

**ATTACHMENT B**

**COMPLIANCE WITH BAT REQUIREMENTS**

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## HUNTSTOWN WASTE RECOVERY FACILITY COMPLIANCE WITH BEST AVAILABLE TECHNOLOGIES

### INTRODUCTION

In its Article 12 compliance letter dated 1 November 2013, the Environmental Protection Agency requested that Roadstone Wood Ltd. provide it with a clear description as to how its proposed inert soil recovery facility at Huntstown will comply with the relevant requirements of BAT. It is considered that BAT for the proposed waste recovery activity is addressed by the guidance given in the Agency's *Draft BAT Guidance Note for the Waste Sector : Landfill Activities (April 2003)* and specifically guidance presented therein in respect of inert waste landfills.

The principal environment impacts associated with the proposed waste recovery activities comprise

- (i) Potential dust emissions arising from unloading, placement and compaction of imported soil and trafficking of HGV's over unpaved haul roads;
- (ii) Potential carbon dioxide (CO<sub>2</sub>) 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 placement 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 national 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 this 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 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 proposed facility can be addressed through the application of the following best available techniques to minimise emissions or to manage / control them.

### 1.0 AIR (DUST) EMISSIONS

A number of measures are already in place to minimise and manage air (dust) emissions at the existing concrete production facility at Huntstown. The following BAT measures are proposed in respect of potential dust generation activities at the waste recovery facility in order to minimise and control dust emissions:

#### *All Activities*

- Using mobile water bowsers to damp down particulate materials across the entire site, as and when required, principally in windy periods during extended dry spells.

#### *Soil Placement and Backfilling*

- Damping down particulate materials as and when required;
- Restricting access to areas once they are restored;
- Avoiding soil handling during adverse (dry, windy) weather conditions and optimising timing of any site operations and/or development works;
- Placing and compacting imported soil in-situ immediately after being unloaded (to minimise windblown particulate matter);
- Seeding soil mounds immediately upon formation / completion;
- Minimising drop heights at all times (to minimise emissions);

#### *Stockpiling*

- Minimising stockpiling of imported soils;
- Use of water sprays on soil stockpiles when necessary;

- Siting of stockpiles to take advantage of shelter from wind;
- Minimising soil mound heights at all times (to minimise emissions);

#### *Traffic Movements*

- Requiring traffic to adhere to defined roads within the facility;
- Regularly maintaining unpaved road sections by grading hardcore to minimise particulate matter generation;
- Maximising travel over paved road sections within the facility;
- Maximising separation distances between internal haul roads and sensitive receptors;
- Implementing and enforcing speed controls on all paved and unpaved roads;
- Directing traffic through wheel cleaning equipment wherever practicable;
- Using road sweepers on paved road sections as and when required;

#### *Monitoring*

- Continuation of dust deposition monitoring at established locations around the facility and undertaking reviews of ambient emissions at regular intervals to determine the effectiveness of dust management and control systems.

The *BAT Draft Guidance Note on 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/m<sup>2</sup>/day is appropriate for the proposed waste recovery facility.

## **2.0 AIR (CO<sub>2</sub>) EMISSIONS**

The proposed backfilling and restoration of the quarry void at Huntstown will, for the most part, entail use of conventional diesel powered HGV trucks and earthmoving equipment (mechanical excavators and/or bulldozers). There is only minor scope to increase the efficiency of HGV's, plant and earthworking equipment and to reduce emissions arising from their use and deployment at this facility. The following BAT measures are proposed in order increase efficiency and to limit, abate and/or reduce carbon dioxide emissions generated by HGVs and plant at the waste recovery facility:

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

## **3.0 NOISE EMISSIONS**

A number of measures are already in place to minimise and manage noise emissions at the existing concrete production facility at Huntstown. The following BAT measures are proposed in respect of activities at the waste recovery facility in order to minimise and control noise emissions:

#### *Facility Layout / Design*

- Retaining / reinforcing existing hedgerows around the property boundary to provide acoustic as well as visual screening;
- Providing screening berms / banks along the appropriate property boundary (where practicable) to provide acoustic as well as visual screening;
- Ensuring 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*

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

- Ensuring 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);
- Ensuring heavy goods vehicles entering and leaving the site have tailgates securely fastened;
- Ensuring 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;
- Ensuring 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);
- Ensuring 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);
- Ensuring 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

- Continuation of noise monitoring at established locations around the facility (closest to sensitive receptors) and undertaking reviews of emissions at regular intervals to determine the effectiveness of noise management systems.

The *Guidance Note for Noise in Relation to Scheduled Activities (206)* 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 proposed 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 do not (and will not) arise on account of existing (or proposed) site activities at Huntstown. The available noise monitoring data indicates that where exceedences of threshold noise limits currently occur at this location, they can be attributed largely to the proximity of the monitoring location to the M50 motorway, the N2 Dual Carriageway and/or low flying aircraft landing or taking-off from Dublin Airport.

#### 4.0 EMISSIONS TO LAND / WATER

The quarry excavations at Huntstown have intersected the local groundwater table and have lowered it around the periphery with the excavation of each quarry bench. At the present time, minor groundwater inflows and surface water run-off within the quarries drain to sumps in the quarry floor, where they are contained. Water is pumped from the quarry floor, as and when required, in order to maintain dry conditions on the floor. When pumps are active, the Northern Quarry has an estimated discharge rate of around 20l/sec.

The Huntstown quarry complex straddles two river catchments, that of the Ward River to the north and that of the Tolka River to the south, with approximately equal areas of the landholding in each. The proposed inert soil recovery facility in the North Quarry lies in the northern part of the landholding, entirely within the Ward River catchment. Influent groundwater and surface water run-off pumped from the floor of the North Quarry is discharged via a series of settlement ponds to the Ballystrahan Stream and Ward River catchment.

A number of measures are already in place to minimise and manage emissions to land, surface water and groundwater at the existing concrete production facility at Huntstown. A trade discharge licence (Ref. No. WPWF008-01) issued by Fingal County Council in November 2011 replaced an earlier licence (Ref WPW/1/87) issued by Dublin County Council in January 1987. It controls discharges from the North Quarry and areas around the established aggregate processing, concrete and asphalt production facilities, prescribes emission limits for defined contaminants and regular monitoring and reporting on the quality of the discharge to the Ballystrahan Stream.

Although the waste streams to be imported to the proposed recovery facility at Huntstown are inert and expected to be free from contamination, there is a minor risk that the proposed activities could result in contaminant emissions to land, surface waters and groundwater, specifically from placement 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 proposed in respect of activities at the waste recovery facility in order to minimise uncontrolled release of polluting materials or liquids / liquors to land, surface waters and groundwater:

#### Land

- Establishing waste acceptance procedures and management systems to identify the source of imported waste materials in advance and to confirm that they are inert;
- Implementing a multi-level soil testing regime for imported waste materials, comprising characterisation testing, compliance testing and on-site verification;
- Ensuring 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 beyond the south-east corner of the North Quarry) and held there pending receipt of test results;
- Removing any quarantined materials that prove to be non-inert off-site, for disposal or recovery at an appropriately licensed waste facility.

#### Water

- Dewatering the quarry floor prior to placing inert soil material in order to minimise the mobilisation and migration of fines in groundwater;
- Constructing drainage channels around the edge of the existing quarry to divert it away from the active waste recovery area (if practicable and feasible to do so)
- Collecting surface water run-off from active recovery areas at sumps within the quarry void and pumping 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 via existing site infrastructure to the nearby tributary stream of the Ward River;
- Pumping any groundwater intercepted by ongoing dewatering of the worked-out quarry void through the settlement pond infrastructure, mobile silt traps and hydrocarbon interceptor prior to discharge off-site;
- Ensuring all fuels, oils, lubricants and other potentially hazardous chemicals held at the facility are stored in
  - (a) large tanks surrounded by protective concrete barriers in order to eliminate the potential for mobile plant to collide or impact with them;
  - (b) smaller drums or intermediate bulk containers (IBCs) on bunded pallets surrounded by protective barriers;
  - (c) double skinned containers and/or mobile bowlers.
- Regular visual inspection and testing of the integrity of tanks, drums, bunded pallets and double skinned containers;
- Diverting all domestic wastewater from staff welfare facilities via septic tanks or other wastewater treatment facilities prior to discharging final effluent to ground via effluent percolation areas;
- Ensuring all vehicle re-fuelling is undertaken on the sealed hardstand areas adjacent to the maintenance shed (or from a mobile double skinned fuel bowser);
- Maintaining and testing the integrity of existing drainage infrastructure, including drainage pipework, the hydrocarbon interceptor and effluent percolation area;
- Undertaking maintenance of plant and machinery over paved surfaces in the existing covered workshops (or off-site, if appropriate);
- Ensuring all plant is regularly maintained and inspected daily for leaks of fuel, lubricating oil or other contaminating liquids / liquors
- Ensuring spill kits (with containment booms and absorbent materials) are available on-site to contain / stop the migration of any accidental spillages, should they occur;
- Establishing 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;
- Establishing and enforcing speed limits across the facility to further reduce the likelihood and significance of collisions;

### Monitoring

- Continued regular monitoring of surface water discharges (at 4 No. locations) and groundwater quality (at 6 No. existing groundwater wells) across the Huntstown Quarry complex;
- Establishment of an additional surface water monitoring point immediately downstream of the dedicated settlement ponds treating influent groundwater and surface water run-off pumped from floor of the North Quarry;
- Undertaking 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 Draft Guidance Note on Landfill Activities (2011)* and/or existing discharge licence.

## 5.0 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 Wood has prepared a preliminary Closure, Restoration and Aftercare Management Plan (CRAMP) and Environmental Liabilities Risk Assessment (ELRA), copies of which have also been provided in response to the EPA's Article 12 compliance request.

It is envisaged that, subject to the grant of a waste licence in respect of inert soil recovery activities at this site and Agency agreement, Roadstone Wood will arrange such financial provision as may be required in respect of these prospective environmental liabilities.

## 6.0 TRANSPORT OF MUD ONTO ROADS

The proposed backfilling and restoration of the quarry void at Huntstown will result in traffic movements of HGV's over areas of unpaved ground within the proposed waste recovery facility and as such, in unfavourable weather conditions, could result in mud being carried off-site and onto the local road network, giving rise to potential health and safety risks to other road users. The following BAT measures are proposed in order to limit, abate and/or minimise deposition of mud on local roads by HGV's and other vehicles exiting the waste recovery facility.

- Directing all traffic exiting the facility through the existing waterbath (wheelwash) and over paved internal roads thereafter out to the public road network;
- Regularly cleaning and maintaining the wheelwash facility;
- Using a road sweeper to ensure local public roads are cleaned as and when required
- Maximising travel over paved road sections within the facility;
- Regularly inspecting and maintaining unpaved road sections within the facility so as to minimise potential accumulation of mud on wheels of HGV lorries.

## 7.0 ENVIRONMENTAL MANAGEMENT SYSTEMS

Roadstone Wood Ltd. currently operates an Environmental Management System (EMS) in respect of the established rock extraction, concrete and asphalt production facilities at its Huntstown landholding.

It is proposed to modify and extend the existing EMS in due course to incorporate any additional mitigation measures and management procedures (outlined above) necessary to

- (i) mitigate specific impacts and emissions arising from the proposed waste recovery activities and
- (ii) implement best practice for environmental management and control of the waste activities.

There is an established programme of environmental monitoring at the Huntstown facility. Emission limit values are consistent with those set by the existing planning permissions and discharge consents in respect of established activities issued by Fingal County Council. These will be reviewed and revised in light of any waste licence issued by the EPA for inert waste recovery activities at the proposed facility.

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**ATTACHMENT C**

**COMPLIANCE WITH EUROPEAN DIRECTIVES**

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## HUNTSTOWN WASTE RECOVERY FACILITY COMPLIANCE WITH ENVIRONMENTAL DIRECTIVES

### INTRODUCTION

In its Article 12 compliance letter dated 1 November 2013, the Environmental Protection Agency requested that Roadstone Wood Ltd. provide it with a clear description as to how its proposed inert soil recovery facility at Huntstown will comply with the requirements of several key pieces of environmental legislation, listed below:

- Waste Framework Directive
- Water Framework Directive
- EC Environmental Objectives (Surface Water) Regulations 2009
- EC Environmental Objectives (Groundwater) Regulations 2010
- IPPC Directive
- Environmental Liabilities Directive

It is considered that the operation of the proposed inert waste recovery facility at Huntstown will comply with each of the above-listed legislative enactments for reasons provided below.

### 1.0 WASTE FRAMEWORK DIRECTIVE (2008/98/EC)

#### 1.1 Key Legislative Provisions

The Waste Framework Directive 2008/98/EC, establishes a legal framework for the management and treatment of waste within the EU. It seeks to protect the environment and human health by preventing harmful effects associated with waste generation and management. It applies to all waste excluding gaseous effluents, radioactive materials, decommissioned explosives, human or animal waste, wastewater, animal by-products / carcasses and waste from the extractive industries.

The Directive requires Member States to implement measures for the treatment of waste which do not endanger human health or harm the environment and which are in line with the waste hierarchy which requires waste to be managed in the following order of priority:

- (i) prevent;
- (ii) prepare for reuse;
- (iii) recycle;
- (iv) recover, including through energy recovery;
- (v) dispose.

The Directive requires producers or holders of waste to carry out waste treatment themselves or else organise to have it carried out by a broker, establishment or undertaking. It requires dangerous waste to be stored and treated in conditions that ensure the protection of human health and the natural environment, prohibits mixing with other dangerous waste and requires packaging or labelling of waste in line with EU or international regulations.

Facilities carrying out waste treatment activities are required to obtain regulatory consent from national competent authorities who decide and condition the quantity and type of waste to be treated, the procedures and methods to be used, as well as monitoring and control requirements.

The Directive also requires Member States to prepare waste management plans to cover their national jurisdiction, outlining the types, quantities and sources of waste, existing collection and management systems and location criteria. Member States are also required to prepare prevention programmes to break the link between economic growth and the negative environmental impacts of waste management.

#### 1.2 Compliance with Directive

##### *Waste Hierarchy*

The proposed restoration and backfilling of the worked out quarry void at Huntstown using imported waste soil and stone generated by construction and development works at off-site locations is classified as a waste recovery activity under national and EU waste management legislation. The proposed activity is classified as recovery as it permits waste to serve a useful purpose (in this instance facilitating the restoration of previously quarried lands) and conserves natural resources

which would otherwise have to be used to achieve the same result. As a recovery activity, it is to be preferred over the disposal option, which is least favoured under the Waste Framework Directive.

Ideally excess soil and stone generated by construction or development projects should be re-used on other development projects, this is very often not practical or viable on account of

- (i) the poor engineering properties of many soils which makes them unacceptable for re-use;
- (ii) the limited local demand for engineering grade soils when they become available at a particular point in time and
- (iii) the uneconomic (financial) and unsustainable (environmental) costs which would otherwise be incurred in transporting such bulky, low value material to more distant markets or buyers.

In such circumstances, the only feasible alternative to managing this particular waste stream is to recover it as close to source as possible.

Although the volume of construction activity in Ireland is significantly depressed at the current time, the most recently published EPA National Waste Report (for 2011) indicates that the volume of construction and demolition waste managed nationally in that year was 3,003,691 tonnes (a reduction of 83% since the peak of 17,800,000 tonnes in 2007). Of this, the vast bulk, 1,975,844 tonnes (or 66%) comprised soil and stone waste. A need clearly exists therefore for inert waste recovery facilities, including a number of relatively large facilities, across the State in order to divert excess soil and stone generated by construction and development activity away from disposal sites and toward more favoured recovery alternatives.

#### *Regulatory Consent*

As it is required to do so under national and EU legislation, Roadstone Wood applied to the EPA (the competent authority) for a waste licence in respect of the proposed inert waste recovery facility in February 2011. Any waste licence issued by the EPA in respect of the proposed facility will determine and condition

- (i) the quantities and types of waste to be treated;
- (ii) waste and materials handling procedures;
- (iii) measures to prevent environmental pollution;
- (iv) measures to control emissions;
- (v) scope and frequency of environmental monitoring and
- (vi) keeping of waste records.

#### *Waste Management Planning*

Waste management planning in the Dublin region is largely influenced by policies and goals set out in the current Dublin Waste Management Plan (2005-2010), jointly published by the Local Authorities of Dublin City, Dun Laoghaire-Rathdown, Fingal and South Dublin. Although the waste management plan for the region was originally intended to cover the period 2005 to 2010, it still remains in force and will continue to do so until such time as it is superseded by the regional waste management plan for the newly configured East and Midlands region in 2015.

Section 19.2 of the Dublin Waste Management Plan (2005-2010) identifies a number of objectives around management of construction and demolition waste in the region, to be met over the lifetime of the plan. These include :

- the provision of 'additional facilities in the Greater Dublin Region to cater for C&D waste, at existing quarries, and other suitable locations' (the plan indicates that such facilities should include front-end removal and recycling of recoverable waste, and should be limited to disposal of non-recoverable waste (soil) only).
- the 'use of soil material for beneficial use where possible, in preference to disposal' (the plan identifies examples of beneficial use including: landfill restoration, amenity projects, quarry reinstatement, major reclamation / infill projects that have been approved in planning).

In light of the above, the proposed development of an inert soil recovery facility at Huntstown is considered to be entirely consistent with the policy objectives of the current Dublin Waste Management Plan.

## 2.0 WATER FRAMEWORK DIRECTIVE (2000/60/EC)

### 2.1 Key Legislative Provisions

The Water Framework Directive 2000/60/EC, establishes an EU wide framework in the field of water policy. The Directive requires Member States to establish River Basin Districts (RBDs) to manage water resources within their national territories (and trans-frontier RBD's where river basins cross international borders). It also requires national competent authorities to prepare river basin management plans, establish environmental objectives and to establish programmes of measures to achieve these objectives. The key objectives of the Directive are

- (i) to expand the scope of water protection to all waters, surface waters and groundwater (rather than limit it to specifically designated waters);
- (ii) to achieve "good status" for all waters within a defined period;
- (iii) to ensure water resources are managed on a 'river basin' basis across the EU;
- (iv) to establish a "combined approach" of discharge emission limit values and water quality standards;
- (v) to encourage public participation in making of water management plans.

For surface waters, the Directive establishes a requirement for all surface waters to achieve both "good ecological status" and "good chemical status" by specified dates. Good ecological status is defined in terms of the quality of the biological community (its population, diversity and sensitivity to pollution), the hydrological characteristics of the water body and its chemical characteristics. Good chemical status is defined in terms of compliance with quality standards established for chemical substances.

For groundwater, a more precautionary approach is adopted by the Directive. It essentially prohibits direct discharges to groundwater and (for indirect discharges), introduces a requirement to monitor groundwater bodies in order to detect changes in chemical composition, and to reverse any upward pollution trend caused by human activity. For groundwater, the Directive also addresses quantitative issues and establishes sustainable groundwater management practices which limit the volume which may be abstracted from any particular groundwater body to that portion of its annual recharge which is not required to support connected ecosystems (be they surface water bodies or terrestrial systems such as wetlands).

The Directive requires Members States to establish registers of protected areas within each river basin district for habitats and species directly dependent on water (including protected Natura 2000 sites designated as Special Conservation Areas (SACs) or Special Protection Areas (SPAs) under 92/43/EEC and 2009/147/EC) and bodies of water used for the extraction of drinking water. These registers must also include designated sensitive areas under the Urban Wastewater Directive (91/271/EEC), vulnerable zones under the Nitrates Directive (91/676/EEC) and protected areas under the Bathing Water Directive (76/160/EEC).

### 2.2 Compliance with Directive

Many of the provisions of the Water Framework Directive (WFD) relate to public policy objectives and administrative functions / responsibilities. One of the principal responsibilities of local authorities and/or regulatory agencies is to ensure that existing pressures and future development is managed so as to ensure compliance with WFD objectives, particularly in respect of achieving set water quality standards within a defined period.

The proposed waste facility at Huntstown is located within the area covered by the Action Plan for the Broadmeadow Water Management Unit (WMU) prepared by the Eastern River Basin District (ERBD) Project. The action plan, published in August 2009, is intended to support the implementation of the Water Framework Directive across the catchment of the Broadmeadow River (which includes the Ballystrahan Stream and the Ward River). The water quality in the Ballystrahan stream catchment to the north of the proposed waste facility is currently rated by the plan as being of 'good' quality status. The principal plan objective for the stream is to protect its existing water quality. The plan also identifies Huntstown Quarry as the only quarry within the WMU and concludes that the waterbodies downstream of it are probably at risk of not achieving the stated plan objectives in 2015.

As part of the Environmental Impact Assessment undertaken in respect of the proposed waste recovery facility, a hydrological assessment was made of discharges to the Ballystrahan Stream

associated with recovery activities. The overall conclusion of that assessment is that, provided water pumped from the quarry floor is treated in line with proposed mitigation measures, it will present little risk of adverse impact on the surface water quality (for key physical and chemical parameters and the biological quality) of the Ballystrahan Stream and that the proposed waste recovery facility will not adversely impact its ability to retain its 'good' quality status in 2015.

Legislation enacted to give effect to the WFD in Ireland, includes the EC Environmental Objectives (Surface Water) Regulations 2009 and the EC Environmental Objectives (Groundwater) Regulations 2010. The compliance of the proposed waste recovery facility with this legislation is discussed in more detail below.

### **3.0 EC ENVIRONMENTAL OBJECTIVES (SURFACE WATER) REGULATIONS 2009**

#### **3.1 Key Legislative Provisions**

The EC Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009) have the effect of transposing key provisions of the Water Framework Directive (2000/60/EC), Dangerous Substances Directive (2006/11/EC) and Priority Substances Directives (2008/105/EC) into Irish national law. The Regulations also repeal the earlier Phosphorus and Dangerous Substances Regulations. The Regulations apply to all surface waters and provide for

- (i) the establishment of legally binding quality objectives for all surface waters;
- (ii) setting of environmental quality standards for specific pollutants;
- (iii) the examination, and where appropriate, review of existing discharge authorisations by public authorities to ensure that the emission limits laid down in authorisations support compliance with the new water quality objectives and standards;
- (iv) the classification of surface water bodies by the EPA for the purposes of the Water Framework Directive;
- (v) the establishment of inventories of priority substances by the EPA;
- (vi) the drawing up of pollution reduction plans by co-ordinating local authorities (in consultation with the EPA) to reduce pollution by priority substances and to cease and/or phase out discharges, emissions or losses of priority hazardous substances.

#### **3.2 Compliance with Directive**

At the present time, surface water drainage (pipes / gullies etc) at the proposed waste recovery facility only exists across the central infrastructure area, where aggregate processing and concrete production activities are concentrated. Rain falling across the remainder of the application area either

- runs over unsealed ground into the existing quarry void to a 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 / floor.

The principal water feature within the proposed waste recovery facility is the pond on the quarry floor. It mainly comprises surface water run-off, with some groundwater inflow from the quarry faces. Other than this pond, there are only a few channels or settlement ponds within the licensed site. These are generally required for surface water management for established activities at the quarry.

##### *Surface Water Quality*

The key impact of backfilling the quarry void at Huntstown with inert soil and stone waste is the potential increase in the volume of suspended soil particles and/or other contaminants which will be discharged off-site to the Ballystrahan Stream.

A hydrological assessment was undertaken in respect of proposed discharges to the Ballystrahan Stream as part of the Environmental Impact Assessment of the proposed waste recovery facility. That assessment concluded that, provided all dewatered groundwater and surface water run-off collected in sumps across the quarry floor was diverted via settlement ponds and/or oil interceptor tanks to reduce the concentration of suspended solids and potential hydrocarbon contaminants prior to discharge, it will present little risk of any adverse impact on the quality of waters in the Ballystrahan Stream.

### Surface Water Flows

The North Quarry at Huntstown is located at the top of the Ballystrahan Stream catchment and as such, the existing discharge established activities at and around the quarry comprise a significant proportion of the existing flow within the stream immediately north and downstream of the site. Discharges from established activities and proposed waste recovery activities at the site principally comprise surface water run-off and will continue for the foreseeable future. It is considered that the continued discharge of treated water from the North Quarry (as it is backfilled) presents little risk of significant impact on existing flow volumes in the Ballystrahan stream.

### Discharge Licensing

The discharge licence (Ref. WPWF008-01) which is currently in place at Huntstown provides for the discharge of dewatered groundwater and surface water run-off from the North Quarry, treated process water from the aggregate processing facility, concrete and production facilities and surface water runoff from paved yards to the Ballystrahan stream. The original discharge licence for the site (issued in January 1987) was recently reviewed by Fingal County Council and the current, updated licence was issued in November 2011.

The revised discharge licence addresses the requirements of the EU Water Framework Directive and incorporates key provisions and targets of the EC Environmental Objectives (Surface Water) Regulations 2009. A copy of the discharge licence is provided as Appendix A.

A number of measures are envisaged to monitor any potential impact of the proposed waste recovery operations on surface water quality. Sampling will be undertaken on a regular basis at any temporary surface water features which may either be created or form naturally at low points within the quarry (as it is backfilled). Regular sampling of treated water from existing or additional pre-designated discharge control points will also be undertaken. These surface water samples will be tested for a range of physical and chemical parameters in order to assess water quality and to detect any possible contamination at the recovery facility.

It is considered that discharges of groundwater and surface water run-off from the proposed waste recovery facility are addressed by the existing discharge licence, subject to such additional provisions in respect of surface water management as may be required being included amongst the waste licence conditions.

## 4.0 EC ENVIRONMENTAL OBJECTIVES (GROUNDWATER) REGULATIONS

### 4.1 Key Legislative Provisions

The EC Environmental Objectives (Groundwater) Regulations (S.I. No 9 of 2010) address and transpose certain requirements of the Water Framework Directive (2000/60/EC) and the Groundwater Directive (2006/118/EC) into Irish national law. They establish a new strengthened regime for the protection of groundwater in line with the requirements of both Directives. This is achieved by establishing clear Environmental Objectives, Groundwater Quality Standards and Threshold Values for the classification of groundwater and the protection against pollution and deterioration. The regulations also introduce the legal basis for a more flexible, proportionate and risk based approach to implementing the pre-existing legal obligation to prevent or limit inputs of pollutants into groundwater.

### 4.2 Compliance with Directive

As previously noted, dewatered groundwater captured by sumps in the floor of the North Quarry is diverted via surface water settlement and treatment infrastructure to the Ballystrahan Stream.

#### Groundwater Quality

The development and operation of the proposed waste recovery facility will not require discharge of effluent to groundwater, and as such does not require a groundwater discharge licence. Available water quality data indicates that the groundwater quality around the site is generally good, and slightly alkaline. Elevated levels of total coliforms and nitrate indicate some contamination of the water (organic pollution), from human or agricultural sources. Mitigation measures have been incorporated in the design of existing and proposed infrastructure and of waste management procedures at the proposed facility to prevent potential contamination of the underlying groundwater body (refer to Chapters 5 and 6 of the EIS submitted in support of the waste licence application).

### Groundwater Flow

The regional permeability of the aquifer at Huntstown is described as being moderate to high with flow along faults and fissures. Dewatering of the North Quarry has been ongoing for in excess of 25 years. The continued dewatering of the North Quarry and infilling it with inert soil material will not alter established regional groundwater flow toward the Ballystrahan stream and/or Ward River, nor will it alter the groundwater flow pattern beyond the site in the long-term.

### Monitoring for Potential Adverse Impacts

A number of measures are proposed in order to monitor any potential impact of the proposed waste recovery operations on groundwater. Groundwater sampling will be undertaken on a regular basis at the 4 No. existing groundwater monitoring wells. Groundwater levels will also be recorded at the time of sampling. Groundwater samples will be tested for a range of physical and chemical parameters in order to assess water quality and detect any possible contamination at the site.

## 5.0 IPPC DIRECTIVE (2008/1/EC)

### 5.1 Key Legislative Provisions

The current Integrated Pollution Prevention and Control (IPPC) Directive (2008/1/EC) lays down measures designed to prevent or reduce air, water or soil pollution by emissions from prescribed industrial facilities. The Directive applies to a significant number of activities with a high pollution potential, such as the energy sector, the production and processing of metals, the mineral and chemical industries, waste management facilities, food production and non-industrial activities such as livestock farming. It establishes a requirement for competent national authorities to issue regulatory permits for existing and new installations, with requirements to ensure the protection of soil and groundwater and limit pollutant emissions.

The Directive sets out the main principles for permitting and control of installations based on:

- (i) an integrated approach (which takes account of the whole environmental performance of the facility, including emissions to air, water and land, generation of waste, use of raw materials, energy efficiency, noise, prevention of accidents, and restoration on closure) and
- (ii) the application of best available techniques (BAT), defined as the most effective techniques to achieve a high level of environmental protection, taking account of the costs and benefits.

The IPPC Directive is due to be replaced by the Industrial Emissions Directive (IED) (2010/75/EU) from January 2014 onwards. The Directive revises and merges seven separate existing Directives relating to industrial emissions into one Directive including:

- (i) the Integrated Pollution Prevention and Control (IPPC) Directive (2008/1/EC);
- (ii) 3 No. Titanium Dioxide Directives (78/176/EEC, 82/883/EEC and 92/112/EEC) on waste from the titanium dioxide industry;
- (iii) Volatile Organic Compounds (VOC) Solvents Directive (99/13/EC);
- (iv) Waste Incineration Directive (2000/76/EC) and
- (v) Large Combustion Plants (LCP) Directive (2001/80/EC).

As well as updating principles of integrated management and BAT, the IED provides a certain amount of flexibility in allowing competent national authorities to set less strict emission limit values in specific cases and introduces mandatory requirements on environmental inspections, requiring site visits to be undertaken at least every 1 to 3 years, using risk-based criteria.

### 5.2 Compliance with Directive

The inert waste recovery activities proposed at Roadstone Wood's Huntstown site are not amongst the list of prescribed industrial facilities, processes and/or activities to which the current Integrated Pollution Prevention and Control Directive and/or the Industrial Emissions Directive apply. As the proposed waste facility does not come under the scope of either Directive, it is immaterial (and unnecessary) to address compliance with the legislative provisions contained therein.

## 6.0 ENVIRONMENTAL LIABILITIES DIRECTIVE (2004/35/EC)

### 6.1 Key Legislative Provisions

The Environmental Liability Directive (ELD) 2004/35/EC is concerned with the prevention and remedying of environmental damage. For the purposes of the Directive, environmental damage is defined as :

- (i) damage which has significant adverse effects on reaching or maintaining favourable conservation status of species and natural habitats protected under EC legislation;
- (ii) damage that significantly adversely affects the ecological, chemical and/or quantitative status and/or ecological potential of waters falling within the scope of the Water Framework Directive;
- (iii) land contamination that creates a significant risk of human health being adversely affected as a result of direct or indirect introduction in, on or under land of substances, preparations, organisms and micro-organisms.

The Environmental Liability Directive provides for two distinct liability regimes. The first applies to operators who conduct potentially risky activities (listed in Annex III) including

- (i) industrial activities regulated under IPPC licenses;
- (ii) waste management operations;
- (iii) the release of pollutants into water or into the air;
- (iv) the production, storage, use and release of dangerous chemicals, and
- (v) the transport, use and release of genetically modified organisms (GMOs).

Under this regime, an operator can (with few exceptions) be held liable, even if he/she has not committed any fault.

The second liability regime applies to all activities (including those not listed in Annex III) where an operator can be held liable for damage if he/she is at fault or negligent and has caused damage to natural habitats or species protected by the Habitats and Birds Directives.

Under the ELD, public authorities are required to identify liable polluters and ensure that they undertake or finance the necessary preventive or remedial measures (detailed in the Directive). In addition, the Directive allows public interest groups (such as non-governmental organisations) to compel public authorities to act where necessary and to challenge their decisions before the courts, if these are considered to be illegal.

### 6.2 Compliance with Directive

As will be evident from

- (i) the environmental mitigation measures outlined in the Environmental Impact Statement submitted in support of the proposed Waste Licence Application and
- (ii) the description of how the proposed inert waste recovery facility at Huntstown complies with BAT requirements (refer to Attachment C of response to the EPA's Article 12 compliance request),

Roadstone Wood recognises its responsibility to minimise, avoid and prevent, insofar as possible, occurrence of any environmental pollution at the proposed waste facility. The company will achieve this by applying mitigation measures to reduce environmental impact and/or risk and by developing and implementing robust environmental management systems.

Notwithstanding this, it is recognised that operation of a waste recovery facility can give rise to potential environmental liabilities (some known and some potentially unknown). It is considered that in this instance, the principal liabilities are likely to arise in respect of land, surface water and/or groundwater and also, to a lesser extent, atmosphere. In order to identify and quantify liabilities, Roadstone Wood has prepared an Environmental Liabilities Risk Assessment (ELRA), a copy of which is provided in Attachment F of the response to the EPA's Article 12 compliance request.

It is envisaged that, subject to the grant of a waste licence in respect of inert soil recovery activities at Huntstown and Agency agreement, Roadstone Wood will make financial provision in respect of these prospective environmental liabilities putting the following insurances in place;

- (i) Employers Liability Insurance – indemnified for at least €2 million.
- (ii) Public Liability Insurance – indemnified for at least €2 million.
- (iii) Environmental Liability or Contractors All-Costs Insurance – indemnified for at least €2 million.

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

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**ATTACHMENT D**

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

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global environmental solutions

**INERT WASTE RECOVERY FACILITY  
HUNTSTOWN QUARRY  
FINGLAS, DUBLIN 11**

**Closure, Restoration and  
Aftercare Management Plan (CRAMP)**

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**December 2013  
SLR Ref: 501.00180.00074 CRAMP Rev0**

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## 1.0 INTRODUCTION

This Closure, Restoration and Aftercare Management Plan (CRAMP) is prepared in response to an Article 12 Compliance request dated 1<sup>st</sup> November 2013 from the Environmental Protection Agency in respect of a waste licence application (Ref. W0277-01) for a proposed inert soil waste recovery facility at a worked out quarry owned and operated by Roadstone Wood Ltd. at its Huntstown Quarry complex, Finglas, Dublin 11.

The waste licence application provides for

- Use of imported natural materials, principally excess inert soil, stones and/or broken rock excavated on construction sites, to backfill and restore a large existing void created by previous extraction of limestone bedrock;
- 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;
- Temporary stockpiling of topsoil and subsoil pending re-use as cover material for final restoration of the site;
- 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.

In preparing this plan, regard has been had to the requirements outlined in the EPA's Article 12 compliance request, specifically

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

This CRAMP has also been prepared in accordance with the EPA guidance publication *Guidance on Environmental Liability Risk Assessment, Residuals Management Plans and Financial Provision (2006)*.

### 1.1 Scope of CRAMP

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 agricultural use, principally as grassland. 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.

## 2.0 SITE EVALUATION

### 2.1 Site Description

The proposed facility is located entirely within the existing Huntstown Quarry complex, in the townlands of Huntstown and Kilshane, in north County Dublin. It is located approximately 2.5km north-west of the suburb of Finglas, as shown on an extract from the 1:50,000 scale Ordnance Survey Discovery Series map of the area, reproduced as Figure 1.

The application area covers an area of approximately 36.1 hectares (87 acres) and comprises a limestone quarry with perimeter screening / overburden mounds and some existing ancillary site infrastructure (offices, sheds, hardstand areas, water settlement ponds etc.) shared with existing quarrying and concrete and asphalt production businesses at the Huntstown Quarry Complex.

The existing quarry void covers an area of approximately 11.2 hectares (27.0 acres) within the waste recovery site and is shown on Photo 1 below, an aerial view of the site as seen on Google Earth.

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



Ground levels across the waste recovery site 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.

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.

**Photo 2**  
**View of Northern Quarry Void in December 2013**



Some restoration work was undertaken at the northern end of the waste recovery site in the period from late 2002 to the end of 2003. At that time, a large volume of inert excavation spoil 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.

This area is partially restored and will be finalised within the scope of this CRAMP. Photo 3 below shows the boundary between the partially restored part of the northern quarry (on right) and the part that remains to be restored (on left).

### Photo 3 View of Northern Quarry and Partially Restored Area



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 worked out lands to agricultural use and improve protection of the underlying groundwater resource, which is currently classified as 'extremely vulnerable' due to the absence of any protective soil cover.

## 2.2 Site Surrounds

Approximately 10 No. residential properties are clustered along the R135 Regional Road (the former N2 National Primary Road, also known as the North Road) to the east of Roadstone Wood's landholding and Kilshane (or Cappagh) Road to the west. The M50 Motorway is located to the south of the landholding, while the N2 Dual Carriageway linking Dublin and Ashbourne, Co. Meath is located east of it.

At the present time, traffic access to the waste recovery site is obtained by turning off a dedicated slip road on the northbound carriageway of the N2 Dual Carriageway and travelling south along the North Road (the former N2 National Primary Road) to a junction with the access road which leads into the Huntstown Quarry complex. Traffic movements at this junction are facilitated by dedicated left and right turning lanes on the North Road.

## 2.3 Planning History

### 2.3.1 Former / Existing Quarry Activities

The excavation and blasting of limestone has been undertaken at the Huntstown Quarry Complex for the past four decades, following grant of an outline permission in or around 1969. It is understood that quarrying at the northern and central areas was commenced at some time in the early-to-mid 1980's, on foot of a planning permission granted in 1982.

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 further 10 year period (Ref. No. F03A/1430 and PL06F.206789).

This current proposal to backfill the worked out quarry with in-situ and imported inert soil and stones is 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 have progressed only intermittently since that time. Quarry backfilling works have previously been controlled by a series of waste permits issued by Fingal County Council.

Roadstone Wood discharges groundwater from quarry dewatering and process water from aggregate washing and concrete production activities via a series of existing settlement ponds to tributary streams of the Ward and Tolka Rivers. Discharges are controlled by way of a licence originally issued by Dublin County Council in January 1987 (Ref. WPW/1/87) and later reviewed and re-issued by Fingal County Council in November 2011 (Ref. WPW/F/0008-01).

### **2.3.2 Recovery of Inert Soil and Stone**

The waste licence application provides for the placement, compaction and capping of approximately 3,840,000m<sup>3</sup> of inert soil and rock. Of this, only a relatively minor quantity, approximately 50,000m<sup>3</sup>, will be sourced from existing mounds and stockpiles on site, leaving a net import requirement of approximately 3,790,000m<sup>3</sup>.

The inert soil and rock to be re-used and recycled at this facility will be sourced from construction and demolition sites where inspection and/or testing have indicated that no contamination is present. The inert materials will be imported by permitted waste contractors.

It is likely that minor quantities of other inert materials, principally oversize or recovered (i.e. crushed and screened) concrete and bricks will be imported to the waste recovery site and used to construct temporary haul roads as and when required. These materials could be imported directly to site or sourced from an adjoining construction and demolition waste recovery facility which is operated by Roadstone Wood within the existing Huntstown Quarry Complex.

### **2.4 Site Inventory / Infrastructure**

The established site facilities, mobile plant and fixed infrastructure at the proposed 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 principal site facilities are located on Figure 2 of this report.

- **Buildings:** site office, staff welfare facilities, canteen, plant maintenance shed; waste quarantine shed.
- **Site Security:** security barriers at two site access points 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.
- **Services:** overhead electricity wires, water supply pipes (connected to local authority watermain).
- **Surface Water:** Drains and settlement ponds; septic tank and associated sewerage pipework serving welfare facilities.
- **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.



### 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 recovery operations and decommissioning / removal of plant and infrastructure from the facility, no remaining environmental liabilities will attach to restored areas of the site and/or areas where the principal inert waste recovery activities are located.

The operation of the Waste Recovery Facility at Huntstown provides for backfilling of a large pre-existing void created by previous extraction of bedrock at the site. On completion of the final phase of backfilling, much of the work required to achieve final restoration and closure of the waste facility will already have been completed. It is expected that the final restoration of the waste recovery areas to agricultural use will be completed within a period of 18 years. The operational life of the facility however will be largely contingent on the availability of inert soil waste from local development projects. Details of the final restoration works are outlined in some detail in Section 4 of this CRAMP.

On completion of the quarry backfilling works and the subsequent final site restoration works, all mobile plant and equipment associated with the backfilling, placement and compaction of soil and stones will be removed off-site.

Any site infrastructure, hardstanding or paved areas used solely for waste recovery activities will be progressively decommissioned, recovered and where possible, re-used within the facility. Hard-standing or paved surfaces will be broken up using a hydraulic breaker and subjected to validation testing to confirm the materials are acceptable for re-use within Roadstone Wood's landholding, for construction of haul roads and/or other hard standing areas. Any materials which are 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.

Any dedicated service infrastructure (principally settlement ponds and groundwater dewatering pipes) will be decommissioned and removed. Any existing or shared plant, equipment or infrastructure required for continued operation of the adjoining concrete or asphalt production facilities will however remain in place.

Provision will be made for short-term (<1year) environmental monitoring of air, surface water and groundwater following cessation of recovery activities. Assuming no evidence of contaminated soil or groundwater is encountered, the in-situ groundwater monitoring wells will be decommissioned in accordance with guidance published by the UK Environmental Agency in its publication Decommissioning Redundant Wells and Boreholes.

#### 3.2 Criteria for Successful Closure

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

- the principal objective is to achieve clean closure of the site following restoration and aftercare, with no residual liabilities or constraints.
- all mobile plant and equipment associated with the backfilling, placement and compaction of soil and stones and/or recovery of inert construction and demolition waste will have been removed off site;
- short-term (< 1year) environmental monitoring of air, surface water and groundwater will be carried out and no evidence of air or surface / groundwater contamination identified on site;
- the backfilled / restored areas will be returned to productive agricultural land use;
- there should be no constraints on future land use associated with soil or groundwater contamination or any structures remaining in-situ.
- the process of surrendering the waste licence to the EPA will be progressing or completed, removing the legal encumbrance on title deeds to the restored land areas and the shared infrastructure areas.

### 3.3 Closure Plan Costing

The expected costs (present-day values), associated with the future closure of the waste recovery facility at Huntstown, are outlined in Table 1 below.

**Table 1  
Waste Recovery Facility Closure Costs**

ITEM	COST €
Removal of all mobile plant off site	1,500.00
Decommissioning of dedicated site infrastructure (excavation, testing and backfilling of settlement ponds, removal of pipelines and/or dedicated services)	6,000.00
Breaking up of pavement and hard-standing surfaces (using hydraulic breaker), validation testing to confirm materials may be re-used on-site, transfer materials across property holding	4,500.00
Transfer off site of any non-inert material (contingency)	5,000.00
Final site restoration works (site levelling and contouring, re-seeding, spraying etc.) – part of aftercare (refer to Table 2)	
Short-term (< 1year) environmental monitoring of air, surface water and groundwater (excess over ongoing monitoring costs)	5,000.00
Decommissioning of groundwater monitoring wells (4 No.)	3,000.00
Closure Validation Report	2,000.00
<b>Total Site Closure Cost (excl. VAT)</b>	<b>€27,000.00</b>
Plus 15% Contingency (to address unforeseen issues / liabilities)	<b>€31,050.00</b>
<b>Total Including VAT @ 23%</b>	<b>€38,191.50</b>

### 3.4 Closure Plan Update and Review

As required by waste licence conditions, this Closure Plan will be reviewed and updated annually as part of the Annual Environmental Report (AER) submission to the EPA. The updated and reviewed Closure Plan will take account of any site or process changes, technology changes and costing changes.

### 3.5 Closure Plan Implementation

Quarry backfilling activity at the Huntstown waste recovery facility is currently projected to be complete within 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 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 final validation report (including a Certificate of Completion for the CRAMP) in respect of the licensed waste facility will be submitted to the Agency within 3 months of completion of the works outlined herein.

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-restored' drawings and photographs of the site;
- results of short-term environmental monitoring which follow Site Closure and Restoration and
- a Certificate of Completion for the CRAMP.

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## **4.0 FACILITY RESTORATION AND AFTERCARE**

### **4.1 Facility Restoration**

The waste recovery activities at Huntstown primarily provide for the backfilling of large voids created by previous extraction of limestone 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 former quarry area to agricultural grassland.

#### **4.1.1 Backfilling / Earthworks / Grass Seeding / Planting**

The backfilling of the former quarry area will proceed upwards, either continually at varying rates or on an intermittent (campaign) basis, as inert soil and stone is generated by local development works. On completion, the final landform will merge into the surrounding undulating pastoral landscape. An indication of the final ground level contours around the backfilled void is provided in Figure 3. In addition to imported materials, some soil in existing screening berms and/or stockpiles across the existing site will be used to backfill the quarry. Cross-sections through the final landform are shown in Figure 4.

Any temporary additional or replacement infrastructure required to facilitate the waste recovery activities at Huntstown will be constructed and/or installed prior to re-commencement of the backfilling operations. It is currently envisaged that backfilling of the existing void will be undertaken in a number of 'lifts' from the existing quarry floor. It is envisaged that backfilling will proceed in phases and that each phase will be broadly defined by the depth and extent of existing benches within the worked-out quarry.

The quarry void will be backfilled in several phases working upwards from the existing quarry floor level at 38 to 40mOD. Final formation levels on completion of the backfilling and restoration works will be approximately 82mOD. On completion, final gradients across the restored ground surface will be very shallow, typically of the order of 1v:25v or less.

On final completion of the restoration, a cover layer of subsoil (approximately 350mm thick) and topsoil (approximately 150mm thick) will be placed and graded across the backfilled mineral soil. This will then be rolled and planted with grass in order to promote stability and minimise soil erosion and dust generation. 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 the site as a quarry (see Figure 3).

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

Provided there is no potential for conflict with established / ongoing site activities, it is envisaged that the restored grassland will be set to a local farmer as soon as practicable following completion of site restoration works and establishment of the grass sward.

### **4.2 Aftercare Management**

#### **4.2.1 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 (< 1 year) environmental monitoring of air, surface water and groundwater will be undertaken by Roadstone Wood 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 Hedgerow Planting*

Following establishment of the hedgerow planting along, 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 use of the restored area as agricultural grassland. Initial maintenance following restoration after each phase of backfilling (principally cutting and possibly spraying), will be overseen by the waste facility manager at Huntstown or by other designated Roadstone Wood staff nominated by him.

After final restoration works have been completed and the aftercare period has elapsed, the land will be set to a local farmer and he/she will then assume responsibility for the general upkeep and environmental management of the land.

### **4.2.2 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 agricultural use and management, it is considered that no long-term aftercare monitoring and maintenance will be required for the waste recovery facility at Huntstown.

### **4.3 Final Restoration and Aftercare Management Costs**

The expected cost, associated with the site restoration and aftercare management, are outlined in Table 2 overleaf. Whilst the total waste recovery site is 36.1 hectares, the actual area that requires restoration is c. 27 hectares (including the partially restored area), so the costs in Table 2 are based on the latter.

**Table 2**  
**Estimated Restoration Cost**  
**(For 27ha Site / 2 Year Aftercare Period)**

ITEM	COSTS (€)
Final site contouring (land raising / lowering as required) (€500 / ha)	13,500
Final capping 150mm topsoil and 350mm subsoil (€1,000 / ha)	27,000
Surface preparation, grass seeding, ground repair and spraying (€1,500 / ha)	40,500
Hedgerow Planting (Ground preparation, supply of plants and planting works)	15,000
24 months establishment maintenance for grassed area and hedge planting	10,000
<b>Total Restoration and Aftercare Cost (excl. VAT)</b>	<b>€106,000</b>
Plus 15% Contingency (to address unforeseen issues / liabilities)	<b>€121,900</b>
<b>Total Including VAT @ 23%</b>	<b>€149,937</b>

Roadstone Wood stockpiles topsoil that is generated on site as well as imported topsoil, so the costs above assume that adequate quantities of topsoil are available on site for final restoration.

#### 4.4 Future Proofing Costs

A financial bond of **€184,000** is considered sufficient to cover the costs identified in this CRAMP. This is based on current costs and we assume an average inflation rate of 2.5% per annum as follows which would increase these costs as follows:

**Table 3 Inflated CRAMP Costs**

Number of Years	Actual Year	Estimated CRAMP Costs (with 2.5% inflation per annum)
1	2014	€ 184,000
2	2015	€ 188,600
3	2016	€ 193,315
4	2017	€ 198,148
5	2018	€ 203,102
6	2019	€ 208,179
7	2020	€ 213,384
8	2021	€ 218,718
9	2022	€ 224,186
10	2023	€ 229,791
11	2024	€ 235,536
12	2025	€ 241,424
13	2026	€ 247,460
14	2027	€ 253,646
15	2028	€ 259,987
16	2029	€ 266,487
17	2030	€ 273,149
18	2031	€ 279,978

The financial bond can be invested in a way that it grows faster than inflation. The value of the bond should be compared against the inflated CRAMP costs in the Annual Environmental Report submitted to the Agency each year and top-ups arranged where the bond falls short of requirements.

## 5.0 REPORT CLOSURE

This report has been prepared by SLR Consulting Limited 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 Wood 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**

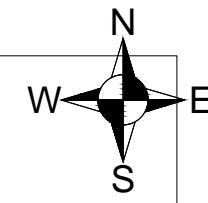
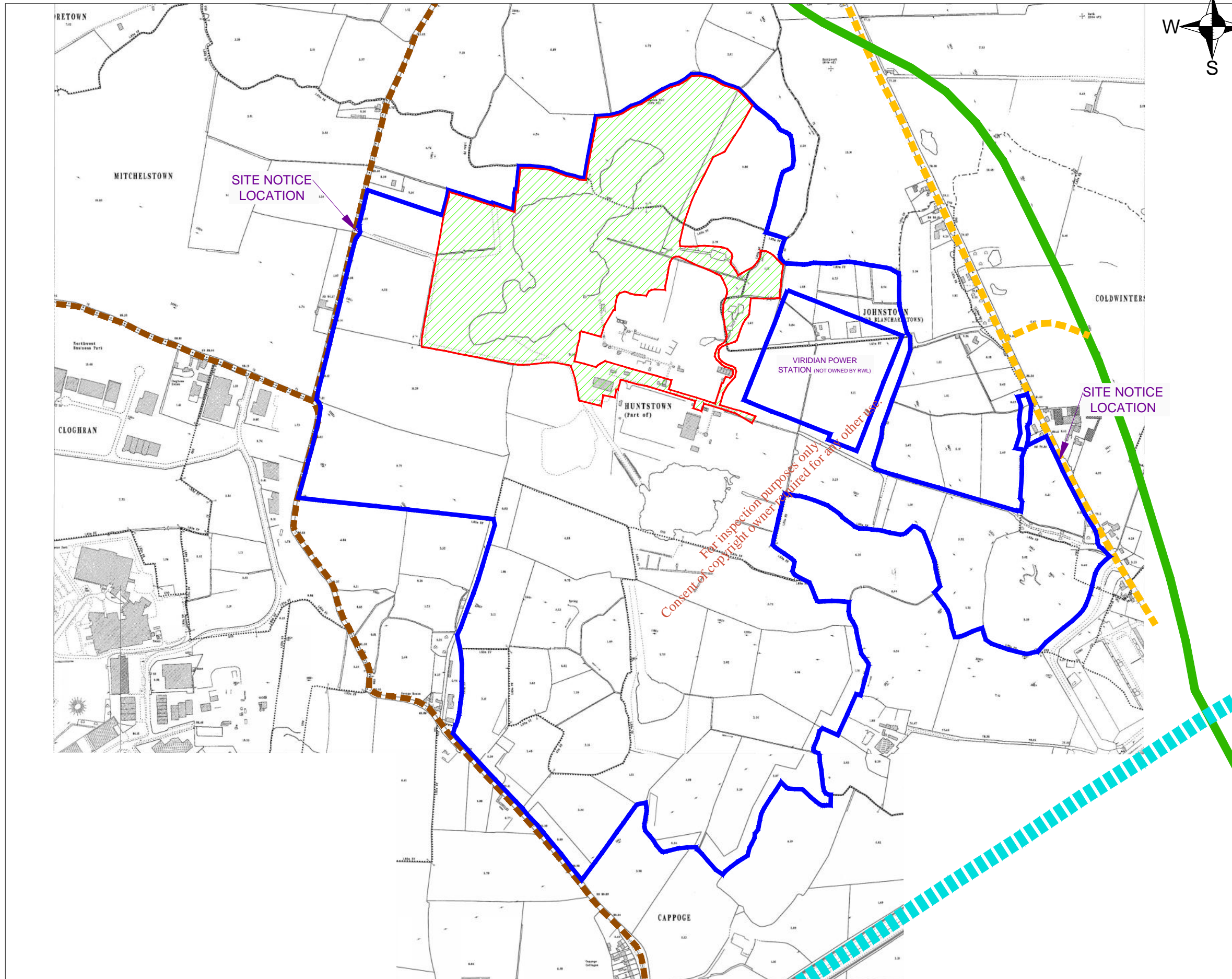
**Figure 2  
Existing Site Layout**

**Figure 3  
Restoration Proposals**

**Figure 4  
Restored Cross Sections**

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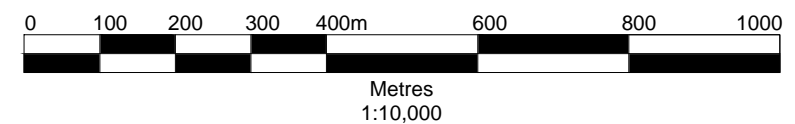


**NOTES**

- 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 0000713 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

**LEGEND**

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



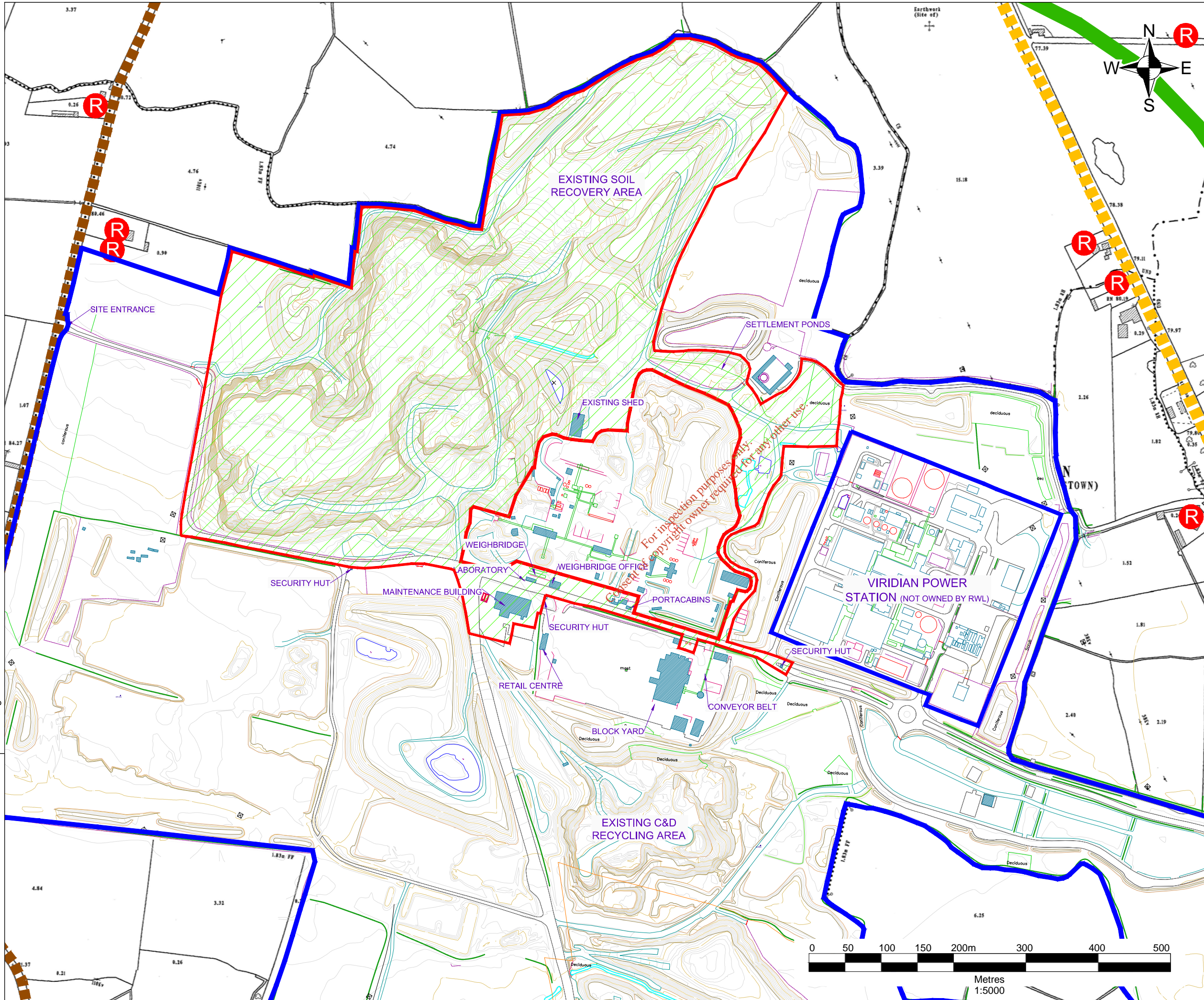
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**ROADSTONE WOOD LTD.  
 HUNTSTOWN - CRAMP  
 INERT WASTE RECOVERY FACILITY,  
 CLOSURE, RESTORATION &  
 AFTERCARE MANAGEMENT PLAN  
 SITE LOCATION MAP**

**FIGURE 1**

Scale: 1:10,000 @ A3 Date: DECEMBER 2013

0180.00011.00074.18.CRAMP.FIG-1.SITE-LOC.R0.dwg



- NOTES
1. EXTRACT FROM 1:2,500 ORDNANCE SUR DIGITAL SHEET NO'S. 3062-A, 3062-B, 3062-D, 3063-A, 3063-C, 3130-A & 3130-B
  2. ORDNANCE SURVEY IRELAND LICENCE SU 0000713 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND
  3. TOPOGRAPHIC SURVEY PREPARED BY FUGRO BKS BASED ON MAY 2009 AERIAL PHOTOGRAPHY

LEGEND

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



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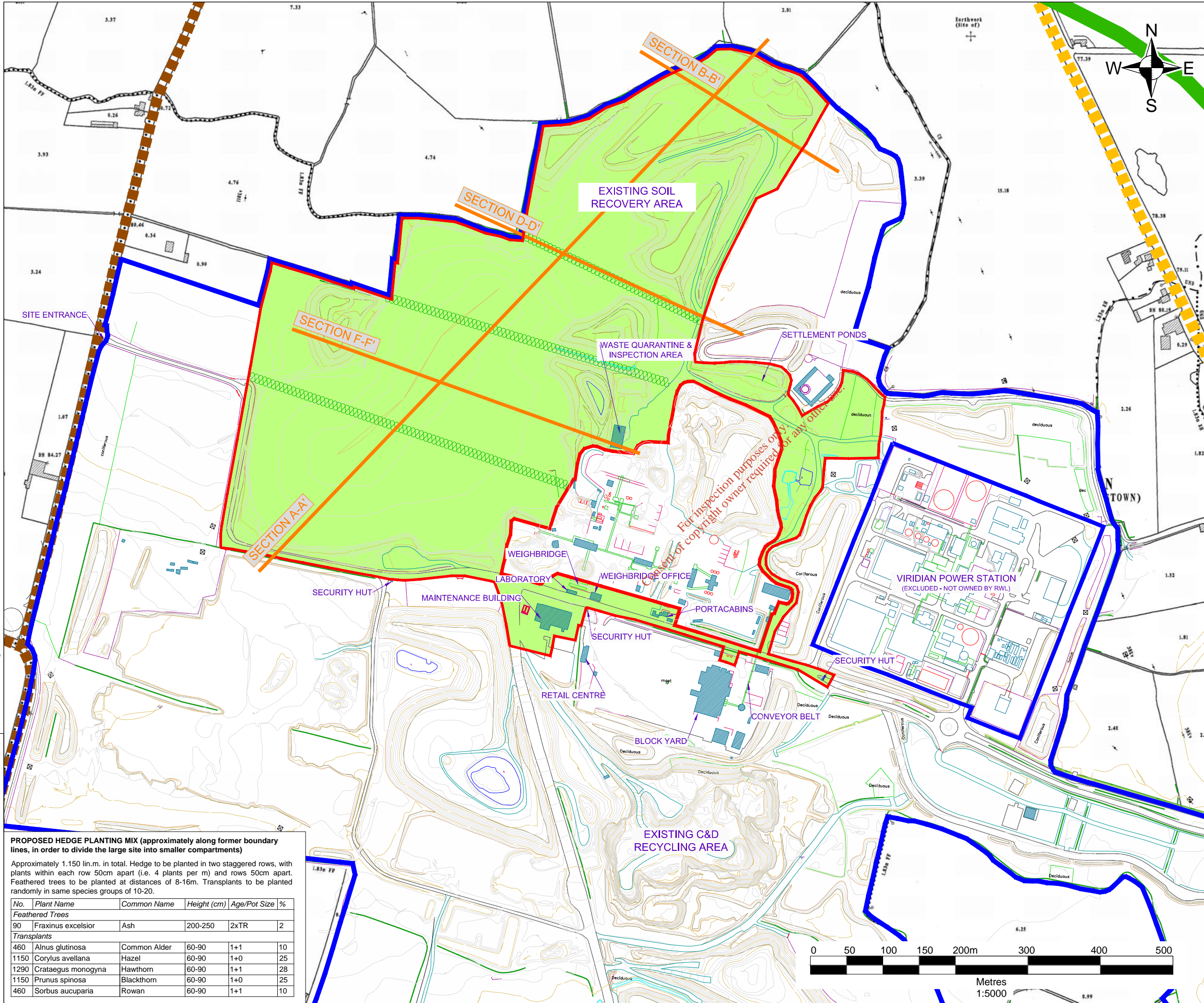
ROADSTONE WOOD LTD.  
 HUNTSTOWN - CRAMP  
 INERT WASTE RECOVERY FACILIT  
 CLOSURE, RESTORATION &  
 AFTERCARE MANAGEMENT PLAN  
 EXISTING SITE LAYOUT

**FIGURE 2**

Scale 1:5,000 @ A3 Date DECEMBER 2013

0180.00011.00074.18.CRAMP.FIG-2.EXIST-SITE-LAYOUT.R0.dwg

0180.00011.00074.18.CRAMP.FIG-3.PROP-RESTORATION-LAYOUT.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
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- LEGEND**
- ROADSTONE WOOD 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

**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	%
<b>Feathered Trees</b>					
90	Fraxinus excelsior	Ash	200-250	2xTR	2
<b>Transplants</b>					
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

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AFTERCARE MANAGEMENT PLAN**

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**RESTORATION PROPOSALS**

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**FIGURE 3**

Scale  
1:5,000 @ A3

Date  
DECEMBER 2013

