ROADSTONE DUBLIN LIMITED

INERT WASTE RECOVERY FACILITY

AT FASSAROE, BRAY, CO. WICKLOW

ENVIRONMENTAL IMPACT STATEMENT

NON-TECHNICAL SUMMARY

APRIL 2009

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1.0 INTRODUCTION

This Environmental Impact Statement (EIS) Non-Technical Summary provides supporting information to accompany a Waste Licence Application (WLA) to the Environmental Protection Agency (EPA) by Roadstone Dublin for continued operation of its existing construction and demolition waste recycling facility at Fassaroe, Bray, Co. Wicklow and the backfilling of the adjoining, worked out quarry void using imported and site-won inert soils. The principal waste activities at the site comprise

(i) backfilling and restoration of a former quarry using imported inert soil and stone and
(ii) recycling of construction and demolition waste.

The location of the site is indicated on an extract from the 1:50,000 scale Ordnance Survey Discovery series map of the area, reproduced as Figure 1. At the present time, traffic access to the site and is via the Fassaroe Junction on the N11 National Primary Road, along a section of local public road (Kilbride Road) and a 930m long private road (Fassaroe Avenue).

The amount of inert material to be imported and placed at the facility over its operational life is 750,000 tonnes (approximately 375,000m^3), of which approximately 620,000 tonnes must be imported. Up to an estimated 20,000 tonnes of inert construction and demolition waste will also be recovered at the facility on an annual basis. Inert materials to be placed and recovered at the facility will be sourced from construction and/or demolition sites where prior testing has indicated that no soil or material contamination is present.

The application area comprises a worked out quarry and surrounding land measuring covering an area of approximately 21.4hectares (51.5acres). Roadstone Dublin obtained planning permission for the existing construction and demolition waste facility at the application site in July 2004 (Wicklow County Council Planning Ref. No. 03/9501). The company also obtained waste permits in respect of these activities from Wicklow County Council (Ref. No. ESS/15/8/12) for successive three years periods from 2004. A grant planning permission to backfill and restore the quarry void was issued by Wicklow County Council on 4 March 2009 (Planning Register Ref. No. 08/1258).

The proposed recovery of inert soils at the former sand and gravel quarry at Fassaroe will eventually result in complete backfilling of a large open void, restore the landscape to its original pre-extraction condition and provide for better protection of the underlying groundwater resource, which is currently classified as 'highly vulnerable' due to the absence of any protective soil cover. The scheme will also provide for future development of the lands which are zoned for mixed use development in the Draft Bray Environs Local Area Plan 2009-2015.

2 RESTORATION SCHEME

2.1 Principal Elements

The proposed inert waste recovery facility at Fassaroe provides for

(i) Use of imported inert natural materials, principally excess soil, stones and/or broken rock excavated on construction sites, to backfill and restore a large existing void created by previous extraction of sand and gravel
(ii) Recovery of imported inert construction materials, including stones, granular fill, concrete, blocks, bricks and ceramic tile, using crushing and screening equipment to generate secondary (recycled) aggregate
(iii) 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
(iv) Use of secondary aggregate to construct internal haul roads within and across the application site
(v) Export of secondary aggregate off-site for re-use by others
(vi) Phased restoration of the backfilled void (including placement of cover soils and seeding) and return to use as agricultural grassland
(vii) Temporary stockpiling of topsoil and subsoil pending re-use as cover material for phased restoration of the site
(viii) Environmental monitoring of noise, dust, surface water and groundwater for the duration of the site restoration works.

2.2 Site Infrastructure

Inert materials are accepted at the site between 08.00 hours and 18.00hours each weekday and 08.00hours to 13.00hours on Saturday. Vehicular access to Roadstone Dublin's landholding and the waste recovery facility can only be obtained via Fassaroe Avenue. All vehicular traffic arriving must stop at the weighbridge in front of the existing site office before gaining access to the waste recovery facility. Within the site, trucks travel to and from the active restoration and recycling areas over a network of paved and unpaved roads. Trucks must pass through a new wheelwash facility before exiting the site.

Fuel for site plant and equipment will be stored at the existing maintenance sheds on Roadstone Dublin's landholding and/or in mobile double skin bowsers. HGV trucks can refuel at the existing refuelling facilities adjacent to the existing concrete production yard. Oil and lubricant changes for both wheeled and tracked plant will be undertaken at existing maintenance sheds.

A temporary portacabin office will be provided at the waste recovery facility, at the location shown on Figure 2. Staff employed at the facility will share established staff facilities with other Roadstone Dublin staff employed the concrete production and aggregate processing facilities which are located on the same landholding.

A waste inspection and quarantine area will be established at an existing A-frame shed at the concrete production yard which is constructed over a sealed concrete slab. Visual inspection, in-situ monitoring and testing of imported waste materials will be undertaken by Roadstone Dublin staff as inert waste materials are end-tipped, spread and placed at the active restoration area. Should there be any concern about the nature of the soil materials being end-tipped it will be loaded onto a truck and re-directed to the waste inspection and quarantine area for closer examination and inspection. Any suspect or unacceptable waste identified will be placed in skips and covered with plastic sheeting in order to minimise potential contamination of surface water run-off.

A temporary hardstanding area constructed of recycled aggregate is currently provided on the western side of the worked out quarry and is currently used for recovery of imported inert construction and demolition waste. Construction and demolition waste is recycled by passing it through a mobile crushing plant in order to create a particulate, granular fill which may exported off-site as secondary aggregate or alternatively may be used to construct hardstanding areas or temporary haul roads within the Fassaroe complex. Provision will be made for storage of any separated non-inert construction and demolition waste (including metal, timber, plastic etc.) at the waste inspection area prior to removal off-site to a licensed recovery facility.

Most rain falling over the site will percolate through backfilled or natural soils to the underlying groundwater table. It is not intended to provide any site drainage infrastructure to collect surface water run-off. Any surface water run-off at the site will be allowed to run over the existing ground surface to collect in existing surface ponds before ultimate discharge to the underlying groundwater table.

2.3 Waste Recovery Activities

Backfilling of the former quarry will proceed in several phases and on completion, will merge into the surrounding landscape. A summary of the proposed phasing and the final ground level contours are shown in Figure 3.

It is currently envisaged that backfilling of the existing void will proceed from the northern to the southern end of the quarry, in 4 No. separate phases. Any temporary additional or replacement infrastructure required to facilitate the proposed works will be constructed and/or installed at the outset of the first phase of backfilling. On completion of each restoration phase, a cover layer of subsoil and topsoil will be placed and graded across the backfilled soil. This will then be planted with grass in order to promote stability and minimise soil erosion and dust generation.

Near the end of the fourth (and final) phase of the quarry backfilling works, all relevant plant and equipment will be removed off site and any temporary infrastructure and/or services will be progressively removed or decommissioned. At the end of the backfilling operation, the ground

surface will be profiled to give a domed shape to facilitate surface water run-off into in-situ sand and gravel soils beyond the backfilled area. The final landform will be similar to that existed prior to extraction of sand and gravel.

It is estimated that the rate of importation of inert materials to the quarry void could vary between 100,000 tonnes and 550,000 tonnes per annum. The corresponding duration of backfilling activities could therefore vary from just over 1year to 6years. Assuming an average, relatively modest importation rate of 200,000 tonnes/year, the current best estimate of the life of the facility is just over 3 years.

2.4 Environmental Monitoring

There is an established programme of environmental monitoring at the site which records emissions from the established construction and demolition waste recovery facility and the adjacent concrete production and aggregate processing facilities. It is envisaged that this programme will be expanded in accordance with requirements set by the waste licence issued by the Environmental Protection Agency. Environmental sampling, monitoring and testing for noise, dust, surface water and groundwater will be undertaken by in-house staff and/or independent external consultants as required. Records of environmental monitoring and testing will be maintained on-site and will be forwarded to the EPA / Wicklow County Council as required.

3 HUMAN BEINGS

Waste recovery, aggregate and concrete production activities have been established at Roadstone Dublin's existing landholding for some period of time. The impacts of a temporary intensification in waste recovery activities on human beings, principally those arising from backfilling of the former quarry, will lead to a marginal increase in noise and/or dust levels at the 9 residences closest to the site. These impacts are most likely to arise when backfilling and restoration works are being undertaken at the northern end of the worked out quarry. There will be negligible impact on much of the other residential housing in the locality.

The importation of inert / construction and demolition materials via the existing local road network may also have temporary adverse implications for existing traffic levels or the safety of traffic movements along Fassaroe Avenue. A number of measures proposed to enhance traffic flow and safety impacts will be (and recently have been) implemented along Fassaroe Avenue.

The principal long-term impact of backfilling the existing void to former ground level will be the removal of an unsightly feature in the landscape and reinstatement of the site to its pre-extraction landform. At the end of the operational life of the backfilling operation, there will be a reduction in traffic movements over the local road network leading to and from the site, with consequent improvement of the human environment.

4 ECOLOGY

Backfilling of the existing void space will result in the loss of any flora and disturbance of any fauna that have naturally colonised the worked-out pit, most notably around the south-western corner of the northern pond and the hummocky soils mounds on the eastern side. It will also result in the loss of groundwater ponds on the floor of the former gravel quarry which could provide a wetland habitat to wintering birds or breeding birds during summer periods.

Hedgerows above the northern face of the former quarry and along the northern perimeter act as a visual and acoustic barrier and will remain in place for the duration of waste recovery activity at the application site. If hedgerows are covered in dust as a result of placement, spreading and compaction of the inert soils and stones or recovery of C&D waste, it may impede their growth. A number of mitigation measures are to be implemented to eliminate and/or minimise the impact of waste recovery activities on flora and fauna at the site.

As backfilling works are completed, the site will be progressively restored to agricultural pasture lands. This will be in keeping with the surrounding area which is composed predominately of improved agricultural land. This process will result in the former sand and gravel quarry being returned to its original land use. The arable farmland which is located within and immediately beyond the boundary of the application site will not be directly affected by waste recovery activity.

5 SOILS AND GEOLOGY

Topsoil (the upper layer of soil capable of sustaining vegetation and crop growth) was previously stripped from the site in order to facilitate the development of the former quarry and is currently stockpiled in hummocky mounds along the eastern side of the existing quarry void. Soils in the vicinity of the site typically have a wide use range of agricultural uses, principally tillage.

Published geological maps indicate that the natural subsoils at the site principally comprise sand and gravel of limestone and that the underlying rock comprises slates and sandstones. The available ground investigation information indicates that the general subsoil profile across the site comprises varying depths of filled ground over sand with clay layers. There is no evidence of soil contamination at the site.

The Geological Survey of Ireland has confirmed that there are no proposed geological National Heritage (pNHA) sites in the vicinity of the site. Although no site of geological or geomorphological interest is identified within Roadstone Dublin's landholding in the Wicklow County Development Plan (2004 to 2010), one is identified north-west of Roadstone Dublin's landholding, around the Fassaroe junction on the N11 National Primary Road.

The backfilling and restoration of the site to former ground level will eliminate ongoing soil erosion and the risk of potential instability in slopes across the site. It will eliminate existing soil exposures, though these are considered to be of limited geological interest value. It will also provide for the re-establishment of agricultural soils across the site.

The importation of soil, stones and inert construction and demolition waste introduces a risk of potential soil contamination at the site. Assuming best practice management procedures are employed in operating the facility, this risk of soil contamination is considered to be small.

6 WATER

Prior to its development as a quarry, the site was located on lime rich soils which were generally well draining. The subsoils occurring across and beneath the entire site comprise sand and gravel derived (mainly) from limestone. The sands and gravels extend across much of the Fassaroe area, are typically in excess of 20m thick and are classified as a regionally important aquifer.

The lack of surface water features across the area, indicates that the sand and gravel aquifer has a high level of recharge (infiltration by rainfall) and a high permeability. Groundwater is classified as highly vulnerable because permeable strata are located close to the ground surface and there is potential for rapid movement of water through the ground.

The deep level groundwater aquifer in the sand and gravel aquifer has not been intercepted by the former quarry workings. There are a number of surface water ponds on the floor of the former quarry. These are formed by ponding of rainfall and surface run-off (drainage) above a layer of impermeable silt on the quarry floor. The silt is essentially an unwanted by-product of sand processing and washing elsewhere on the Roadstone Dublin's lands. Available groundwater well information indicates that the ponds in the quarry floor are perched approximately 5m – 7m above the groundwater table in the sand and gravel aquifer.

Published data suggests that the bedrock inhibits groundwater flow (in that it has low permeability) with groundwater storage and movement constrained to the upper weathered horizons of this unit and fractures / faults.

Recent ground investigations indicate that groundwater quality at the site is generally very good, with established site operations shown to have no significant impact on existing groundwater quality.

The proposed filling area is not in close proximity to local watercourses. Public records from the Office of Public Works indicate that the site is not at risk of flooding.

Potential impacts of infilling the former sand and gravel quarry with inert materials have been assessed and it is considered that in the absence of mitigation measures, the development could have the potential to negatively impact groundwater quality and groundwater flow, particularly if contaminated soils were placed at the site or if fuel or chemical spillages occurred.

It is therefore proposed that a number of mitigation measures be incorporated into the scheme, including site management measures, particularly in respect of fuelling and maintenance activities), placement of specific waste types in particular areas, review of waste types entering the site and prior removal of ponded water before filling. With the incorporation of the proposed mitigation measures the residual risk to groundwater is considered to be low.

7 AIR QUALITY

Given the inert nature of the materials being used to restore the site and the absence of biodegradeable (organic) wastes, no landfill gas emissions will arise at this site.

The principal air quality impact associated with the continued operation of the inert waste recycling facility is fugitive dust emission. Emissions are likely to arise during

(i) trafficking by HGVs over unpaved surfaces
(ii) end-tipping of inert soil or construction and demolition waste
(iii) stockpiling, handling and compaction of inert soils and
(iv) processing (crushing / screening) of construction and demolition waste

In order to control dust emissions, a number of measures will be implemented, principally

(i) spraying of water from a tractor drawn bowser on dry exposed soil surfaces
(ii) planting with grass as soon as practicable after placement of cover soils to minimise soil erosion and dust emissions and
(iii) construction of internal haul roads using recycled aggregate (with low silt and clay content)
(iv) routing all HGVs leaving site through a temporary wheelwash facility at the end of the paved internal road leading to the waste recovery facility.

The amount of dust or fines carried onto the public road network will be further reduced by periodic sweeping of the paved internal access road and the existing local road in front of the site.

8 NOISE

Noise monitoring at the site indicates that average ambient noise levels typically range between 45dBA L_{Aeq} and 62dBA L_{Aeq}. These noise levels are consistent with daytime levels in suburban areas around the Greater Dublin Area and/or close to national road infrastructure. The existing noise levels exceed threshold limits for daytime noise emissions (55dBA L_{Aeq}) recommended by the EPA Environmental Management Guidelines for the Extractive Sector (2006).

The worst case scenario in relation to potential temporary noise impact arises at residences beyond the northern site boundary, along Berryfield Road, when quarry backfilling activity takes place at the northern end of the former quarry. Spreading and compaction plant and HGV trucks will be at the shortest distance from the residences at this time. Noise assessment indicates that in a worst case scenario, cumulative noise levels arising from intensive backfilling activities and operation of the crushing / screening plant *100% of the time* could marginally exceed permissible threshold limits. In reality however, this is unlikely to occur. Predicted (maximum) future noise levels are comparable to existing levels, making it unlikely that any exceedence of threshold noise levels will be noticed by nearby residents.

It is proposed to monitor average noise levels during the operation of the waste recovery facility at the Fassaroe site. Should these indicate that average noise limits are exceeded (or likely to be exceeded); provision will be made for a combination of one or more of the following in order to reduce noise levels:

(i) construction of a temporary screening embankment,
(ii) installation of a temporary noise barrier between noise source and receptor(s)
(iii) reduction of noise emissions at source

(iv) management of activities to minimise vehicular movements and/or duration of activities in the vicinity of affected residences.

While the noise levels experienced at the affected residences may exceed threshold limits, any impact will be temporary in nature. This impact is considered acceptable in view of the overall environmental improvement that the site restoration works will effect.

9 CULTURAL HERITAGE

The cultural heritage study in respect of the waste recovery facility at Fassaroe, Co. Wicklow comprising a paper study and fieldwork was carried out in November and December 2008. A wide variety of paper, cartographic, photographic and archival sources was consulted. Consultation was also carried out with a wide range of planning consultees. All the lands impacted by the development were visually inspected.

Given the history of quarrying, aggregate processing and waste recovery activities at the site, it is considered that continued recycling of construction and demolition waste and backfilling of the former quarry will have no direct or indirect impact on any items of cultural heritage, including archaeological resources and architectural heritage.

10 LANDSCAPE

The inert waste recovery facility at Fassaroe is located within a rural landscape whose character is classified as an *Area of Outstanding Natural Beauty* by the County Wicklow Development Plan 2004-2010. Although the area is physically quite open, its rural character has been significantly eroded owing to high levels of suburban type development, in the form of roads, housing and industry. The predominant land use in the surrounding area is agricultural, principally tillage, with some pasture and forestry on sloping ground.

Given the gently sloping nature of the landscape surrounding the application site and the presence of boundary hedgerows, there are only limited long-distance views into the site. There are some views into the site from local roads where breaks occur in the line of hedgerows around the site boundary.

The inert waste recovery facility will not have any significant impacts on designated scenic roads and viewpoints on account of its location; the intervening undulating topography and screening by hedgerows. The application site is too distant and fully screened by intervening vegetation to be perceptible from any designated view or prospect.

The quarry backfilling activities are expected to have only limited temporary visual impact from nearby residences due to the natural screening afforded the site by the surrounding landscape elements, a combination of the undulating topography and existing hedgerows. The phasing of the backfilling operations will minimise the area being actively restored and open to public view at any time.

Ultimately, the worked-out quarry will be returned to former ground level and restored to beneficial use as agricultural pasture. On completion, the site will blend into the surrounding landscape, eliminating any negative visual impact which currently arises.

Landscape mitigation measures will be put in place to minimise any potential visual impact associated with the proposed restoration scheme. These include

i) retaining all hedgerows along the site boundary;
ii) removing any temporary plant, infrastructure and paved surfaces on completion of backfilling works and
iii) grading the final landform at a shallow angle to merge with the surrounding landscape.

11 MATERIAL ASSETS

Access to the inert waste recovery facility at Fassaroe is along a private road which has a number of one-off residential units located intermittently along it. There is no other transport infrastructure in the vicinity of the site.

There are several residential clusters in the immediate vicinity of the site, mainly located along the side of existing local roads. The sand and gravel deposits beneath the site are classified as a locally important gravel aquifer, although it is understood that houses in the vicinity of the site source drinking water from Local Authority Mains supply.

The level of HGV movements to and from the inert waste recovery facility could increase, depending on the rate of importation of soil and stones. Backfilling activities at the site present a number of risks to groundwater quality. However a number of measures will be implemented to minimize these risks. There may be some short-term impacts on residential amenity for residents living immediately north of the site, most notably an increase in ambient noise and dust emissions. A number of measures will be implemented to minimize such emissions.

In the long-term, backfilling of the former quarry with inert material will increase protection to, and reduce the vulnerability of, the existing groundwater aquifer. It will also have a neutral, possibly beneficial, impact on land values and/or residential property values.

12 TRAFFIC

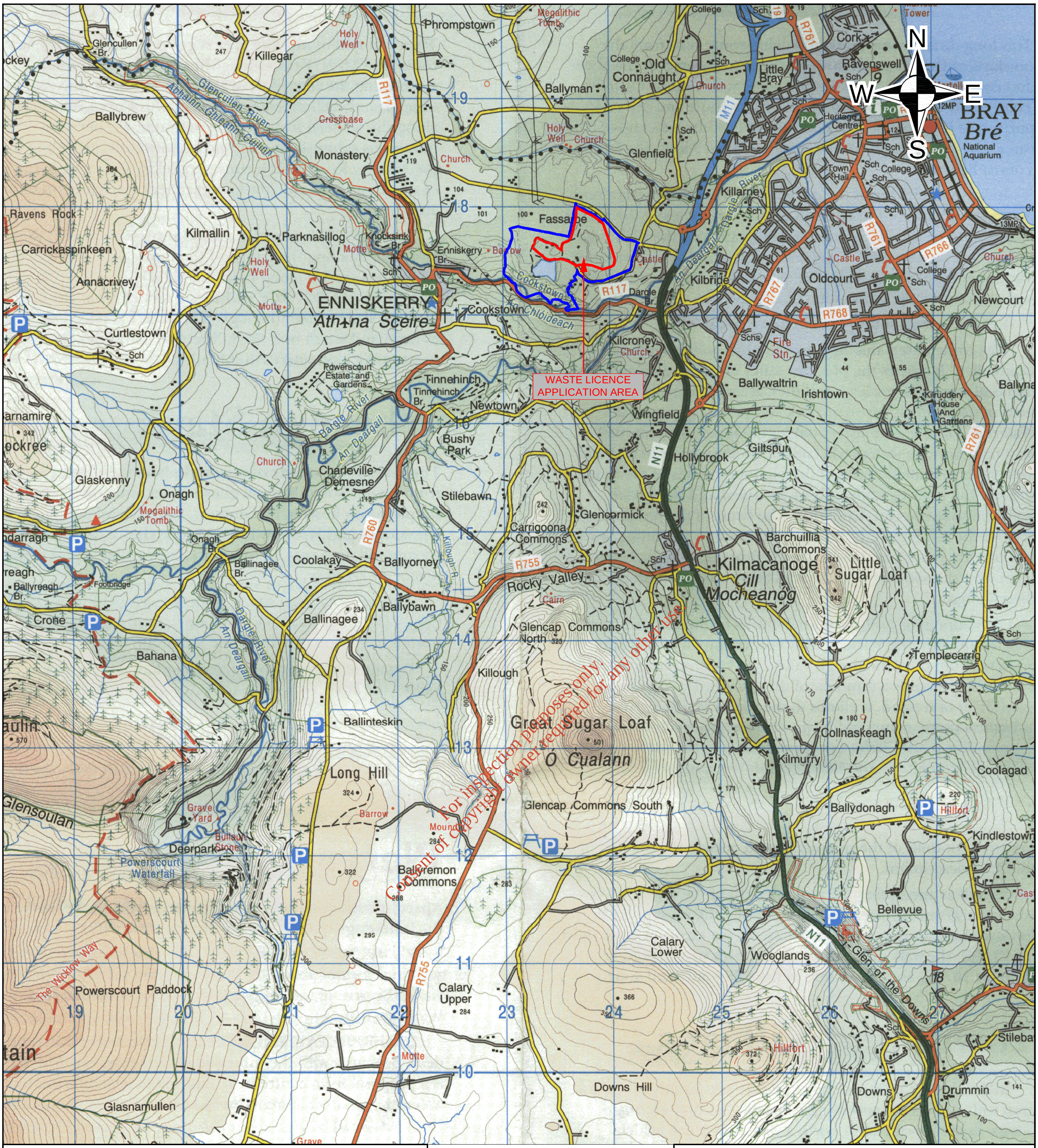
The proposed waste activities at Fassaroe entail backfilling the existing quarry void using imported inert soils and stones and/or some limited recovered construction and demolition waste. HGV trucks carrying soil and stones to the waste recovery facility will use the existing quarry access road i.e. Fassaroe Avenue, and may generate an increase in traffic levels along it and the local road network.

Fassaroe Avenue currently has a number of traffic calming elements incorporated along its length; these traffic calming elements take the form of a series of ramps incorporating road narrowings. In addition to providing access to the quarry, Fassaroe Avenue provides access to 9 No. private properties. The existing visibility from two of these properties is restricted by their own existing fencelines.

On-site observations and traffic speed surveys indicate that existing traffic speed along Fassaroe Avenue generally exceeds the recommended limit.

In the worst case scenario, the increase in traffic flows generated by the proposed development will result in an additional 20 No. HGV movements during the peak hour period, and result in a maximum flow of vehicular flow of 97 in the peak period.

In order to mitigate against the impact of the remediation works upon the local road network a number of measures have recently been implemented to reduce traffic speed and improve traffic safety. It is also proposed to locally realign the road outside of two existing properties. The proposed improvements will improve the visibility splays at the two properties with reduced visibility.



LEGEND

- Applicants Land Interest (c. 65.1 ha)
- Waste Licence Application Area (c. 21.4 ha)

NOTES

1. *Extract from Ordnance Survey Discovery Map No. 50*

2. *Ordnance Survey Ireland Licence No. SU 0000709 (c) Ordnance Survey Ireland / Government of Ireland*

0 500 1000 1500 2000m 3000 4000 5000

Metres
1:50,000

0059.00017.18.FIG NTS 1.0.SITE LOC PLAN

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WASTE LICENCE APPLICATION

FASSAROE WASTE RECOVERY FACILITY
FASSAROE, BRAY, CO.WICKLOW

SITE LOCATION PLAN

FIGURE NTS 1

Scale	Date
1:50,000 @ A4	APRIL 2009

N
W E
S

Construction & Demolition Waste Recycling Area (Hardstanding)

Low Rise Perimter Bond

WHEELWASH

Existing Shed (Waste Quarantine & Inspection Area)

Fuel Storage & Truck Re-fuelling Area

CONCRETE YARD

BLOCK YARD

EXISTING POND

SILT AREA

AGGREGATE PROCESSING PLANT & STOCKPILES

WEIGHBRIDGE

SILT AREA

EXISTING POND

STORAGE YARD

RETAIL AREA & EMPLOYEE PARKING

EXISTING SITE OFFICE

SILT POND / CLOSED DEPRESSION

SITE GATE

MAINTENANCE SHED

0 80m 200
Metres
1:2500

0059.00017.18.FIG NTS2.0.SITE INFRASTRUCTURE

NOTES

1. Based on OSi 6inch sheet no. 21

2. Ordnance Survey Ireland Licence no. SU 0000709 (c) Ordnance Survey of Ireland & Government of Ireland

LEGEND

- Applicant's Land Interest (c. 65.1 ha)
- Waste Licence Application Area (c. 21.4 ha)
- Internal Unpaved Road
- Internal Paved Road
- Building

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SITE INFRASTRUCTURE LAYOUT

FIGURE NTS 2

Scale	Date
1:2,500 @ A3	APRIL 2009

N
W E
S

PHASE 1
PHASE 2
PHASE 4

87.0
86.0
85.0
84.0
82.0
80.0

AGGREGATE PROCESSING PLANT STOCKPILES
WEIGHBRIDGE
STORAGE YARD
SAWING SHOP & RETAIL AREA
EXISTING SITE OFFICE
SITE GATE
MAINTENANCE SHED
LT POND / CLOSED DEPRESSION

0 50m 100m 200m
Metres

NOTES

1. Based on OSi 6inch sheet no. 21

2. Ordnance Survey Ireland Licence no. SU 0000709 (c) Ordnance Survey of Ireland & Government of Ireland

LEGEND

- Applicant's Land Interest (c. 65.1 ha)
- Waste Licence Application Area (c. 21.4 ha)
- Restoration Area
- 85.0 Restoration Contours

roadstone

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PHASING PLAN

FIGURE NTS 3

Scale	Date
1:2,500 @ A3	APRIL 2009

0059.00017.18.FIG NTS 3.0.PHASING PLAN