

# DESCRIPTION OF WASTE RECOVERY FACILITY 2

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## INTRODUCTION

### Principal Elements

- 2.1 The proposed quarry restoration scheme and inert soil recovery facility at the Old Quarry at Brownswood, Enniscorthy, Co. Wexford 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 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 aftercare period.
- 2.2 The existing void will only be backfilled using inert soil materials imported from pre-approved external construction sites. Soil stockpiled in existing overburden mounds around the quarry will also be used to backfill the quarry void. No peat, contaminated soils or non-hazardous waste will be accepted at the proposed recovery facility.
- 2.3 It is likely that relatively minor quantities of construction and demolition waste, principally oversized or recovered (ie. crushed and screened) concrete and bricks will be imported to the application site and used to construct temporary haul roads as and when required. Any non-inert construction and demolition waste will be removed off-site. The location and layout of the existing site is shown on Figure 2-1.

## SITE INFRASTRUCTURE

### Site Security

- 2.4 Vehicular access into Roadstone Wood Ltd.'s landholding at the Old Quarry and the application site is principally made via an entrance off a very short length of local road which links directly to the N11 National Primary Road to the south of Enniscorthy. The only other entrance, to the rear (south) of the landholding, is a link road connecting the Old Quarry to the Operating Quarry ('Murphy's Quarry') which is largely used by quarry loading shovels and related plant. The Operating Quarry is part of the Brownswood Quarry Complex and is also operated by Roadstone Wood Ltd.
- 2.5 At the present time, the boundary of the Old Quarry is closed off by post and wire fencing and/or hedgerow. Prior to commencement of the proposed quarry backfilling and restoration activities, a survey of the entire property boundary will be undertaken and where necessary, boundary fencing will be

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erected, existing fencing will be repaired and/or replaced and hedgerows will be strengthened or fortified by additional planting.

- 2.6 The only vehicles which will be permitted to access the proposed inert waste / soil recovery facility will be HGV's carrying inert soil for backfilling and restoration purposes. This proposal to backfill the worked out quarry with in-situ and imported inert soil and stones is part of the quarry restoration scheme and is the subject of an application for planning permission from Wexford County Council (WCC) and a waste licence application to the Environmental Protection Agency (EPA).
- 2.7 Inert materials will be accepted at the site between 06.00 hours and 18.00 hours each weekday (Monday to Friday) and 07.00hours to 16.00hours on Saturday. No materials will be accepted at any other time including Sundays and Public Holidays. These operating hours are consistent with those set by Condition 2 in the Notification of Conditions issued under Section 261 (Ref. No. Q3).
- 2.8 All heavy good vehicles (HGVs) importing inert soil and stone to the proposed recovery facility will be required to pass over the existing weighbridge which is located along the shared access road into the Old Quarry and the proposed waste recovery facility. On arrival, HGV drivers carrying material to the waste recovery facility will identify themselves to the facility manager (or his authorised assistant(s)) before proceeding to the active backfilling location within the former quarry. The facility manager (or his assistant(s)) will take a copy of the weigh docket, record the time and date of arrival, the nature and origin of the imported soils, the Client, the truck licence plate number and relevant waste collection permit details.

### Site Roads and Parking Areas

- 2.9 All trucks delivering inert soil for quarry restoration purposes will be confined within the Applicant's landholding. Trucks will initially travel over a short section of paved road surface leading from the existing weighbridge up toward the former quarry. Thereafter they will turn east and travel over a wide unpaved area (with no defined roadway) toward the decline which leads into the worked out quarry void. Thereafter they will follow a network of temporary haul roads which will lead down to the active backfilling area within the quarry void.
- 2.10 Adequate provision for car parking by existing (and potential future) employees and visitors is currently provided on a paved area which surrounds the existing office building and fronts onto the access road leading into the Brownswood facility. Existing paved and unpaved haul roads crossing the application site are indicated on the site infrastructure drawing in Figure 2-2, together with the location of the car parking area.
- 2.11 The access road and car parking areas surrounding the office building are sealed by concrete and will remain in place for the duration of the waste recovery activities at the site. Surface water falling across these areas is not currently intercepted by drains, but instead falls westwards over the existing

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ground surface and is collected by a pipe which carries it to settlement ponds in the south-western corner of the site.

### Hardstanding Areas

- 2.12 At the present time, within the application area, there are permanent hardstanding areas located around the worked out quarry void. These hardstanding areas are not sealed and any rain falling over these areas either percolates downwards into the underlying soil / bedrock or runs-off over the existing ground surface, toward the existing quarry void. The unpaved hardstanding area will be used for the storage of any necessary site plant, equipment and/or materials required at the proposed waste recovery facility.

### Wheelwash and Weighbridge

- 2.13 In order to prevent transport of soil onto public roads, the existing wheelwash facility along the access road will be used by all traffic exiting the waste recovery facility. The location of the wheelwash facility is indicated in the site infrastructure layout shown in Figure 2-2.
- 2.14 In order to track and record the amount of material entering the application site, all HGV traffic importing soil and stones to the waste recovery facility will be directed across the existing weighbridge. Any separated non-inert construction and demolition waste dispatched (in skips) to other licensed waste disposal or recovery facilities will also be weighed out at the existing weighbridge. Records of imported soil tonnage will be maintained for waste auditing purposes.

### Laboratory Testing

- 2.15 Laboratory testing of soil, surface water, groundwater and soil water percolate (leachate) will be undertaken off-site at an ILAB / UKAS accredited geo-environmental laboratory. Any validation testing and laboratory testing, required to confirm inert classification of waste soil, will also be undertaken by the same laboratory. All samples taken on-site will be forwarded to the laboratory on the same day and test results will typically be forwarded to site in seven to ten working days.
- 2.16 It is not intended to store environmental monitoring equipment such as pH and temperature meters, conductivity meters, flow meters and dissolved oxygen meters at the site office. Any such equipment will be brought to site by an in-house and/or independent environmental consultant as and when required.

### Fuel and Oil Storage

- 2.17 Fuel for the proposed waste recovery facility will be stored in existing fuel storage tanks within the Old Quarry which are bunded to provide a storage volume equivalent to 110% of the tank storage volume. These tanks are constructed on a sealed concrete surface.

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- 2.18 Plant maintained on site will principally comprise mechanical excavators and/or bulldozers. Mobile plant and equipment undertaking quarry backfilling works will be refuelled from mobile, double skin fuel bowzers or at the existing refuelling area within the Old Quarry. Oil and lubricant changes and servicing of wheeled or tracked plant will be undertaken at the existing maintenance sheds. Re-fuelling of HGV trucks will take place on site at the auto-diesel tank located on a hardstanding surface to the rear of the existing maintenance shed (refer to Figure 2-2).
- 2.19 A small bunded area for waste oils is provided alongside the maintenance shed. Oil collected in tanks will be emptied at intervals by a licensed waste contractor and disposed off-site at a suitably licensed waste facility.

### Waste Inspection and Quarantine Area

- 2.20 Any imported waste which, it is suspected, may not comply with waste acceptance criteria for the waste recovery facility, will be transferred across the application site to a covered structure which is currently unused and located near aggregate storage bins in the south-western corner of the application site (refer to Figure 2-2). This shed is constructed over a sealed concrete slab. It will serve as the dedicated waste inspection and quarantine facility for the waste recovery operation.
- 2.21 As incipient rainfall will not come into contact with consignments of suspected contaminated waste stored at the covered shed, there is no requirement to install drainage infrastructure to provide for the separate collection and storage of potentially contaminated surface water run-off.
- 2.22 Visual inspection, in-situ monitoring and chemical testing of imported waste materials will be undertaken by the Applicant's site staff as inert waste materials are end-tipped at the active restoration area. If subsequently, there is any concern about the nature of the materials imported to site, they will be re-loaded onto HGV trucks and re-directed to the waste inspection and quarantine facility for closer examination and inspection. Detailed records of all such inspections will be kept.
- 2.23 Should inspection or testing of suspect soil waste at the inspection and quarantine facility identify any non-inert material which cannot be accepted or re-used in the restoration of this site, it will be segregated and temporarily stockpiled (quarantined) pending removal off-site by permitted waste collectors to a suitably licensed permitted waste disposal or recovery facility. Provision will also be made for temporary storage of any separated non-inert construction and demolition waste (including metal, timber, plastic etc.) prior to removal off-site to a licensed recovery facility.

### Traffic Control

- 2.24 Traffic to and from the proposed waste recovery facility will travel along the existing N11 National Primary Road from Enniscorthy to the north and Oilgate/ Wexford to the south. The junction with the local road leading to the application site includes a dedicated left turning lane for southbound traffic

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and a dedicated right turning lane for northbound traffic. Existing notices along the N11 provide advance warning to drivers that there is an existing quarry facility ahead.

- 2.25 Existing sightlines, road signage and road markings along the local road leading to/from the application site from/to the N11 will be upgraded in accordance with recommendations made by independent road safety auditors (in a report re-produced in Chapter 12 of this EIS). Internally, within the Brownswood facility, warning notices, direction signs and speed restriction signs will be implemented along paved and/or unpaved roads leading to and from the active restoration area and/or the waste inspection and quarantine area.
- 2.26 All HGV traffic entering and egressing the application site will be required to pass over the existing weighbridge and through the existing wheelwash facility, both of which are located along the access road and shown on Figure 2-2.

### Sewerage and Surface Water Drainage

- 2.27 Site staff at the Brownswood facility will use toilet, hand washing and welfare facilities provided at the existing site offices or staff canteen. The location of these facilities and the septic tanks servicing them are shown on the site services drawing in Figure 2-3
- 2.28 There is currently little or no surface water drainage infrastructure across the application site. Rain falling across the site either:
- percolates through unsealed ground into the underlying bedrock and ultimately intercepts groundwater, the upper surface of which lies at approximately the same level as the water in the worked out quarry void (once it is part of the groundwater body, the groundwater recharge follows regional groundwater flow toward the River Slaney);
  - falls westwards over sealed ground around the office building and is collected by a pipe which carries it to settlement ponds in the south-western corner of the site.
  - runs over unsealed ground into the existing pond in the worked out quarry void.

### Lowering of Water Level in Worked Out Quarry

- 2.29 Available survey data suggests that the depth of water in the groundwater pond within the worked out quarry void is up to 29m deep. Prior to commencement of backfilling, it will be necessary to dewater the quarry void by pumping. The water will be pumped to the top of the quarry via existing pipe networks to new settlement ponds or a mobile silt trap and oil interceptor (yet to be installed). Thereafter, it will flow (under gravity) to the existing water holding tank system before being recycled for concrete production or discharged via existing pipes and settlement ponds to a drainage channel / ditch leading to the River Slaney, see Figure 2-2. A discharge licence has been issued by Wexford County Council (Ref. SS/W024/81/99R1) in respect of the discharge of treated process water from the concrete production facility

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and some surface water runoff from the block yard, via existing settlement ponds, to the River Slaney.

- 2.30 Lowering of the existing groundwater pond will be undertaken over an extended period of time, most likely in the time following grant of planning permission and/or waste licence and commencement of quarry backfilling and restoration activities.

### *Surface Water Management at Waste Inspection and Quarantine Area*

- 2.31 As previously outlined, any suspect contaminated waste imported to the proposed waste recovery facility will be transferred to a covered shed in the south western corner of the application site. As the floor of the shed is sealed by a concrete slab and as no rainfall will come into contact with consignments of suspected contaminated waste, there is no requirement to install drainage infrastructure to provide for the separate collection and storage of potentially contaminated surface water run-off at the waste inspection and quarantine facility.

### *Surface Water Management during Quarry Backfilling*

- 2.32 As backfilling of the quarry proceeds over the short-to-medium term, the flow of surface water run-off into the quarry will be minimised by the construction of drainage channels around the edge of the quarry. These channels will collect and divert overground surface water flows to temporary infiltration ponds (excavated and constructed at the ground surface as required).
- 2.33 Groundwater intercepted by ongoing dewatering of the worked-out quarry will be pumped via proposed new settlement ponds / mobile silt trap and oil interceptor to the water holding tank and existing drainage network which leads to the discharge point to the River Slaney.
- 2.34 During the backfilling operations, the upper surface of the backfilled soil will be graded so as to ensure that surface water run-off falling over the quarry footprint falls to sumps at temporary low points within the worked-out quarry. These temporary sumps will effectively function as primary settlement ponds and water collecting in them will be pumped (causing minimum agitation to ponded water) to the proposed new settlement ponds / mobile silt trap and oil interceptor and from there, to the existing drainage network leading to the River Slaney discharge. Should they be necessary to achieve discharge emission standards, further temporary settlement ponds can be provided between the sumps and the proposed new settlement ponds / mobile silt trap and oil interceptor.
- 2.35 In the longer term, toward the end of the quarry backfilling works, ground contours within and around the backfilled quarry void will be modified to ensure that surface water run-off across the area is directed to a closed depression in the south-eastern corner of the backfilled area (refer to Figure 2-4). The restored ground level at this closed depression will be slightly below the natural groundwater level (at approximately 6-7mOD) and as such, it is expected that a small surface water pond will form within it. This shallow



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water feature will facilitate recharge of surface water runoff across the restored area to the groundwater body.

### Site Services

- 2.36 Electric power, lighting and heating are all currently provided via the electricity network to existing site offices and staff welfare facilities at Brownswood.
- 2.37 Site staff overseeing backfilling and recovery operations at the application site will be contactable by mobile phone. Site staff may also be contacted by fixed line telephone, fax and email facilities available at the site office.
- 2.38 A septic tank is installed adjacent to the existing site office (at the location indicated in Figure 2-3) and currently services toilets, wash hand basins and sink units in the office. Another septic tank is located south of the canteen and it services the canteen toilets, wash hand basins and sink units. The treated effluent from both septic tanks discharges to groundwater via designed percolation areas.
- 2.39 Potable water is provided to the site via a local authority water main. Apart from short lengths of water supply and sewerage pipes running to or from the existing site office, no other buried water or waste water service pipes are present at the application site.
- 2.40 Overhead electricity transmission cables run along the N11 immediately west of the application site and through agricultural lands immediately to the east. Electricity cables run from the N11 to the existing concrete plant and from there are carried underground to the transformer located to the east of the site office. Telephone cables run along the N11 and a connection is provided from there to the site office. The plan layout of known existing site services is shown on Figure 2-3.
- 2.41 Given the lack of combustible waste materials at this site, it is considered highly unlikely that a fire will break out during backfilling and recovery operations. A range of fire extinguishers (water, foam and CO<sub>2</sub>) will be kept at the site office to deal with any localised small scale fires which might occur. Additional fire-fighting capacity will be provided by storing water in a mobile bowser at the unsealed hardstand area around the waste inspection and quarantine area, and ultimately by local and regional fire fighting services should it be necessary.

### Plant Sheds and Equipment Compounds

- 2.42 Plant and equipment used in the quarry backfilling and soil recovery activities will be stored on the unsealed hardstand area to the south of the worked out quarry. Given the restricted access into the Old Quarry at Brownswood, it is not considered necessary to provide a secure compound for plant and equipment servicing the waste recovery facility.
- 2.43 Any plant or equipment requiring specialist repair or overhaul will be taken to the existing maintenance sheds within the existing quarry facility which are

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covered and have an impermeable floor. Small items of mobile or hand-held plant and equipment will also be stored as required in the maintenance shed.

### Site Accommodation

- 2.44 The existing site office and canteen at Brownswood will also serve the proposed inert waste recovery facility. All administration and management functions for the waste recovery facility will be based at the site office for the duration of site restoration and soil recovery activities. Staff changing, washing and cooking facilities will be provided at the separate canteen facility, located south of the concrete production area for the same duration.

### Recovery of Other Waste Streams

- 2.45 Any intermixed and/or non-inert construction and demolition waste inadvertently imported to site with the inert soil will be segregated and stored at the waste quarantine facility. Any occasional concrete or bricks imported to site will be separated and re-used on site for temporary haul road construction. Excess quantities of concrete, brick or other inert construction and demolition waste will be transferred to a local permitted construction and demolition waste recovery facility.
- 2.46 Any occasional metal waste will be separated and placed in a skip pending removal off site to a permitted (or licensed) waste recovery facility. Any other non-inert waste (timber, plastic etc.) will also be separated off and placed in a skip pending removal to a permitted (or licensed) waste disposal or recovery facility.
- 2.47 Only operators and/or haulage firms holding valid current waste collection permits will be engaged to transfer these waste streams to other waste disposal or recovery facilities.

## RESTORATION AND RECOVERY ACTIVITIES

- 2.48 The backfilling of the existing quarry void with inert soils and stone is deemed to constitute inert waste recovery through deposition for the purposes of land improvement or restoration. The proposed restoration scheme provides for direct use of the imported soil and stone, without further processing.

### Backfilling / Restoration Schedule

- 2.49 Backfilling of the application site will progress upwards from the former quarry floor and on completion; the restored landform will merge better into the surrounding pastoral landscape. An outline of the proposed restoration scheme and the final ground level contours are shown in Figure 2-4. 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 2-5.
- 2.50 Any temporary additional or replacement infrastructure required to facilitate the proposed waste activities will be constructed and/or installed prior to

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commencement of the backfilling operations. Backfilling of the existing void will be undertaken in a number of 'lifts' from the existing quarry floor. Each lift (or phase of backfilling) will be broadly defined by the depth and extent of existing benches within the worked-out quarry.

- 2.51 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 provides for strengthening of existing lightly wooded / vegetated areas on disturbed ground around the western boundary of the application area by planting of additional native woodland trees and shrubs.

### Method and Safety Statements for Construction Works

- 2.52 Any additional infrastructure required at the application site, over and above that which is currently in place, will be constructed in accordance with a detailed construction method statement and health and safety plan prepared by Roadstone Wood Ltd. and/or its external work Contractors.

### Material Requirements

- 2.53 The only material requirements in respect of the proposed restoration scheme are the inert soil, stone and rock to be used in backfilling the existing quarry void. Clean, inert soil and stone is likely to be sourced from greenfield development sites. At the present time, it is considered that the principal sources of such materials over the lifetime of the waste recovery facility will be the proposed M11 Gorey to Enniscorthy Motorway PPP scheme and the N11 Oilgate to Rosslare Harbour Road Improvement Scheme. The expected start date for construction of the M11 Motorway PPP Scheme is in 2012 / 2013. Although no start date is currently available for construction of the N11 Oilgate to Rosslare Harbour Scheme, it is likely to be at or near the end of this decade.
- 2.54 When the proposed waste recovery facility is operational, no construction and demolition waste (intermixed concrete, brick, pipes, metal, timber etc.) will be imported for backfilling purposes other than concrete, brick or secondary aggregate used in construction of temporary haul roads.
- 2.55 The total volume of backfilled soil required to create the restored landform is approximately 700,000m<sup>3</sup>. The backfilled materials will be subject to a degree of compactive effort in order to maximise the overall capacity of the proposed recovery facility. An average target compaction density of 1.9t/m<sup>3</sup> assumed for tonnage assessment purposes, gives an overall requirement for approximately 1,330,000 tonnes of inert soil and/or subsoil.
- 2.56 Aside from inert soil, a relatively small quantity of directly imported inert concrete or brick or recovered (i.e. processed) secondary aggregate will be required to construct temporary haul roads across and through the site as the backfilling works proceed.

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- 2.57 An estimate of the material quantities required to complete backfilling of the application site is provided below:

**Table 2-1  
Material Requirements**

Material	Quantity (tonnes)	Source
Inert subsoil, stones and rock	1,270,000	Imported
Stockpiled soil	38,000	In-situ
Concrete / Concrete Products Brick	2,000	Imported
Topsoil (150mm)	20,000	Imported

### Material Balance

- 2.58 Up to approximately 20,000m<sup>3</sup> (38,000 tonnes) of the inert materials required to backfill the quarry void may be sourced from existing soil stockpiles and/or screening berms around the application site. All remaining inert materials to be used in the restoration of the application site will be imported from external construction work sites.

### Stability Analyses

- 2.59 Visual inspection and available site investigation data indicates that the area to be backfilled is underlain by slightly weathered to fresh intact, competent bedrock. Backfilling of the quarry using in-situ and imported soils will not induce failure within the rock. The application of loading to the underlying rock will not exceed that which existed prior to extraction and, as such, no deep seated foundation failure is anticipated.
- 2.60 Temporary side slopes in backfilled soils (above formation level) will be graded at an angle no steeper than 35° (approximately 1v:1.5h), sufficient to ensure no large scale instability arises over the short-term. Ongoing assessment of slope stability will be undertaken at the application site as backfilling progresses.
- 2.61 In the longer-term, once backfilling and restoration works are complete, there will be no risk of instability as the site will be graded to a relatively flat, shallow slope. Permanent restored slopes on completion of the site backfilling and restoration activities will be everywhere shallower than 1v:2h (26°) and across much of the site, considerably shallower than this, typically 1v:4h (14°). Given that the bulk of the soil materials to be imported to site for restoration purposes are likely to be relatively competent glacial tills, no long-term slope instability is anticipated to occur. This assertion is made in view of the fact that glacial till slopes of 1v:2h are routinely constructed for infrastructure projects across Ireland and are demonstrably stable.

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### Importation of Construction Materials

- 2.62 Of the construction materials required to construct site infrastructure, hardcore, drainage stone and concrete will be either be sourced from aggregate sourced from in-situ stockpiles or from Murphy's Quarry immediately to the south. Other materials, principally drainage infrastructure will be sourced from specialist suppliers and installed prior to commencement of backfilling activities.

### Removal of Materials Off-Site

- 2.63 Any non-hazardous or hazardous wastes identified within the inert soils imported for restoration purposes will be separated, transferred to the waste inspection and quarantine facility pending removal to suitably licensed waste disposal or recovery facilities by permitted waste collectors. The Applicant anticipates, on the basis of its experience operating similar waste recovery facilities in the Greater Dublin Area for several years, and that these waste quantities will be very low.
- 2.64 Small volumes of inert concrete, block or brick imported to site may be re-used in temporary haul road construction at the restoration site. Excess quantities of concrete and bricks, timber, metal, pipes, tiles or other construction and demolition waste inadvertently brought to site will be separated using mechanical plant and stockpiled at the waste quarantine area pending transfer to a permitted construction and demolition waste recovery site. Metal waste will be placed in a skip pending removal off-site to a permitted (or licensed) waste recovery facility. Other non-inert wastes (timber, plastic etc.) will be placed in a skip pending removal off-site by permitted waste collectors to a permitted (or licensed) waste disposal or recovery facility.

### Formation Levels and Gradients

- 2.65 The quarry void will be backfilled in several phases working upwards from the existing quarry floor level at c. -22mOD. Final formation levels on completion of the backfilling and restoration works vary on account of the sloped nature of the restored landform, from approximately 28mOD at the northern end to 6mOD below the surface water pond in the south-eastern corner (refer to Figure 2-4).
- 2.66 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 worked-out quarry void being backfilled. Water will be pumped from these temporary sumps via the proposed settlement tanks / mobile silt trap and oil interceptor to the water holding tank and the existing drainage network leading to the River Slaney discharge.
- 2.67 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

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stability. On completion, final gradients across the restored ground surface will be relatively shallow, typically of the order of 1v:4v or less.

### Bund Design

- 2.68 Given the inert nature of the materials being used to restore the application site, no provision is made in the restoration scheme for construction of perimeter / containment bunds at the base or sides of the backfilled area.

### Capacity and Lifespan

- 2.69 The estimated volume of material to be placed at the application site is approximately 700,000m<sup>3</sup>. Of this, a relatively small volume, estimated at no more than 20,000m<sup>3</sup> will be sourced from stockpiles, perimeter screening berms and general site levelling works required for the final restoration of the quarry. The remainder of the material will need to be imported.

- 2.70 The duration of backfilling activities at the quarry void will largely be dictated by the rate at which approximately 680,000m<sup>3</sup> (1,290,000 tonnes) of externally sourced inert soil and stone is imported to the site. There are many factors which will influence this, including, but not limited to the:

- Availability of acceptable inert materials at construction sites;
- Prevailing economic climate;
- Construction industry output;
- Distance of construction projects from the facility (and scale of activity);
- Logistical / programming constraints at sites generating inert materials;
- Climatic conditions (reduced construction activity in wet weather);
- Disruptions along the existing local and national road network;
- Capacity of earthmoving plant to place and compact materials; and
- Waste inspection / weighbridge processing constraints.

- 2.71 In light of these and other variables, calculation of intake rates and duration is not an exact science. Over the short-to-medium term (the initial 5 years of operation), it is hoped that a large proportion of inert soil could be sourced from construction of the M11 Gorey to Eniscorthy Motorway PPP scheme over a three year period from 2012 /2013. Thereafter, in the medium-to-long term, the construction of the proposed N11 Oilgate to Rosslare Harbour Scheme, could also generate significant volumes of material for use in the restoration works if required.

- 2.72 At the present time, assuming 50 working weeks in each calendar year, 5.5 days per working week and 12 hours per working day, it is estimated that the rate of importation of inert materials to the quarry void could average around 200,000 tonnes per annum and increase to a maximum of 400,000 tonnes per annum should a large scale infrastructure or development project proceed at some stage within the surrounding catchment area during its operational life. If an average importation rate of 200,000 tonnes/year is assumed, the expected operational life of the facility would be 6.5 years. If however the rate of backfilling is less, it could operate for up to 20 years.

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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- 2.73 In view of the difficult economic climate which exists at the present time, intake tonnages may be lower over the initial few years (2011-2015) and the over that time, the facility may only operate on an intermittent or project-specific basis.

### Basal and Side Slope Liner Design

- 2.74 Given the inert nature of the materials being used to restore the application site, no provision is made for installation of a basal liner or side slope liners at this facility, nor is any provision made for a drainage blanket at the base of the backfilled materials. At the present time, surface water and groundwater forms a large pond within the existing worked out quarry void. Prior to commencement of site operations and backfilling of inert soil over the quarry floor, any ponded water will be removed by pumping.

### Leachate Management System

- 2.75 Given the inert nature of the materials being used to restore the application site, no provision is made for a leachate management system at this facility.

### Landfill Gas Management System

- 2.76 Given the inert nature of the materials being used to restore the application site, no provision is made for a leachate management system at this facility.

### Capping and Decommissioning

- 2.77 The application site will be restored on completion of backfilling operations and will merge better into the surrounding pastoral landscape.
- 2.78 During and after the final phase of the quarry backfilling works, ground contours and/or drainage channels will be modified as necessary to ensure that surface water run-off across the restored site is directed to a surface water pond in a closed depression in the south-eastern corner of the waste application area or alternatively into existing surface water drainage infrastructure or boundary ditches.
- 2.79 A cover layer comprising 150mm of topsoil and approximately 350mm of subsoil shall be placed over the inert backfilled materials on completion of the backfilling activities. This will then be planted with grass in order to promote stability and minimise soil erosion and dust generation. Thereafter the lands will be progressively returned to use as agricultural grassland. The proposed restoration scheme provides for strengthening of the existing lightly wooded / vegetated areas on disturbed ground around the western boundary of the application area by planting additional native woodland trees and shrubs.
- 2.80 Topsoil and subsoil will be imported to the site on a continual basis and shall not be used immediately in general backfilling of the worked-out quarry. The topsoil and subsoil shall 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

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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restoration scheme. These materials shall be stored separately within the application site, away from the active backfilling area and in such location and manner as not to create any temporary adverse visual impact or dust nuisance.

- 2.81 On completion of the quarry backfilling and restoration works, all mobile plant and equipment associated with the waste recovery activities will be removed off-site. Any dedicated temporary site accommodation, infrastructure and/or services will also be progressively decommissioned and/or removed off-site. Any elements of shared infrastructure used by adjacent aggregate processing or added-value activities will remain in place.
- 2.82 Wherever necessary, sealed concrete surfaces will be broken up using a hydraulic breaker and transferred-off site to a local permitted construction and demolition waste recovery facility.

### WASTE ACCEPTANCE AND HANDLING

- 2.83 Only inert, uncontaminated soil and stones shall be accepted at the application site. Inert materials shall be accepted at the site between 06.00 hours and 18.00hours each weekday and 07.00hours to 16.00hours on Saturday. No materials shall be accepted at any other time including Sundays and Public Holidays.
- 2.84 Insofar as practicable, the source of each consignment of soil imported to site for backfilling purposes shall be identified in advance and subject to basic characterisation testing to confirm that soils at that location can be classified as inert. Ideally, characterisation testing will be undertaken in advance by Clients and/or Contractors forwarding soil to the application site.
- 2.85 Operating procedures at the waste recovery facility will require all soil and stones forwarded for backfilling / recovery purposes to be pre-sorted at source, inert and largely free of construction or demolition waste or any non-hazardous / hazardous domestic, commercial or industrial wastes. Any consignments forwarded to site with these materials intermixed in them will be rejected and directed to leave the site.
- 2.86 All inert soils imported to the site will be unloaded (end-tipped) from trucks at the active backfilling area. It will be visually inspected by site personnel at that point to ensure that there is no intermixed construction or demolition, non-hazardous or hazardous waste placed within it.
- 2.87 If, following acceptance of waste, there is any subsequent grounds for concern about the nature of the wastes imported to site, it will be segregated and transferred to the waste inspection and quarantine area for closer inspection and classification. A detailed record will be kept of all such inspections.
- 2.88 Should detailed inspection and/or subsequent testing indicate that the segregated materials are non-inert and cannot be accepted and used for restoration purposes at this site, they will be removed off-site by permitted



## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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waste collectors to a suitably permitted (or licensed) waste disposal or recovery facility, as appropriate.

- 2.89 Any excessive quantities of inert construction and demolition wastes (most notably concrete and brick) imported to the site will be segregated and either re-used in temporary haul road construction around the application site or stockpiled at the waste quarantine area pending removal off-site to a local permitted construction and demolition waste recovery facility.
- 2.90 Any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) inadvertently imported to the site will be separated out and temporarily stored in skips at the waste quarantine area prior to removal off-site to appropriately permitted (or licensed) waste disposal or recovery facilities.
- 2.91 A representative sample shall be taken from one in every 500 loads of inert soil accepted at the facility and subjected to compliance testing which is less extensive than characterisation testing and focuses on key contaminant indicators. These data shall be used to confirm that the accepted soils are inert and comply with acceptance criteria. Compliance testing shall be undertaken by the Applicant.
- 2.92 An outline Waste Handling and Acceptance Plan for this waste recovery facility is provided in Appendix 2-1 of this Environmental Impact Statement.

## ENVIRONMENTAL NUISANCE CONTROL

### General

- 2.93 Backfilling and restoration activities at the application site will require a number of environmental controls to eliminate or minimise the potential nuisance to the public arising from the importation, placement and compaction of inert soils. The planned environmental control measures are outlined in detail in the following sections.
- 2.94 The quarry backfilling and restoration works to be undertaken at the application site will ultimately be regulated by conditions attaching to any grant of planning permission issued by Wexford County Council or waste recovery licence issued by the Environmental Protection Agency (EPA). Any additional control measures required by these consents, in addition to those outlined below, will also be implemented.

### Bird Control

- 2.95 As the soil and stones being placed / recovered at the application site are free of putrescible (food / kitchen) waste, site activities are unlikely to attract scavenging birds such as gulls and crows for the duration of the restoration works. Accordingly, it is not intended to implement any specific bird control measures at the site.
- 2.96 In the unlikely event that any putrescible waste is identified among imported materials, it shall be immediately removed to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

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### Dust Control

- 2.97 In dry, windy weather conditions, the quarry backfilling and restoration activities may give rise to dust blows across, and possibly beyond the application site. In order to control dust emissions, the following measures will be implemented:-
- water will be sprayed from the existing water sprinkler system established across the site
  - if and where necessary, water will also be sprayed from a tractor drawn bowser on dry exposed surfaces (roads and hardstand areas)
  - dust blows will be partially screened by the quarry side walls as backfilling progresses upwards. As the level of the backfilled materials approaches final surface levels, the site will be seeded with grass on a phased basis, as soon as practicable after placement of cover soils (subsoil and topsoil). This will help to minimise soil erosion and potential dust emissions;
  - the area of bare or exposed soils will, insofar as practicable, be kept to a minimum. Consideration will be given to establishing temporary vegetation cover over temporary exposed soil surfaces and stockpiles pending backfilling and restoration to final ground levels;
  - all HGV's exiting the site shall be routed through the existing wheelwash facility (refer to Figure 2-2) in order to minimise transport of fines by HGVs on the public road network;
  - stockpiling of imported soil materials will be minimized. Soils will ideally be placed and compacted in-situ immediately after being imported to site and end tipped. If and when temporary stockpiling of soil is required, it will be placed as far as practicable from nearby residences.
- 2.98 The amount of dust or fines carried onto the public road network will be further reduced by periodic sweeping of internal paved site roads and the existing public roads.

### Traffic Control

- 2.99 The proposed backfilling operations at the Brownswood inert waste recovery facility will entail importation of 1,290,000 tonnes of material. This translates to approximately 64,500 HGV movements (at 20 tonnes per load) to fill the quarry void. Roadstone Wood Ltd has defined a relatively optimistic scenario where it would be possible to backfill the void at the Old Quarry over a 6½ year period. Although it is likely that it could take longer to backfill the quarry void, as a result of recent scaling back in construction activity, the 6½ year scenario is considered sufficiently onerous for modelling and assessment of traffic impacts.
- 2.100 Assuming an annual average intake of up to 200,000 tonnes / year corresponds to an average hourly trip rate of three HGV movements into and three HGV movements out of the quarry per hour. Should the rate of backfilling accelerate to 400,000 tonnes / year on account of a local large scale development or infrastructure project (such as the M11 Motorway PPP Scheme) , the hourly HGV trip rate could increase to approximately six HGV movements into and six HGV movements out of the quarry per hour.

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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- 2.101 As indicated in Chapter 12 of this Environmental Impact Statement, operation of the proposed waste recovery facility will have no adverse impact on traffic flow along the existing N11 National Primary Road *in an optimistic case scenario*.
- 2.102 Any roadside vegetation which could potentially impact on visibility splays will be cut back as required in order to maintain visibility for HGV traffic exiting the proposed waste recovery facility. Existing road signage and road markings along the local road leading to/from the application site from/to the N11 will be upgraded and maintained as required. In order to minimise dirt and debris from being transferred from the waste recovery facility onto the public road network, all traffic exiting the facility will be routed through the existing wheelwash facility located along the road leading out of the facility.

### Litter Control

- 2.103 As the materials being placed or recovered at this site will be largely free of litter, the site restoration activities are unlikely to give rise to problems with windblown litter. Accordingly, it is not intended to implement any specific litter control measures at the site.
- 2.104 In the unlikely event that any litter waste is identified among imported materials, it shall be immediately removed to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

### Odour Control

- 2.105 As the soil and stones being placed / recovered at this site are not biodegradable and do not therefore emit odourous gases, site activities will not give rise to odour nuisance. Accordingly, it is not intended to implement any specific odour control measures at the site.
- 2.106 In the unlikely event that any biodegradable waste is identified among imported materials, it shall be immediately removed to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

### Vermin Control

- 2.107 As the soils and stones being placed / recovered at this site are free of putrescible (food / kitchen) waste, site activities are unlikely to attract vermin (rats) for the duration of the restoration works. Accordingly, no specific vermin control measures shall be implemented at the site.
- 2.108 In the unlikely event that any putrescible waste is identified among imported materials, it shall be immediately transferred to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

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### Fire Control

- 2.109 As the soil and stones being placed / recovered at this site are free of flammable materials and biodegradable waste which could create a fire or explosion risk, site activities will not present a fire risk for the duration of the restoration works. Accordingly, no specific fire control measures shall be implemented at the site.
- 2.110 Notwithstanding this, the following operational practices will be implemented in order to prevent fire at the application site:
- (i) smoking at the application site and at the site office or canteen will be prohibited
  - (ii) any biodegradable or flammable waste included in materials imported to site shall be immediately transferred to the waste quarantine area pending removal off-site to a licensed waste disposal or recovery facility
  - (iii) plant and equipment will be removed if they exhibit signs of overheating etc.
- 2.111 In the unlikely event that a fire does occur, the local fire station in Enniscorthy will be contacted and emergency response procedures will be implemented. Fire extinguishers (water and foam) will be provided at the site office to deal with any small outbreaks which may occur.

### ENVIRONMENTAL MONITORING

#### General

- 2.112 There is an established programme of environmental monitoring in connection with existing ancillary processes across the Old Quarry site. This environmental monitoring programme complies with the requirements of existing planning permission / quarry registration conditions issued by Wexford County Council.
- 2.113 In addition, Roadstone Wood Ltd. operates an environmental management programme to monitor and manage emissions from established operations. Although limit values for environmental emissions arising from these activities are identified by existing consents, it is expected that such limits could be reviewed / revised by the EPA were it to issue a waste licence in respect of the proposed inert waste recovery facility.
- 2.114 Environmental sampling, monitoring and testing will generally be undertaken by the Applicant's in-house environmental staff as required. Records of environmental monitoring and testing will be maintained on-site and forwarded to the EPA as required under the terms of the waste licence.

#### Dust Monitoring

- 2.115 Dust emissions associated with concrete production activities within Roadstone Wood Ltd.'s landholding are monitored on a quarterly (ie. three monthly) basis using Bergerhoff dust gauges at 2 No. locations (designated

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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D1 and D2) close to the site boundary, shown on Figure 2-6. These gauges are located close to emission sources within the landholding and represent an upper bound on dust emission levels from established site activities.

- 2.116 The two existing dust monitoring stations will remain in place and one additional dedicated monitoring station (designated D3) will be established for the proposed waste recovery activity. These will be monitored for the duration of the site backfilling and restoration activities and for a short duration thereafter.

### Ecological Monitoring

- 2.117 Given the presence of invasive species (principally Himalayan balsam and Japanese knotweed) at the application site and the requirement to eradicate or control the potential spread of these species by waste recovery activity, regular (annual) site visits and inspections will be undertaken by a consultant ecologist to delineate exclusion zones (where no site activity or ground disturbance will occur) and make recommendations on control methods and treatment. In the absence of any rare or protected species within the application site, there is no requirement for ecological monitoring of other species during quarry backfilling and restoration operations.

### Groundwater Monitoring

- 2.118 Four groundwater monitoring wells have recently been installed across the Old Quarry at Brownswood in order to establish baseline groundwater quality across the site.
- 2.119 Groundwater sampling and testing will be undertaken on a bi-annual basis at the 4 No. groundwater monitoring wells. Groundwater levels will also be recorded on a bi-annual basis. The location of the existing groundwater monitoring wells is indicated in Figure 2-6.
- 2.120 Groundwater samples are currently tested for a range of physical and chemical parameters in order to assess water quality and detect possible contamination at the site. Further detail on these data is presented in Section 6 of this EIS.
- 2.121 The groundwater monitoring regime will remain in place for the duration of the quarry backfilling and restoration works. Regular groundwater sampling and monitoring will be undertaken as long as backfilling activities continue and for a short period thereafter.

### Landfill Gas Monitoring

- 2.122 In the absence of biodegradable waste amongst the inert materials used to backfill and restore the application site, no landfill gas can be generated and accordingly no provision has been made for landfill gas monitoring at this facility.

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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### Leachate Monitoring

- 2.123 In the absence of biodegradable waste amongst the inert materials used to backfill and restore the application site, no leachate can be generated and accordingly no provision has been made for leachate monitoring at this facility.

### Meteorological Monitoring

- 2.124 At the present time, no meteorological monitoring is undertaken at the application site. It is understood that temperature, rainfall, sunshine, wind speed and direction are recorded at the weather station at Johnstown Castle, near Wexford town, approximately 20km south of the application site. It is currently envisaged that representative meteorological data will be acquired from the existing weather station at Johnstown Castle, as and if required.

### Noise Monitoring

- 2.125 Noise emissions associated with concrete production activities within Roadstone Wood Ltd.'s landholding are monitored on a quarterly (ie. three monthly) basis at ~~32~~ No. locations (designated N1, ~~and N2~~ and N3) close to the site boundary.
- 2.126 The noise monitoring regime will continue for the duration of the proposed quarry backfilling activities and for a short period thereafter. ~~In addition, another noise monitoring station (designated N3) will be established, close to an existing residential property.~~
- 2.127 Noise monitoring will be undertaken using a Larson Davis Model 824 Sound Level Meter, calibrated using a Larson Davies Acoustic Calibrator CAL 200 (or equivalent). Noise monitoring locations are indicated in Figure 2-6.

### Odour Monitoring

- 2.128 As the materials being placed or recovered at this site are not biodegradable and do not therefore emit odourous gases, the site restoration and recovery activities will not give rise to odour nuisance. Accordingly, no provision has been made for odour monitoring at this facility.
- 2.129 Site staff will report and record any odour emissions at the site in the highly unlikely event that a complaint is made about odours emanating from the site.

### Surface Water Monitoring

- 2.130 Surface water sampling and testing will be undertaken on a bi-annual basis (i.e. six monthly) basis at any temporary surface water features which may either be created or form naturally at low points within the application site.

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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- 2.131 Surface water sampling and testing will also be undertaken at the discharge from the proposed new settlement ponds / mobile silt trap and oil interceptor, immediately upstream of its connection to the water holding tank and the existing drainage network which leads to the River Slaney discharge. The surface water monitoring locations across the application site are shown on Figure 2-6.
- 2.132 Surface water samples will be tested for a wide range of physical and chemical parameters in order to assess water quality and detect possible contamination at the site. Further detail is presented in Section 6 of this Environmental Impact Statement.
- 2.133 The surface water monitoring regime will remain in place for the duration of the quarry backfilling and restoration works and for a short period thereafter.

### Stability and Settlement Monitoring

- 2.134 On completion of the final phase of restoration, a number of fixed stations will be set into the ground surface across the restored area and will subsequently be surveyed annually, as and if required by the grant of planning permission / waste licence. This monitoring will facilitate assessment of the magnitude of settlement and instability (lateral movement), if any, which may arise on completion of the site restoration works.
- 2.135 Temporary slopes in the backfilled soils will be visually inspected on an ongoing basis, at least once a month, by site staff and a record will be kept of same. Should these inspections give cause for concern, an inspection of the affected area will be undertaken by a qualified geotechnical engineer and measures will be implemented to address any instability identified.
- 2.136 Following completion of restoration works and closure of the facility, stability and settlement monitoring will be undertaken as and if required by the grant of planning permission / waste licence.

### FINAL RESTORATION AND AFTERCARE

- 2.137 The principal activity which will be undertaken at the application site is backfilling and restoration of lands within an existing hard rock quarry. As previously noted, the application site will be restored to give a landform which merges into the surrounding agricultural landscape, refer to the proposed site restoration plan provided in Figure 2-4.
- 2.138 A cover layer comprising 150mm of topsoil and approximately 350mm of subsoil shall be placed over the inert backfilled materials on completion of the backfilling activities. This will then be planted with grass in order to promote stability and minimise soil erosion and dust generation. Thereafter the lands will be progressively returned to use as agricultural grassland. The proposed restoration scheme also envisages that existing lightly wooded / vegetated areas on disturbed ground around the western boundary of the application area will be strengthened by additional planting of native woodland trees and shrubs.

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- 2.139 On completion, the final landform will be modified as necessary to ensure that surface water run-off across the site is directed to a surface water pond in the closed depression in the south-eastern corner of the waste application area. Alternatively, surface water run-off will be directed to existing surface water drainage infrastructure or boundary ditches.
- 2.140 On completion, all mobile plant and equipment associated with the waste recovery activities will be removed off-site. Any dedicated temporary site accommodation, infrastructure and/or services will also be progressively decommissioned and/or removed off-site.
- 2.141 Wherever necessary, sealed concrete surfaces will be broken up using a hydraulic breaker and transferred-off site to a local permitted construction and demolition waste recovery facility.
- 2.142 Following final completion of the restoration and site decommissioning works, provision will be made for further, short-term (<1year) environmental monitoring of air, surface water and groundwater.

### CONTINGENCY ARRANGEMENTS

- 2.143 Details of existing contingency arrangements at the application site are provided in the contingency plan, a copy of which is provided in Appendix 2-2 of this report.

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# DESCRIPTION OF WASTE RECOVERY FACILITY 2

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## FIGURES

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# DESCRIPTION OF WASTE RECOVERY FACILITY 2

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## APPENDIX 2-1 WASTE ACCEPTANCE AND HANDLING PLAN

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# DESCRIPTION OF WASTE RECOVERY FACILITY 2

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## APPENDIX 2-2 CONTINGENCY PLAN

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