROJECT

Based on the screening of Natura 2000 sites in Section 4.1, it is assessed that the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry will not have any stand-alone effects on the integrity of any Natura 2000 site, or sites, or any of the qualifying habitats and/or species for which any such site has been designated / classified as being of European importance.

It is therefore considered that no further assessment is required for the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex as a stand-alone project.

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6.0 AVOIDANCE AND MITIGATION

As no effects are predicted on any Natura 2000 site or sites, no specific avoidance and mitigation measures are proposed in respect of the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex over and above the measures already carried out as part of the existing discharge licence Ref. No WPW/F008-01 (and current waste licence Ref. No W0277-01).

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7.0 IN-COMBINATION ASSESSMENT

It is a requirement of The European Communities (Birds and Natural Habitats) Regulations 2011 that, when considering whether a plan or project will adversely affect the integrity of a Natura 2000 site that it must take into account in-combination effects with other current or reasonably foreseeable plans and projects.

There is no single agreed method for addressing the issue of in-combination effects, however, current practice and available guidance suggests a staged approach which takes into account the following:

- i. if it can be clearly demonstrated that the plan or project will not result in any effects at all that are relevant to the integrity of a Natura 2000 site then the plan or project should proceed without considering the in-combination test, further; or
- ii. if there are identified effects arising from the plan or project even if they are perceived as minor and not likely to have a significant effect on the integrity of a Natura 2000 site alone, then these effects must be considered 'in-combination' with the effects arising from other plans and projects.

From the screening assessment undertaken here, it is considered that it can be clearly demonstrated that the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex will not have any effects at all on any Natura 2000 site or sites, as a stand-alone project. Therefore it is considered that there is not a requirement in this case to undertake any further assessment in-combination with other plans and projects.

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8.0 SUMMARY AND CONCLUSIONS

This assessment has considered the potential effects associated with the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex on Natura 2000 sites in line with the methodology set out in the '*Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites. Methodological Guidance on the Provision of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*'.

The assessment has concluded that the proposed increase in the permitted intake and recovery rate for inert C&D waste at the existing recovery facility and the relocation of this facility to another site within the Huntstown Quarry Complex will have no effects on the integrity of any Natura 2000 site or sites, or on any of the qualifying habitats and/or species for which a site has been designated or classified as being of European importance, either as a stand-alone project or in-combination with other plans or projects.

Based in the findings from this assessment, it is considered there is not a requirement to proceed to a Stage 2 Natura Impact Assessment for the proposed development under Article 6 of the Habitats Directive (92/43/EEC).

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9.0 CLOSURE

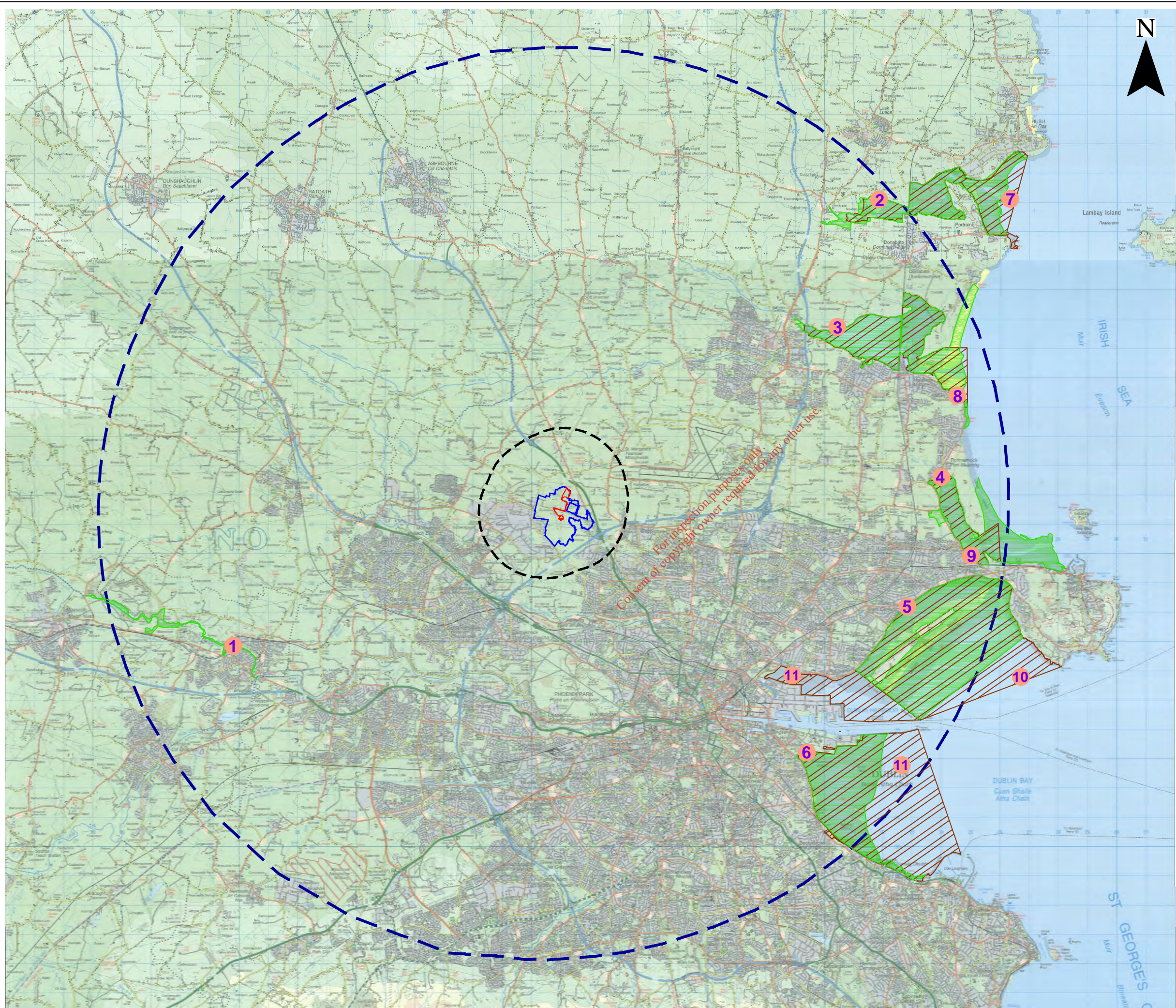
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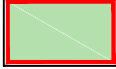
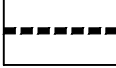

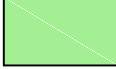

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NOTES

1. EXTRACT FROM 1:50,000 O.S DISCOVERY MAP NO. 50
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C)
ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

-  ROADSTONE LIMITED LAND INTEREST (c. 200.3 ha)
-  WASTE LICENCE APPLICATION AREA (c. 8.27 ha)
-  2km RADIUS FROM APPLICATION AREA
-  15km RADIUS FROM APPLICATION AREA
-  15km RADIUS FROM APPLICATION AREA
-  15km RADIUS FROM APPLICATION AREA

1. RYE WATER VALLEY / CARTON SAC (001398)
2. ROGERSTOWN ESTUARY SAC (000208)
3. MALAHIDE ESTUARY SAC (000205)
4. BALDOYLE BAY SAC (000199)
5. NORTH DUBLIN BAY SAC (000206)
6. SOUTH DUBLIN BAY SAC (000210)
7. ROGERSTOWN ESTUARY SPA (004015)
8. MALAHIDE ESTUARY SPA (004025)
9. BALDOYLE BAY SPA (004016)
10. NORTH BULL ISLAND SPA (004006)
11. SOUTH DUBLIN BAY & RIVER TOLKA SPA (004024)

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ROADSTONE LIMITED
ENVIRONMENTAL IMPACT STATEMENT

C&D WASTE RECOVERY FACILITY
NORTH ROAD, FINGLAS, DUBLIN 11

DESIGNATED SITES

FIGURE 1

Scale: 1:125,000 @ A3 Date: DECEMBER 2016

ABERDEEN

214 Union Street,
Aberdeen AB10 1TL, UK
T: +44 (0)1224 517405

AYLESBURY

7 Wornal Park, Menmarsh Road,
Worminghall, Aylesbury,
Buckinghamshire HP18 9PH, UK
T: +44 (0)1844 337380

BELFAST

Suite 1 Potters Quay, 5 Ravenhill Road,
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BRADFORD-ON-AVON

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UK
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BRISTOL

Langford Lodge, 109 Pembroke Road,
Clifton, Bristol BS8 3EU, UK
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CAMBRIDGE

8 Stow Court, Stow-cum-Quy,
Cambridge CB25 9AS, UK
T: +44 (0)1223 813805

CARDIFF

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Way, Cardiff CF24 5PB, UK
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CHELMSFORD

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CM1 2QE, UK
T: +44 (0)1245 392170

DUBLIN

7 Dundrum Business Park, Windy
Arbour, Dundrum, Dublin 14 Ireland
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EDINBURGH

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Edinburgh EH12 9DH, UK
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EXETER

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GLASGOW

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Glasgow G3 7QF, UK
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GRENOBLE

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38028 Grenoble Cedex 1, France
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GUILDFORD

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Surrey GU1 4RD, UK
T: +44 (0)1483 889 800

LEEDS

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Horsforth, Leeds LS18 4JR, UK
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LONDON

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MANCHESTER

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T: +44 (0)161 872 7564

NEWCASTLE UPON TYNE

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NOTTINGHAM

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SHEFFIELD

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Thornccliffe Park Estate, Newton
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STAFFORD

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T: +44 (0)1785 241755

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9FD, UK
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Renewable & Low Carbon



Waste Management



global environmental solutions

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

**CLOSURE, RESTORATION AND
AFTERCARE MANAGEMENT PLAN (CRAMP)**

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September 2015
SLR Ref: 501.00180.00111 CRAMP Rev 2

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Figure 2 Existing Site Layout
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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 closure and restoration / aftercare management plan has been independently prepared on behalf of Roadstone Ltd. by SLR Consulting Ireland, of 7 Dundrum Business Park, Wind Arbour, Dublin 14.

Comparison with Previous Plans

This plan updates a draft closure and restoration / aftercare management plan previously submitted to the EPA by Roadstone Ltd. in December 2013 in support of 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 closure and restoration / aftercare management plan has had regard to the requirements outlined in Condition 10.3 of the Waste Licence and was prepared in accordance with the EPA publication, *Guidance on Assessing and Costing Environmental Liabilities (2014)*.

Scope

The closure plan envisages that the licensed waste facility will achieve a clean closure, such that, on cessation of waste recovery operations, plant and equipment are decommissioned, decontaminated and/or removed from the facility in order to ensure that the facility presents no environmental liabilities or risk of long-term environmental pollution.

Cost Summary

As a result of this assessment, the total combined cost of the facility closure, restoration and aftercare management is calculated at **€1,534,502.50** (including 15% contingency) of which €913,387.50 is for closure and €621,115 is for aftercare.

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 Closure Plan 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 shall be included in the Annual Environmental Report (AER) submission to the EPA.

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1.0 INTRODUCTION

1.1 Huntstown Inert Waste 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 North Quarry, Finglas, Dublin 11 on 11th February 2015 (Ref. W0277-01). The principal waste activity at the site will be backfilling of the existing quarry void using imported inert soil and stone. It is anticipated that waste activities will commence on-site 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 naturally occurring waste materials, principally excess inert soil, stones and/or broken rock excavated on construction and development sites, to re-use in backfilling and restoring a large quarry void created by extraction of bedrock;
- Separation of any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) unintentionally imported to site and its temporary storage at a dedicated inspection and quarantine facility, 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 natural grassland habitat and
- Environmental monitoring of noise, dust, surface water and groundwater for the duration of the proposed site restoration works and for a short aftercare period.

1.2 Site Description

The licensed 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 a map of the local area reproduced in Figure 1.

The waste licence facility is located entirely within a large active quarry complex and adjoining 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 adjoining, 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.

The total volume of inert soil waste to be recovered at the licensed facility at Huntstown is 3,840,000m³, (equivalent to approximately 7,295,000 tonnes). It is estimated that 50,000m³ (approximately 95,000 tonnes) of topsoil is available at on-site perimeter screening berms for incorporation into the final restored landform, following backfilling of the worked out quarry, leaving approximately 3,790,000m³ of material to be imported to the recovery facility from off-site locations. The area of the main quarry void to be backfilled has a plan footprint of approximately 12 hectares.

Ground levels across the licensed facility have been significantly disturbed by 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. The existing quarry void covers an area of approximately 11.2 hectares (27.0 acres) within the overall licensed area.

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 waste licence area 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.

1.3 Planning Status - Former / Existing / Planned Activities

Excavation and blasting of limestone has been carried out across the Huntstown Quarry Complex for the past four decades, following grant of planning permission in or around 1973. A 10 year planning permission (Ref. No. 93A/1134 and P06F.092622) was granted in 1994 to continue quarrying and for production of related concrete materials. Planning permission for the existing construction and demolition waste recycling facility in the centre of the quarry complex was granted in 2002 (Ref. No. F02A/0602 and PL06F.200623). Planning permission was granted in 2004 for continuation of quarrying for a 10 year period (Ref. No. F03A/1430 and PL06F.206789).

The proposal to backfill the North Quarry with in-situ and imported inert soil and stones was part of the quarry restoration works which were previously notified and agreed with Fingal County Council in 2002 in accordance with Condition No. 17 of 1994 planning permission. These works were commenced in the 2002-2003 period, but progressed only intermittently after that time. Quarry backfilling works were previously controlled by a series of waste permits issued by Fingal County Council.

In August 2014, planning permission was secured for continuation of quarrying for a 20 year period (Fingal County Council Ref. No. FW12A-0022, An Bord Pleanála Ref. No. 06F.241693). The overall development proposal, which was subject to EIA, included provision for ultimate backfilling and restoration of the North Quarry area. As backfilling with inert waste soil is technically designated a waste activity under national waste management legislation, it was also necessary to obtain an EPA waste licence in respect of this activity.

Roadstone discharges dewatered groundwater and surface water run-off from the North Quarry, together with process water from aggregate washing and concrete production activities, via a series of existing settlement ponds to tributary streams of the Ward River. Discharge for non-waste activities are controlled by way of a licence issued by Fingal County Council in November 2011 (Ref WPW-F008-01). This superseded an earlier discharge licence issued by Dublin County Council in January 1987 (Ref. WPW/1/87).

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 : 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 and
- Class R13 : Storage of waste pending any of the operations numbered R1 to R12.

1.5 Licence Requirements

This Closure, Restoration and Aftercare Management Plan (CRAMP) is prepared in compliance with Condition 10.2 of the waste licence for an inert soil waste recovery facility at Huntstown North Quarry, Finglas, Dublin 11 (Ref. W0277-01).

10.2 Closure, Restoration and Aftercare Management Plan (CRAMP)

- 10.2.1 *The licensee shall prepare, prior to the commencement of the activity and to the satisfaction of the Agency, a revised, fully detailed and costed revised plan for the closure, restoration and aftercare of the facility or part thereof.*
- 10.2.2 *The plan shall be reviewed annually and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the agreement of the Agency.*
- 10.2.3 *The licensee shall have regard to the Environmental Protection Agency Guidance on Assessing and Costing Environmental Liabilities (2014) when implementing Condition 10.2.1 and 10.2.2 above.*

1.6 Scope of this CRAMP

In preparing this plan, regard has been had to requirements outlined in Condition 10.3 of the Waste Licence which include

- *A scope statement for the plan;*
- *The criteria that define the successful decommissioning of the activity or part thereof, which ensures minimum impact on the environment;*
- *A programme to achieve the stated criteria;*
- *Where relevant, a test programme to demonstrate the successful implementation of the CRAMP;*
- *Details of the costings for the plan and the financial provisions to underwrite those costs.*

The objective of this CRAMP is to ensure that on completion / cessation of the inert soil waste recovery activities at Huntstown, the formed quarry void will be substantially re-integrated into the surrounding pastoral landscape, with much of the land restored to natural grassland habitat.

The scope of this CRAMP comprises:

- a Site Evaluation, which presents details of its planning history and an inventory of existing mobile plant and fixed infrastructure;
- the Closure Considerations and Criteria for successful closure;
- an outline Closure Plan Costing and measures for the Closure Plan update, review, implementation and validation; and
- the Facility Restoration and Aftercare proposals, including a restoration and aftercare management costing.

The CRAMP has also been prepared in accordance with the recent EPA publication, *Guidance on Assessing and Costing Environmental Liabilities (2014)*.

2.0 SITE EVALUATION

2.1 Operator Performance

2.1.1 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. A part of its EMS, Roadstone has developed standard procedures to address waste acceptance and handling activities, as well as an emergency response plan.

2.1.2 Compliance History

As previously noted, the 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 largely operated in compliance with all permits and planning consents and Roadstone has not been subject to 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.

2.1.3 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.

2.1.4 Environmental Monitoring

Environmental monitoring of surface water, groundwater, noise and dust is undertaken at designated locations across the licensed facility, at the locations indicated in Figure 3.

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.

Surface Water

The inert soil recovery facility to be located in the North Quarry lies in the northern part of the Roadstone landholding, entirely within, albeit at the edge of the Ward River catchment. There is no surface water watercourse located within the licensed facility and the nearest

watercourses are artificial (man made) ditches and/or small tributary streams on the eastern side which flow north to the Ward River, which flows approximately 4km north of the facility.

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 pond on the eastern side of the quarry floor and pumped to a drainage channel / watercourse at original ground surface level via an existing pipe network. Water pumped to this channel is routed via settlement lagoons to discharge to a tributary stream of the Ward River which runs northwards out of the licensed site.

Surface water sampling and testing is undertaken immediately downstream of the existing settlement lagoons, beyond the eastern face of the North Quarry (at location W4), and upstream of its discharge to the tributary stream of the Ward River (at location W1), as indicated in Figure 3. Surface water samples are tested for a wide range of physical and chemical parameters in order to assess water quality and detect possible contamination. Most recent monitoring (for 2014) indicates that water discharge quality complies with requirements of the existing discharge licence.

Groundwater

There are 6 No. groundwater monitoring wells installed across the Huntstown Quarry Complex. Of these, 2 No. (GW03 and GW04) are located in close proximity to the waste licence boundary, while 2 No. others (GW02 and GW05) occur at a short distance to the south.

The available groundwater quality data for groundwater at Huntstown indicates that it is of good status, with virtually all parameters analysed having ion concentrations lower than the Interim Guideline Values (IGV) set out in the EPA Publication 'Towards setting Guideline values for the Protection of Groundwater in Ireland'. The guideline value for chloride has been exceeded on occasion, but this may be due to proximity to seawater at the coast (12km away). All samples exceeded the guideline for hardness, which is not unusual for groundwater samples from limestone bedrock. Occasional recorded exceedances of guideline values for orthophosphate may be the result of fertiliser application on adjoining agricultural lands.

A septic tank installed to the east of the site offices and north of the existing blockyard currently services toilets, wash hand basins and sink units at the site. The treated effluent from the septic tanks discharges to groundwater via a percolation area. Much of the water demand in Huntstown and the surrounding area is met by a Local Authority mains supply.

Dust

Planning permissions for the ongoing rock extraction, aggregate processing and concrete / asphalt production activities at Huntstown specify an emission limit value for dust deposition (at the site boundary) of 350 mg/m²/day (30 day composite sample) when measured using the conventional 'Bergerhoff' method.

Atmospheric emissions related to site activities are primarily associated with dust emissions associated with aggregate processing and exhaust emissions from traffic to and from the R135 Regional Road (the former N2) and heavy good vehicle (HGV) / truck movements on unpaved roads around the quarry complex.

Dust emissions are monitored using Bergerhoff dust gauges at four locations (D1, D3 and D4) around the licensed facility and at one location within the central infrastructure area (D2), all shown on Figure 3. Monitoring gauges are located closest to emission sources and/or potentially sensitive receptors beyond the Licensee's property boundary.

Dust deposition monitoring undertaken in 2014 indicated that dust deposition levels around the Huntstown Complex were generally low, with average measured dust deposition levels around the perimeter comfortably within the prescribed emission limit value of 350mg/m²/day.

Noise

Planning permissions for associated established activities within Roadstone's landholding specify noise emission limit values of 55 dB(A) L_{Aeq} at the property boundary during day-time hours, with a reduced limit of 45 dB(A) L_{Aeq} during night-time hours.

Noise emissions are monitored on a quarterly (i.e. three monthly) basis at 4 No. locations across the Huntstown complex (designated N1 to N4), all of which are located beyond the licensed site boundary.

Noise surveys undertaken around the Roadstone landholding indicates that in 2013 and 2014, noise levels were elevated about the permissible limits on account of high background noise levels associated with high volume of traffic along the nearby M50 Motorway and N2 Dual Carriageway as well as frequent overhead plane movements in and out of Dublin Airport.

The principal noise impact associated with the operation of the inert soil waste recovery facility will be the increased noise generated by moving HGV trucks and/or earthworks equipment during daytime hours (07:00 to 19:00 hrs). No recovery operations or traffic movements will be undertaken at the recovery facility during either evening time (19:00 to 23:00 hrs) or night-time hours (23:00 to 07:00 hrs).

2.2 Environmental Pathways and Sensitivity

2.2.1 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 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 and some poorly drained soil which have more restricted uses, principally as 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. There is no evidence of soil contamination 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.

2.2.2 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 sump 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 the sump on the eastern 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.

2.2.3 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 subsoil deposits into the underlying bedrock aquifer. It is generally high or extreme where subsoil 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.

2.2.4 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.

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.

2.2.5 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 above the

eastern face of the North Quarry. All surface water run-off across the licensed facility is collected and passed through the 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 there is some surface contamination of near-surface soil or ground, 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.

Most noise and dust emissions from the waste recovery facility will 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.

2.3 Site Processes and Activities

As previously indicated, a significant proportion of the licensed facility has been excavated out and is to be infilled under the terms of the waste licence. The quarry void is still being dewatered of any incipient rainfall or groundwater inflows.

Rock excavated at Huntstown Quarry is used to produce concrete, blocks and asphalt products at the central infrastructure area adjacent to, and surrounded by, the licensed waste facility.

Although the extent of the licensed waste facility seeks to avoid conflict with other on-site activities (including concrete, asphalt and block production areas), it includes access roadways and all shared infrastructure necessary for the soil waste recovery activities (including offices, wheelwash, weighbridge, maintenance garage, hardstand areas etc.).

When operational, the waste recovery activity will provide for

- Importation and acceptance of inert soil, stones and/or broken rock
- Placement and compaction of the imported materials in backfilling and restoring the quarry void;
- Separation of any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) unintentionally imported to site;
- Transfer of any separated waste streams to the waste inspection and quarantine facility for temporary storage pending inspection, testing and potential removal to off-site waste disposal or recovery facilities;
- Stockpiling and storage of imported topsoil and/or subsoil pending re-use as cover material in the final phase of restoration;
- Environmental monitoring of noise, dust, surface water and groundwater for the duration of the proposed site restoration works and for a short aftercare period.

2.4 Site Inventory / Infrastructure

The established site facilities, mobile plant and fixed infrastructure at the waste recovery facility at Huntstown are listed below. Most of the site facilities and infrastructure are shared with the adjoining / co-located construction material production facility and have been in place for many years. The locations of the principal site facilities are shown on Figure 2.

- Buildings: site office, staff welfare facilities, canteen, plant maintenance building; waste quarantine shed, laboratory, weighbridge office.
- Site Security: security barriers at the existing site access point are manned by security staff on a 24 hour, 7 day a week basis.
- Fixed Infrastructure: paved / unpaved internal road network; paved employee and visitor parking areas, hardstanding, wheelwash; weighbridge, fuel / oil storage facilities, conveyor belt.
- Services: overhead electricity wires, water supply pipes (connected to local authority watermain), septic tank and associated sewerage pipework serving welfare facilities;
- Surface Water: sumps, pipelines, drains, settlement ponds and hydrocarbon interceptor;
- Plant and Machinery: re-fuelling plant; mechanical excavators; bulldozers; pumps.

Assuming co-located production activities continue following cessation of waste recovery activities at Huntstown, much of this infrastructure (either existing or replaced) will remain in place and continue to be used after that time.

2.5 Inventory of Raw Materials, Product and Waste

Table 1 overleaf provides an inventory of the raw materials, products and waste stored at the recovery facility. Most of the materials stored are oils, fuels and lubricants required for ongoing maintenance and repair of plant and equipment used in recovery activities.

Table 1
Inventory of Raw Materials, Products and Waste

Type	Storage Area	Storage Type	Maximum Storage Capacity	Measurement Unit
Road Diesel	External Tanks	Bunded Tank	40,000	Litres
Marked Diesel (Gasoil)	External Tanks	Bunded Tank	53,000	Litres
Diesel Engine Lubricant	Back Room in Maintenance Shed	Double Skinned Steel Tank	2,730 (600 gallon)	Litres
Hydraulic Oil	Back Room in Maintenance Shed	Double Skinned Steel Tank	2,730 (600 gallon)	Litres
Transmission Fluid	Back Room in Maintenance Shed	Double Skinned Steel Tank	1,365 (300 gallon)	Litres
Waste Oil	Back Room in Maintenance Shed	Double Skinned Steel Tank	2,730 (600 gallon)	Litres
Hydrocarbon Fluids and Gels	Maintenance Shed	Bunded Area or Bunded Tanks	200 litres	Litres

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3.0 FACILITY CLOSURE

3.1 Closure Considerations

This closure plan envisages that the licensed waste facility will achieve a clean closure, such that, on cessation of waste recovery operations, plant and equipment are decommissioned, decontaminated and/or removed from the facility in order to ensure that the facility presents no risk of environmental pollution.

On suspension or unplanned cessation of waste recovery activities,

- the landform within the quarry void will be graded, rolled and compacted to create a uniform stable surface (flat or at shallow slope angle);
- any temporary settlement ponds at the base of the filling area will be dewatered and infilled with inert soil and stone;
- all mobile plant and equipment associated with the backfilling, placement and compaction of backfilled materials will be removed off-site;
- any dedicated water pumping and transmission infrastructure (flexible piping carrying surface water run-off and dewatered groundwater) will be maintained in place and operated for a 36 month period following facility closure;
- the dedicated silt trap / hydrocarbon interceptor tank will be emptied and decontaminated; deposited silts will be removed from the wheelwash and the septic tank will be desludged. All wastes arising will be transferred off-site to appropriately licensed waste disposal or recovery facilities;
- any unused oil and fuel storage tanks will be emptied and decontaminated. Unused oil and fuel will be removed off-site and used elsewhere;
- any unused oils, greases, lubricants, chemicals stored in the maintenance shed will be removed off-site and re-used elsewhere. Other hazardous materials will be removed to appropriately licensed waste disposal or recovery facilities;
- any materials which are stored on site and found to exceed inert waste acceptance criteria will be transferred off-site by licensed waste contractors to a suitably licensed waste disposal or recovery facility;
- environmental monitoring will continue over the period of the closure works (note however that provision will be made for monitoring over a 36 month period following facility closure.
- attendance by security staff (with a patrolling vehicle) at the facility for a 36 month period following facility closure.

As much of the storage and maintenance infrastructure within the recovery facility is shared with the adjoining stone, concrete and asphalt production activities, any storage tanks, drums, IBCs etc. holding fuel, oil or compounds (and related wastes) which could be required for the continued operation of those facilities will be retained and will not be decommissioned, demolished or removed off site.

3.2 Criteria for Successful Closure

The principal objective of the closure plan is to achieve clean closure of the site, with no residual risk of environmental pollution, particularly to soil or groundwater.

The principal criteria against which successful closure will be gauged are as follows:

- the existing landform within the quarry void will be uniformly graded and stable;
- all dedicated mobile plant and equipment associated with the recovery activity (specifically backfilling, soil placement and compaction) will have been decontaminated and/or removed off site;

- any potential pollutants and/or wastes associated with the recovery activity will have been removed off site.

3.3 Closure Plan Costing

The expected costs (present-day values), associated with the future closure of the waste recovery facility at the North Quarry at Huntstown, are outlined in Table 2 below. Note that the costs provided for assume a worst case scenario, where there is unexpected shut down of the facility, with no on-site activities or resources to cover facility closure or environmental protection costs.

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Table 2
Waste Recovery Facility Closure Costs

ACTIVITY	QUANTITY	UNITS	RATE (€)	COST (€)	SOURCE
Remove all mobile plant (mechanical excavator and bulldozer) off site	Item	Sum	3,000	3,000	McCabes Mile River Ltd
Decommission waste recovery infrastructure					
Test sediments in settlement ponds / silt trap	8	No.	250	2,000	Chemtest
Excavate settlement pond sediments	1,000	m ³	5	5,000	NRA Rates
Remove sediments to landfill facility (as cover)	1,000	m ³	40	40,000	Greenstar
Empty hydrocarbon interceptor and tanker off-site (assume 5 tonnes sludge)	Item	Sum	2,000	2,000	Enva
Emptying and cleaning of oil and fuel storage tank (assume 5 tonnes sludge) and transfer of bottom sludge to off-site disposal/ recovery facility	Item	Sum	3,200	3,200	Enva
Removal of oils and lubricants from garage, workshop and external tanks and recovery at off-site facility	10	Tonnes	150	1,500	Rilta
Removal of other (solid / liquid) chemical wastes from laboratory / workshop and disposal or recovery off-site	5	Tonnes	150	750	Rilta
De-silting of wheelwash and disposal of silt at off-site landfill facility (assume 5 tonnes solid waste)	Item	Sum	2,000	2,000	Enva
Emptying of septic tank and disposal of solid waste (10 tonnes) at off-site facility	Item	Sum	1000	1,000	Enva

ACTIVITY	QUANTITY	UNITS	RATE (€)	COST (€)	SOURCE
Re-profile and grade upper surface of in-situ soils to create stable landform and facilitate surface water drainage	120,000	m ²	0.65	78,000	NRA / Landscape Contractors* / McCabes Mile River Ltd
Continued pumping of surface water run-off and dewatered groundwater from part backfilled quarry to settlement ponds / interceptor (upper bound energy consumption of 200,000 kWh/yr for 3 years)	600,000	kWh	0.125c / kWh	75,000	Electric Ireland
Off-site transfer and recovery / disposal of non-inert material	250	m ³	100	25,000	Rilta
Environmental Monitoring of Noise, Dust, Water (Quarterly for 3 year period, incl. closure works)	12	No.	1,500	18,000	SLR IE
24 hour manned security cover (during works and/or following unexpected closure or abandonment)	Month	36	13,500	486,000	TOP Security
Provision of security patrolling vehicle	Month	36	800	28,800	TOP Security
Provision of utilities to security office (light / heat / water)	Month	36	500	18,000	Electric Ireland / Irish Water
Closure Validation Report	Item	Sum	5,000	5,000	SLR IE
Total Site Closure Cost (excl. VAT)				€794,250	
15% Contingency (to address unforeseen issues / liabilities)				119,137.50	
Total Site Closure Cost (excl. VAT)				€913,387.50	

- * O Brien Landscaping / Redlough Landscapes

3.4 Closure Plan Update and Review

As required by the waste licence conditions, this Closure Plan 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 will be included in the Annual Environmental Report (AER) submission to the EPA.

3.5 Closure Plan Implementation

Quarry backfilling activity is currently projected to be complete within the life of the existing planning permission (i.e. 20 years). If an average importation rate of 400,000 tonnes / year, is assumed, the expected operational life of the waste recovery facility at Huntstown is 18 years. In reality, the timeline for backfilling the quarry void is very dependent on the availability of inert soil and stone generated by off-site construction activity locally and will be subject to ongoing review and change.

The EPA will be given 2 months notice of any proposed temporary closure or suspension of activities and 6 months notice of the intended final closure date. Notice will be provided in accordance with prevailing guidance and it is anticipated that there will also be ongoing discussions with the EPA in respect of required closure procedures.

3.6 Closure Plan Validation

A validation report (including a Certificate of Completion in respect of the Closure Plan) will be submitted to the Agency within 3 months of completion of the works provided for above.

The validation audit will be undertaken by an independent, external environmental Consultant. The final validation report will include:

- an assessment of how the objectives of the Closure Plan have been achieved;
- final 'as-closed' drawings and photographs of the facility;
- results of short-term environmental monitoring undertaken over the closure works period (note however that provision is made for an extended monitoring period thereafter);
- a Certificate of Completion for the CRAMP.

4.0 FACILITY RESTORATION AND AFTERCARE

4.1 Facility Restoration

The waste recovery activities at Huntstown primarily provide for the backfilling of a large void created by extraction of bedrock at the site using imported inert soil and stone and some in-situ stockpiled soil. Backfilling of the quarry void will facilitate restoration of the North Quarry to natural grassland habitat.

The operational life of the recovery facility is anticipated to be approximately 18-20 years and is ultimately contingent on the availability of inert soil waste from local development projects. On planned completion of the final phase of backfilling, much of the work required to achieve the final closure and restoration of the waste facility will already have been completed. It is expected that the final restoration of the waste recovery areas to natural grassland habitat will be completed within a period of 12 months following closure.

In addition to the closure tasks identified previously, the following works will be undertaken during the restoration and aftercare phase

- Progressive decommissioning of any site infrastructure used solely for waste recovery activities;
- Break up of any dedicated hard standing or paved surfaces using a hydraulic breaker;
- Classification testing of construction and demolition wastes;
- Removal of construction and demolition wastes off-site to appropriate construction and demolition waste recovery facility;
- Final grading of the backfilled materials within the quarry void to create the approved restoration landform / slope;
- On-going water management of surface water run-off;
- Backfilling of settlement ponds and decommissioning of all dedicated on-site drainage infrastructure;
- Topsoiling and seeding of the final landform / slope to facilitate development of natural grassland habitat;
- Additional planting around the infilled quarry void to separate the restored area from continuing concrete and asphalt production activities.
- Attendance by security staff (with a patrolling vehicle) at the facility for the duration of the aftercare works.

Further details on the proposed final earthworks and tree planting are provided below.

4.2 Backfilling / Earthworks / Grass Seeding

The backfilling of the former quarry area will proceed upwards, either continually at varying rates or on an intermittent (campaign) basis, as waste material is generated by local development works. In addition to imported materials, small volumes of soil stockpiled in existing berms around the quarry void will also be used to backfill the former quarry.

The quarry void will be backfilled in several phases working upwards from the existing quarry floor at approximately 38mOD to 39mOD. Final formation levels on completion of the backfilling and restoration works will vary on account of the sloped nature of the restored landform, from approximately 65mOD on the eastern side up to 85mOD on the western side.

During site restoration works, the upper surface of the backfilled materials will be graded so as to ensure surface water run-off falls to sumps at temporary low points within the final worked-out quarry. Water will be pumped from these temporary sumps as and when

required to existing channels and settlement ponds / treatment infrastructure at the original ground surface. Treated effluent will be discharged off-site to a tributary stream of the Ward River.

Temporary access ramps into and out of active backfilling areas will be at a gradient of approximately 1v:10h. Temporary side slopes in soil will be constructed at gradients no greater (steeper) than 1v:1.5h in order to ensure stability. On completion, final gradients across the restored ground surface will be relatively shallow, typically of the order of 1v:8v or less.

Topsoil and subsoil will be imported to the site on a continual basis and will not be used immediately in general backfilling of the worked-out quarry. The topsoil and subsoil will be stockpiled separately pending re-use toward the latter stages of the quarry backfilling works, when the top surface of backfilled ground approaches the finished ground levels envisaged by the restoration scheme.

The licence area will be restored on completion of backfilling operations and will merge better into the surrounding suburban landscape. On attaining the planned final level, the final landform will be graded, rolled and compacted as provided for in the closure plan. Thereafter a cover layer of subsoil and topsoil will be placed and graded across the backfilled site. It is likely that this cover will comprise up to 300mm of topsoil over subsoil, such that total thickness of topsoil and subsoil will be at least 1m.

The upper (ground) surface will then be rolled and seeded with grass in order to promote stability, minimise soil erosion and dust generation and establish a natural grassland habitat. The proposed restoration scheme also envisages that hedgerows will be planted across the restored area in an effort to re-establish some of the former field boundaries which pre-dated the development of a quarry in the area.

It is envisaged that the final restoration works across the waste recovery site will be completed within 9 to 12 months of facility closure and final cessation of waste recovery activities. Following seeding, the restored surface will be inspected at intervals in order to identify areas of bare soil or poorly established vegetation growth. In these areas, additional seeding will be undertaken as necessary to improve vegetation coverage.

In order to ensure that there is no long-term conflict with established / ongoing production activities following completion of restoration works, the restored area will be largely be left as managed grassland and/or natural habitat.

4.3 Aftercare Management

On completion of facility closure and restoration works, provision will also be made for subsequent short-term environmental monitoring of air, surface water and groundwater to confirm that there is no evidence of soil or groundwater contamination. Established in-situ groundwater monitoring wells will be maintained and will continue in service.

It is expected that following the aftercare phase, there should be no constraints on future land use associated with soil or groundwater contamination or on future use of any structures remaining in-situ.

The process of surrendering the waste licence to the EPA will progress following the aftercare period in order to remove the legal encumbrance on title deeds to the restored lands and shared infrastructure areas.

4.3.1 Short-Term Aftercare Management

The restoration aftercare management plan for the Huntstown waste recovery facility will comprise three principal short-term activities:

Environmental Monitoring

As previously stated, short-term environmental monitoring of air, surface water and groundwater (for up to 5 years) will be undertaken by the Licensee to ensure that no surface / groundwater contamination is present / emerging following closure of the waste recovery facility and completion of the restoration works.

Maintenance of Planted Hedgerows

Following establishment of the hedgerow planting, it is envisaged that a programme of established maintenance will be required for a period of up to 24 months after the initial planting. This will be undertaken by a landscaping contractor and will include activities such as weed control, formative pruning and/or removal of deadwood, watering (as and if required) and adjustment of ties and stakes.

Maintenance of Grass Sward

The aftercare of the grass sward will be as per grass supplier's instructions, consistent with the intended creation of a natural grassland habitat within the restored area. Initial maintenance following restoration after each phase of backfilling (principally cutting) will be overseen by the waste facility manager at Huntstown or by other designated Roadstone staff nominated by the manager.

After final restoration works have been completed and the aftercare period has elapsed, the land will be left as a natural grassland habitat.

4.3.2 Long Term Aftercare Management

Given the inert nature of the soil and stone material used to backfill the quarry area and the proposed return of the backfilled areas to natural grassland habitat, it is considered that no long-term aftercare monitoring and maintenance will be required for the waste recovery facility at Huntstown.

4.4 Final Restoration and Aftercare Management Costs

The expected cost, associated with the site restoration and aftercare management, are outlined in Table 3 overleaf.

Table 3
Restoration and Aftercare Costs (based on 5 Year Aftercare Period)

ACTIVITY	QUANTITY	UNITS	RATE (€)	COST (€)	SOURCE
Breaking up of pavement and hard-standing surfaces (using hydraulic breaker),	200	m ³	15	3,000	McCabes Mile River Ltd.
Validation testing to classify C&D waste	20	sample	150	3,000	SLR IE
Transfer C&D waste to off-site recovery facility (incl. haulage)	500	tonne	9	4,500	McCabes Mile River Ltd
5 year environmental monitoring (at quarterly intervals)	20	No.	1,500	30,000	SLR IE
Backfill settlement ponds	5,000	m ³	5	25,000	NRA Rates
Final placement of topsoil (assumed to be previously imported and stockpiled on site) (up to 300mm)	12	ha	9,000	108,000	Landscape Contractors*
Surface water management costs (pumping from temporary sumps to settlement ponds for 1 year)	Item	Sum	36,000	36,000	McCabes Mile River Ltd.
Decommission / remove pumping equipment and flexible pipeline infrastructure (total length 2,000m)	Item	Sum	4,000	4,000	McCabes Mile River Ltd.
Empty interceptor and tanker waste off-site	Item	Sum	1,000	1,000	Enva
Surface preparation, grass seeding, ground repair and spraying	12	ha	6,000	72,000	Landscape Contractors*
Post and wire perimeter fencing (3,600m at €5/m)	3,600	m	5	18,000	Landscape Contractors*
Hedgerow Planting (Ground preparation, supply of plants and planting works)	3,600	m	5	18,000	Landscape Contractors*
24 months establishment maintenance for grassland / hedgerows	2	years	15,000	30,000	Landscape Contractors*
Preparation of Waste Licence Surrender application	Item	Sum	4,000	4,000	SLR IE
Surrender of Waste Licence to EPA	Item	Sum	6,000	6,000	EPA
24 hour manned security cover (during restoration works)	Month	12	13,500	162,000	TOP Security

ACTIVITY	QUANTITY	UNITS	RATE (€)	COST (€)	SOURCE
Provision of security patrolling vehicle	Month	12	800	9,600	TOP Security
Provision of utilities to security office (light / heat / water)	Month	12	500	6,000	ESB / Irish Water
Total Restoration and Aftercare Cost (excl. VAT)				€540,100	
15% Contingency (to address unforeseen issues / liabilities)				81,015	
Total Restoration and Aftercare Cost (excl. VAT)				€621,115	

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4.4.1 Closure Plan Costs

The anticipated cost of the planned facility closure following completion of projected soil intake is **€913,387.50** (present day value and incl 15% contingency), as outlined in Table 2 of this plan. As previously indicated, the plan envisages that the proposed waste recovery facility will achieve a clean closure, such that, following cessation of inert soil waste intake and recovery activities and the subsequent decommissioning / removal of plant and waste infrastructure from the facility, no remaining environmental liabilities will attach to restored areas of the site and/or areas where the principal waste recovery activities are located.

4.4.2 Site Restoration and Aftercare Management Costs

The anticipated costs of the site restoration and aftercare management, outlined in Table 3 of this plan, comes to a total of **€621,115** (present day value and incl. 15% contingency). These costs are based on a projected 5 year aftercare management period, with no provision for long-term aftercare monitoring and maintenance thereafter.

4.5 Financial Provision

Subject to Agency approval and agreement, Roadstone Ltd. will make financial provision for the closure and restoration of the waste recovery facility at Huntstown 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) to ensure the satisfactory completion of site restoration and aftercare works at Huntstown.

The initial amount of the bond will be agreed with the Agency on the basis of the assessments provided in this plan and will be adjusted as necessary each year thereafter to take account of ongoing review and revisions of the CRAMP.

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5.0 REPORT 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.

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FIGURES

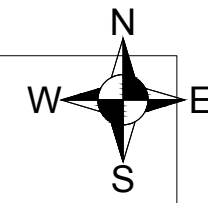
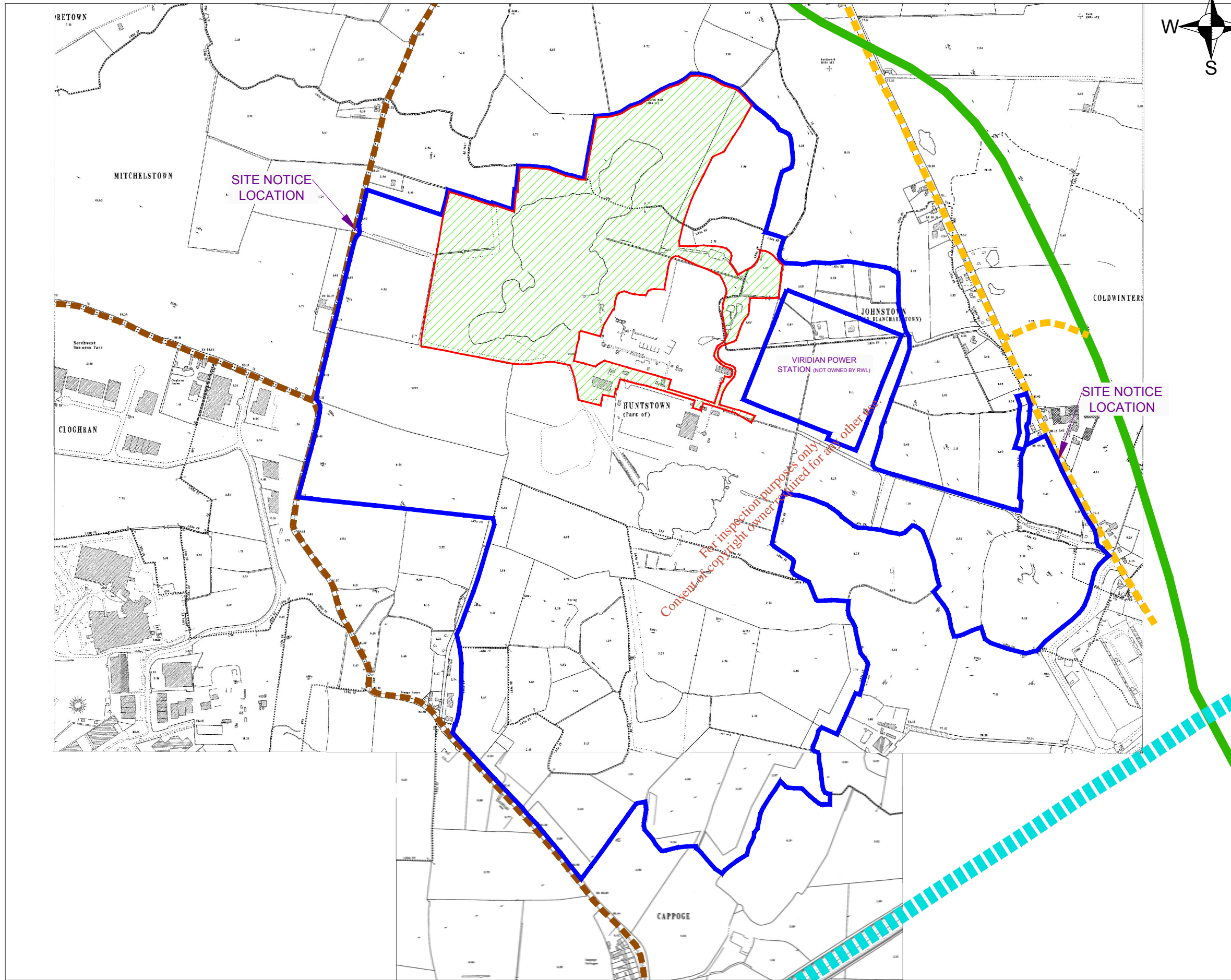
**Figure 1
Site Location Map**

**Figure 2
Existing Site Layout**

**Figure 3
Environmental Monitoring Locations**

**Figure 4
Restoration Proposals**

**Figure 5
Restored Cross Sections**



NOTES

- EXTRACT FROM 1:2,500 ORDNANCE SURVEY DIGITAL SHEET NO'S. 3062-A, 3062-B, 3062-C, 3062-D, 3063-A, 3063-C, 3130-A, 3130-B,
- ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000715 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

	ROADSTONE LTD. LANDHOLDING (c. 201.8 ha)
	WASTE LICENCE APPLICATION AREA (c. 36.1 ha)
	N2 DUAL CARRIAGEWAY
	NORTH ROAD (R135)
	LOCAL ROAD
	M50 MOTORWAY

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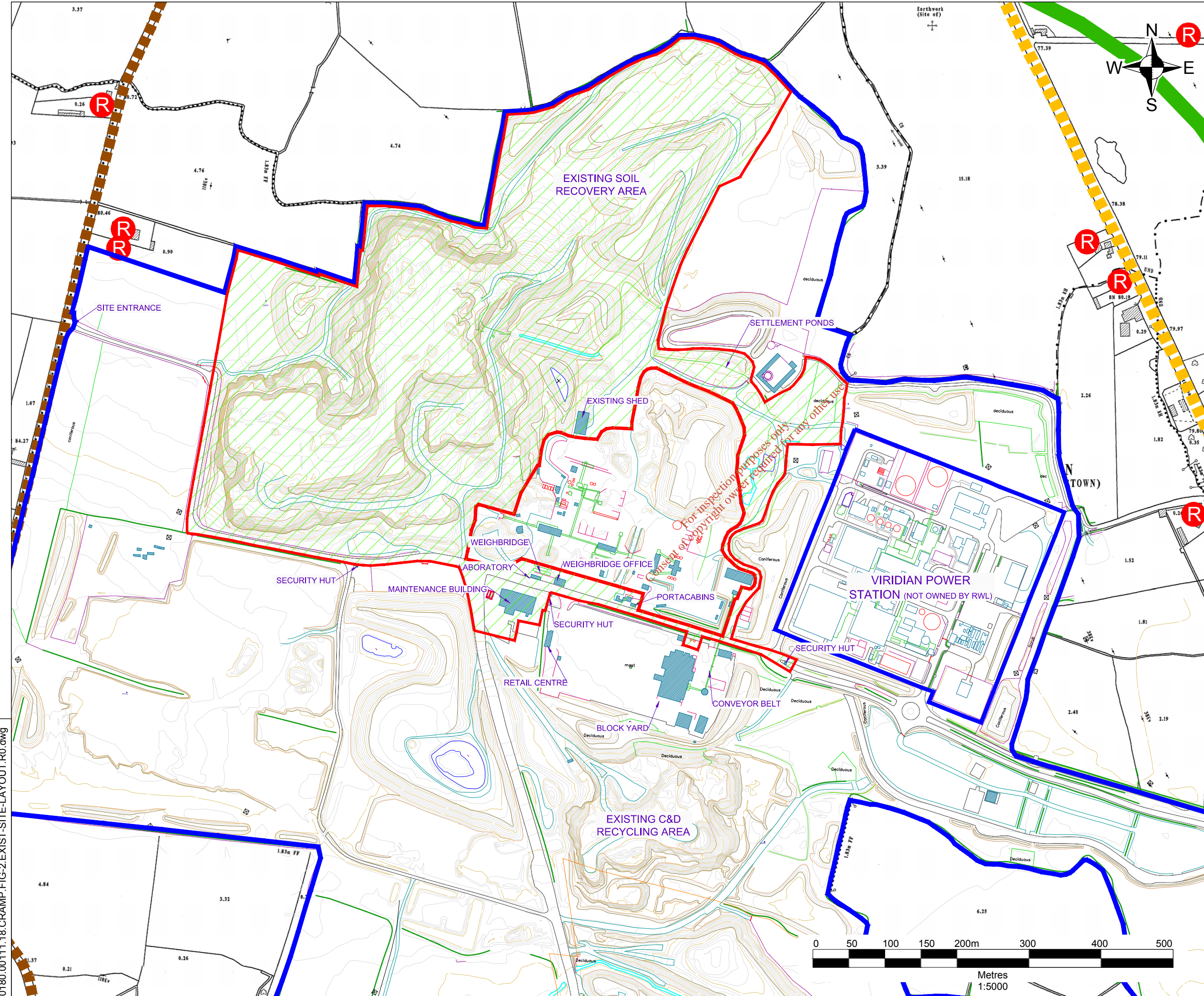
0180.00111.18.CRAMP.FIG-1.SITE-LOC.R0.dwg

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ROADSTONE LIMITED
HUNTSTOWN - CRAMP
 INERT WASTE RECOVERY FACILITY,
 CLOSURE, RESTORATION &
 AFTERCARE MANAGEMENT PLAN
SITE LOCATION MAP

FIGURE 1

Scale 1:10,000 @ A3	Date MARCH 2015
------------------------	--------------------



NOTES

1. EXTRACT FROM 1:2,500 ORDNANCE SURVEY DIGITAL SHEET NO'S. 3062-A, 3062-B, 3062-C, 3062-D, 3063-A, 3063-C, 3130-A & 3130-B
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000715 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND
3. TOPOGRAPHIC SURVEY PREPARED BY FUGRO BKS BASED ON MAY 2009 AERIAL PHOTOGRAPHY

LEGEND

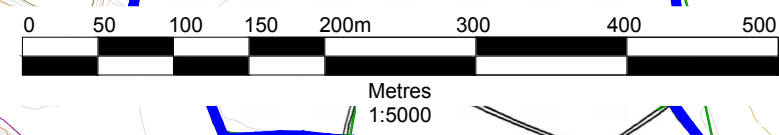
	ROADSTONE LTD. LANDHOLDING (c. 201.8 ha)
	WASTE LICENCE APPLICATION AREA (c. 36.1 ha)
	N2 DUAL CARRIAGEWAY
	NORTH ROAD (R135)
	LOCAL ROAD
	LOCATION OF NEAREST RESIDENCES

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**ROADSTONE LIMITED
 HUNTSTOWN - CRAMP**
 INERT WASTE RECOVERY FACILITY,
 CLOSURE, RESTORATION &
 AFTERCARE MANAGEMENT PLAN
EXISTING SITE LAYOUT

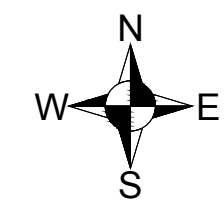
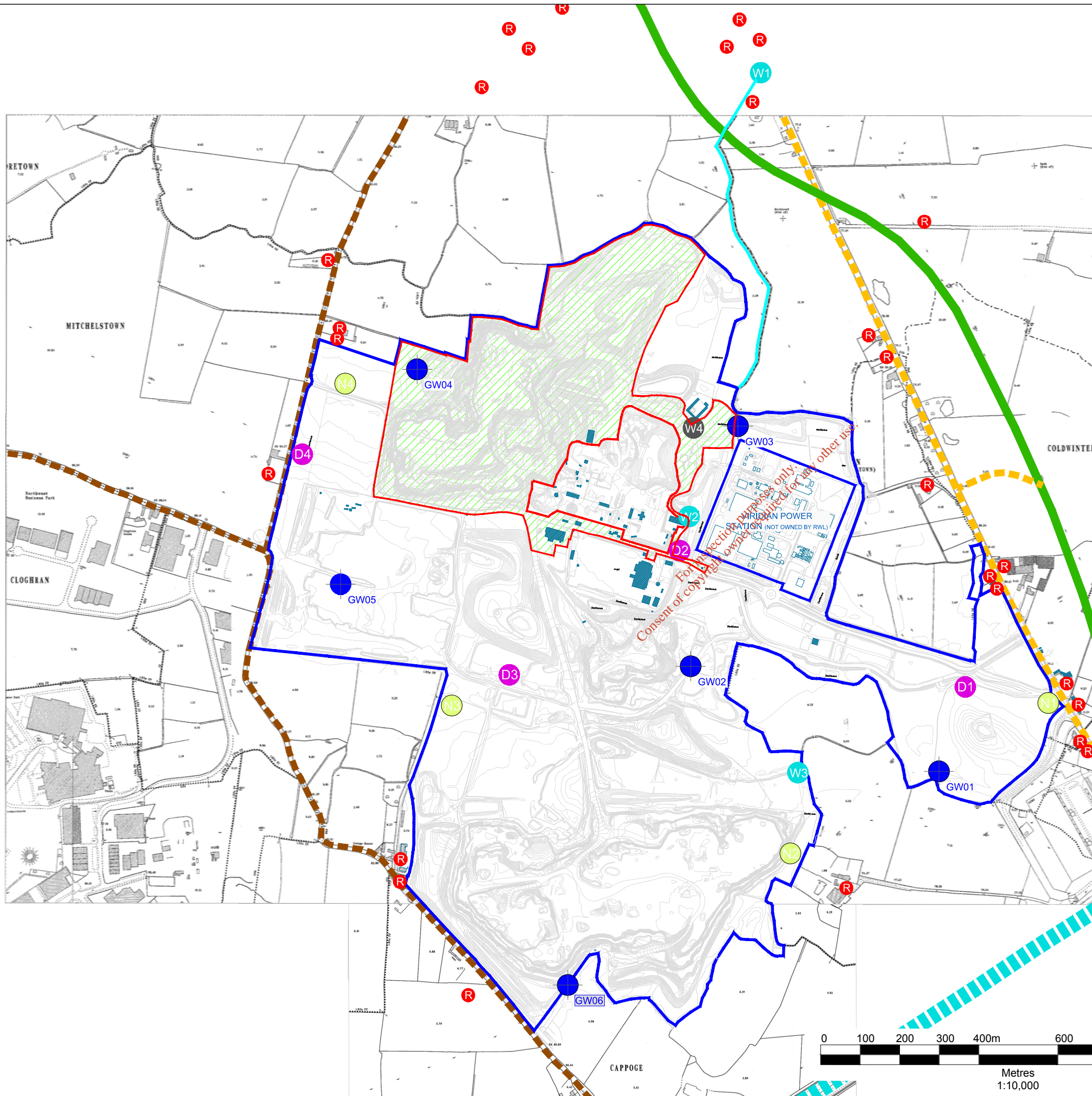
FIGURE 2

Scale 1:5,000 @ A3 Date MARCH 2015



0180.00111.18.CRAMP.FIG-2.EXIST-SITE-LAYOUT.R0.dwg

0180.00111.18.CRAMP.FIG-3.ENVIRO-MONITORING-LOCATIONS.R0.dwg

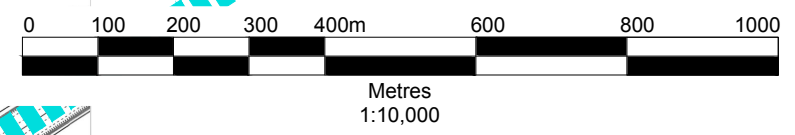


NOTES

1. EXTRACT FROM 1:2,500 ORDNANCE SURVEY DIGITAL SHEET NO'S. 3062-A, 3062-B, 3062-C, 3062-D, 3063-A, 3063-C, 3130-A & 3130-B
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000715 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND
3. TOPOGRAPHIC SURVEY PREPARED BY FUGRO BKS BASED ON MAY 2009 AERIAL PHOTOGRAPHY

LEGEND

	ROADSTONE LTD. LANDHOLDING (c. 201.8 ha)
	WASTE LICENCE APPLICATION AREA (c. 36.1 ha)
	N2 NATIONAL PRIMARY ROUTE (DUAL CARRIAGEWAY)
	NORTH ROAD (R135)
	LOCAL ACCESS ROAD
	M50 MOTORWAY
	LOCATION OF NEAREST RESIDENCES
	NOISE MONITORING LOCATION
	DUST MONITORING LOCATION
	GROUNDWATER MONITORING WELL LOCATION
	SURFACE WATER MONITORING LOCATION
	PROPOSED SURFACE WATER MONITORING LOCATION

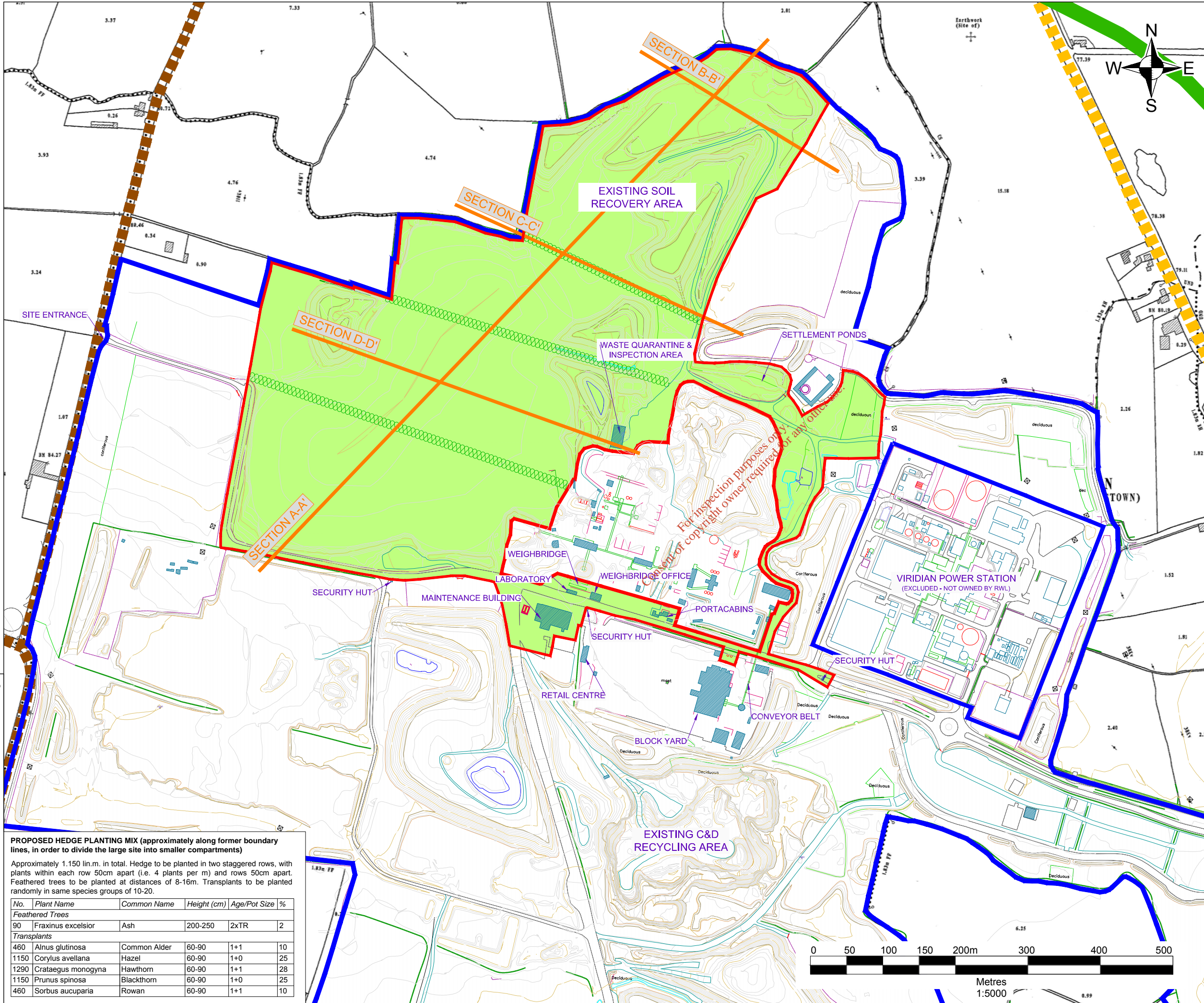


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**ROADSTONE LIMITED
 HUNTSTOWN - CRAMP**
 INERT WASTE RECOVERY FACILITY,
 ENVIRONMENTAL LIABILITY
 RISK ASSESSMENT
**ENVIRONMENTAL MONITORING
 LOCATIONS**

FIGURE 3

Scale: 1:10,000 @ A3 Date: MARCH 2015



NOTES

1. EXTRACT FROM 1:2,500 ORDNANCE SURVEY DIGITAL SHEET NO'S. 3062-A, 3062-B, 3062-C, 3062-D, 3063-A, 3063-C, 3130-A & 3130-B
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000715 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND
3. TOPOGRAPHIC SURVEY PREPARED BY FUGRO BKS BASED ON MAY 2009 AERIAL PHOTOGRAPHY

LEGEND

	ROADSTONE LTD. LANDHOLDING (c. 201.8 ha)
	WASTE LICENCE APPLICATION AREA (c. 36.1 ha)
	N2 DUAL CARRIAGEWAY
	NORTH ROAD (R135)
	LOCAL ROAD
	PROPOSED NATIVE HEDGE PLANTING
	CROSS SECTION LOCATIONS

0180.0011.18.CRAMP.FIG-4.PROP-RESTORATION-LAYOUT.R0.dwg

PROPOSED HEDGE PLANTING MIX (approximately along former boundary lines, in order to divide the large site into smaller compartments)

Approximately 1.150 lin.m. in total. Hedge to be planted in two staggered rows, with plants within each row 50cm apart (i.e. 4 plants per m) and rows 50cm apart. Feathered trees to be planted at distances of 8-16m. Transplants to be planted randomly in same species groups of 10-20.

No.	Plant Name	Common Name	Height (cm)	Age/Pot Size	%
Feathered Trees					
90	Fraxinus excelsior	Ash	200-250	2xTR	2
Transplants					
460	Alnus glutinosa	Common Alder	60-90	1+1	10
1150	Corylus avellana	Hazel	60-90	1+0	25
1290	Crataegus monogyna	Hawthorn	60-90	1+1	28
1150	Prunus spinosa	Blackthorn	60-90	1+0	25
460	Sorbus aucuparia	Rowan	60-90	1+1	10

SLR

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**ROADSTONE LIMITED
HUNTSTOWN - CRAMP**

**INERT WASTE RECOVERY FACILITY,
CLOSURE, RESTORATION &
AFTERCARE MANAGEMENT PLAN**

RESTORATION PROPOSALS

FIGURE 4

Scale: 1:5,000 @ A3

Date: MARCH 2015



global environmental solutions

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

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**ENVIRONMENTAL LIABILITY
RISK ASSESSMENT (ELRA)**



August 2015
SLR Ref: 501.00180.00111 ELRA Rev A

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APPENDICES

Appendix A Details of Roadstone Limited Current Insurances
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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.

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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.

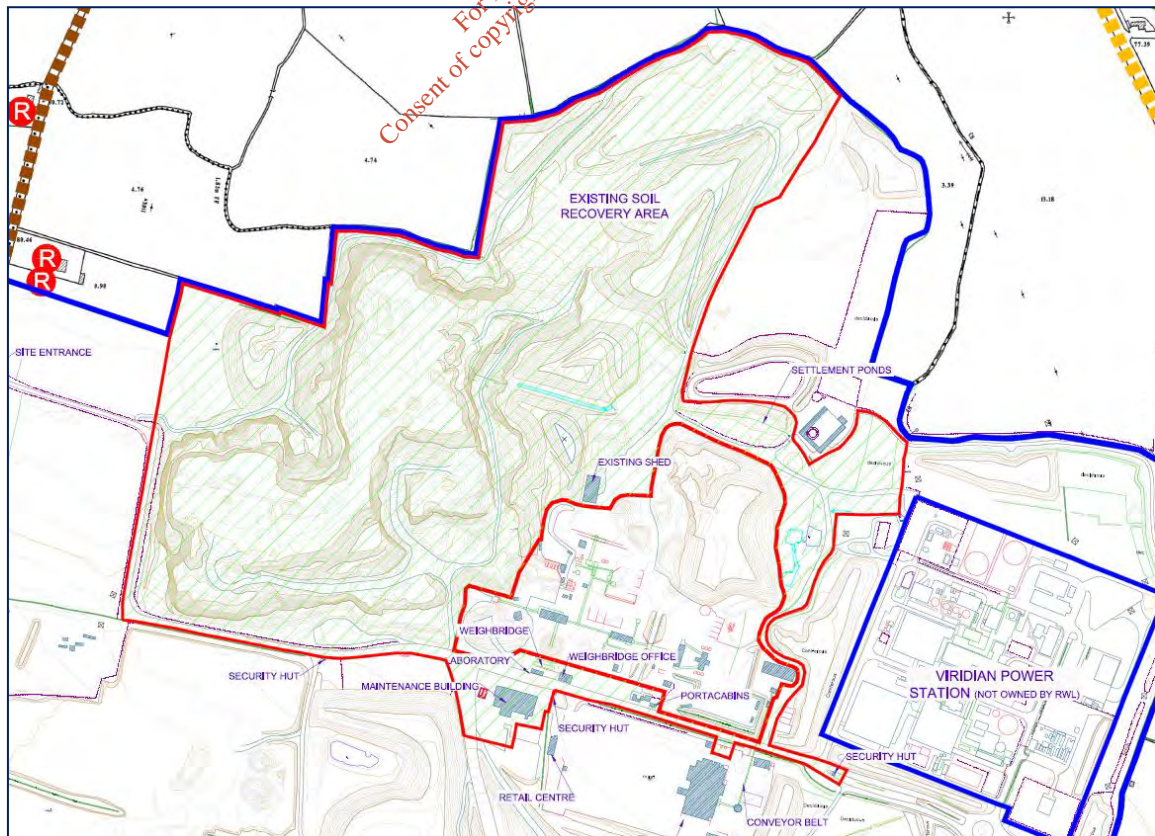
The waste licence facility is located entirely within a large active quarry complex and adjoins concrete and asphalt production facilities operated by Roadstone Ltd. The waste facility covers an area of approximately 36.1 hectares (87.0 acres) and comprises a largely worked-out limestone quarry with 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



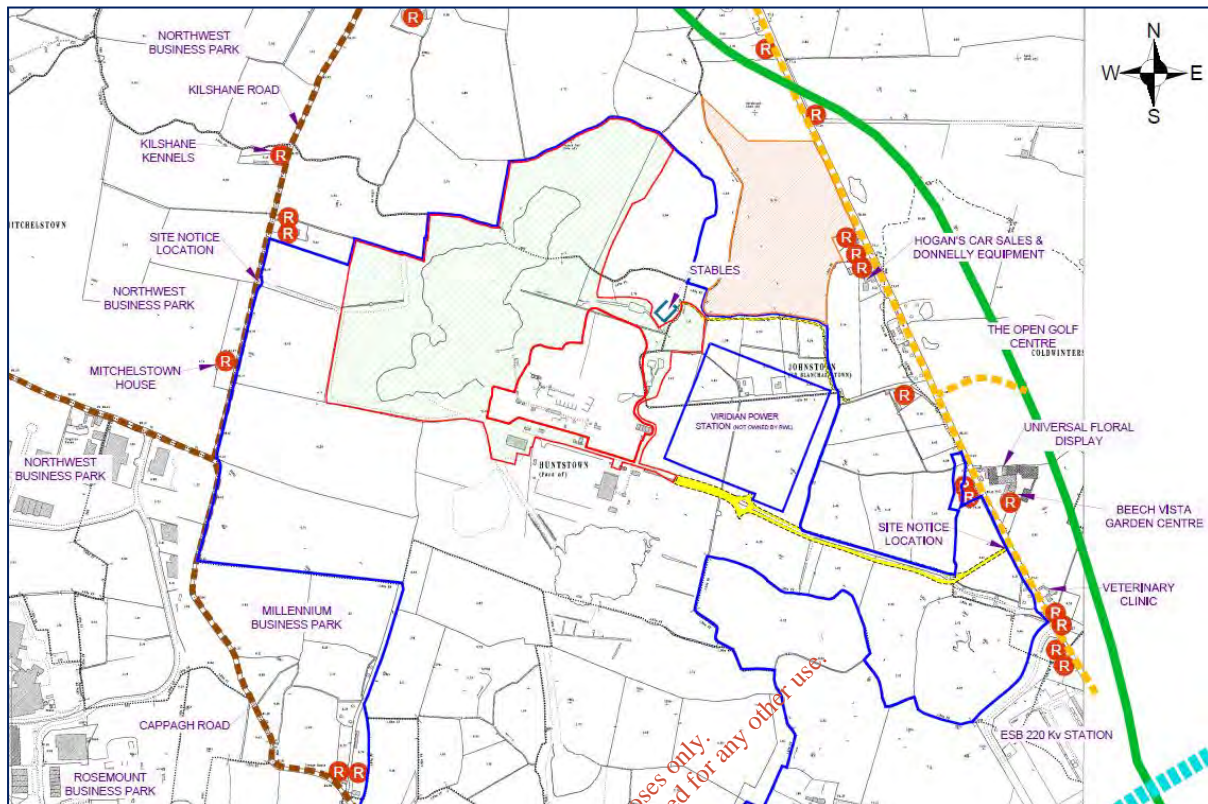
1.3 Surrounding Land Use

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.

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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

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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.

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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.

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APPENDIX A
Details of Roadstone Limited Current Insurances

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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