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INTRODUCTION

12.1 This Chapter of the Environmental Impact Statement (EIS) evaluates the existing traffic environment at and around the Old Quarry at Brownswood, south of Enniscorthy, Co. Wexford. It also assesses the impact that backfilling of the Old Quarry and the establishment and operation of an inert waste recovery facility and will have on the traffic environment in the surrounding area.

12.2 This Chapter is prepared on the basis of historical information on quarry output provided by Roadstone Wood Ltd., historical traffic monitoring data published by the National Roads Authority, an updated topographical survey of the entrance to the Old Quarry and site inspections.

RECEIVING ENVIRONMENT

Existing Road Network

12.3 The Old Quarry operated by Roadstone Wood Ltd. at Brownswood is located south of the town of Enniscorthy. It is located immediately east of the N11 National Primary Road linking Wexford to Dublin. Although quarrying / extractive activity has ceased at the Old Quarry site, it continues to be used for related (added value) activities, principally concrete, asphalt and block production.

12.4 The existing road network around the site is defined by

- the N11 National Primary Road which runs on a north-south axis immediately to the west of the site;
- a local road located along the northern site boundary which runs eastwards from its junction with the N11;
- a local road that runs along a north-south axis, parallel to and immediately east of the N11 which provides access to the Old Quarry. This road forms a crossroads with the local road running east from the N11. The mainline through the crossroads is from the N11 to the quarry, with the northern and eastern approaches to the crossroads subject to a STOP control. The northern arm of the crossroads junction is a cul-de–sac.
- a local road which runs on a north-south axis immediately beyond the eastern site boundary
- a number of local (public) and private roads to the south of the site linking it to Brownswood House, Murphy's Quarry (also operated by Roadstone Wood Ltd.) and a minor junction with the N11.

12.5 The River Slaney flows north-south immediately west of the N11 National Primary Road. The nearest river crossings are located at Enniscorthy, approximately 3km north of the application site, and at Edermine Bridge, approximately 2.5km south of the site.

12.6 The wider road network beyond the site comprises a series of local roads to the north, east and south. The local road network is shown on the 1:50,000 Discovery Series map of the area in Figure 12.1.

12.7 The existing N11 running west of the Old Quarry at Brownswood is a single carriageway road, typically between 7m and 9m wide, with hard shoulders of variable width. Its alignment runs generally straight northwards from the existing junction with the quarry access road toward Enniscorthy. It also runs generally straight southwards as far as Edermine Bridge.

12.8 A speed limit of 1000kph applies on the existing N11 National Primary Road. The speed limit on all local roads leading to, from and around the Old Quarry is 80kph.

Proposed Road Infrastructure

12.9 Wexford County Council has recently obtained planning approval from An Bord Pleanála for a standard dual carriageway to motorway standard between the southern end of the existing N11 Gorey Bypass at Clough and the N11 at Scurlockstown townland, approximately 4km south of the application site. The alignment of the proposed road scheme is indicated on Figure 12-1.

12.10 It is understood that prospective Tenderers for the proposed road scheme are being / have been shortlisted by Wexford County Council. While no start date for construction of the scheme has been confirmed, it is scheduled to start some time in 2012 / 2013.

12.11 The speed limit on the proposed M11 Motorway / Dual Carriageway to the east of the application site is likely to be 120kph.

Traffic Movements to / from Application Site

12.12 Vehicular and HGV traffic to and from the Old Quarry site at Brownswood travels along the existing N11 National Primary road from Enniscorthy to the north and to 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 and a dedicated right turning lane for northbound traffic. Existing notices along the N11 provide advance warning to drivers that there is a quarry facility ahead.

12.13 An independent safety audit of the local road network around the Old Quarry was undertaken by Roadplan Consulting Ltd. in March 2011. The road safety audit was based on site inspections and an updated topographical survey of the road network around the entrance to Old Quarry site at Brownswood. This survey is reproduced as Figure 12-2

12.14 The audit identified minor deficiencies in existing sightlines, road signage and road markings along the local access road and crossroads leading to / from the Old Quarry from / to the N11 junction. The minor deficiencies are described in greater detail in the road safety audit report, reproduced in Appendix 12-1.

12.15 In summary, the road safety audit found that

(i) the sightline to the south (left) of the local road junction with the N11 is currently obstructed by roadside vegetation;

(ii) the sightline to the south from the eastern arm of the crossroads is currently obscured by roadside vegetation;

(iii) the STOP sign at the N11 junction is not visible to approaching drivers on account of the road alignment (sharp bend on approach to junction) and the presence of roadside vegetation. In addition, supplementary road signs which were erected along the road to address the issue are potentially confusing and inconsistent;

(iv) the stop line and road markings at the junction between the local road and the N11 are poor, as are the road markings on the eastern approach to the crossroads.

12.16 All HGV traffic entering and egressing the Old Quarry site is required to pass over the existing weighbridge and through the existing wheelwash facility, both of which are located along the access road leading into the site.

12.17 Another entrance to the rear (south) of the Old Quarry site, is essentially a link road connecting it to Murphy's Quarry. This road is generally only used by quarry loading shovels and related plant travelling between the two sites. Murphy's Quarry is also operated by Roadstone Wood Ltd. and is part of the wider Brownswood Quarry Complex.

12.18 At the present time, established quarry ancillary activities at the Old Quarry are undertaken between 06.00 hours and 18.00 hours each weekday (Monday to Friday) and 07.00hours to 16.00hours on Saturday. No activity takes place at the site on Sundays or Public Holidays. At all other times, both the front and rear gates of the Old Quarry are closed, restricting traffic entry.

Traffic Flows on Local Road Network

12.19 The latest available traffic flow data along the N11 south of Enniscorthy dates back to 2003. The subsequent increase in traffic levels along the N11, coupled with the more recent fallback in traffic volumes since the onset of recession around 2008, means that this data is likely to be reasonably representative of likely traffic flows along the N11 at the present time.

12.20 The 2003 traffic count data indicates that the annual average traffic levels (AADT) along the N11 south of Enniscorthy was 10,804. Of this approximately 10.3% comprised heavy goods vehicles (HGVs).

Existing HGV Traffic to/from Brownswood Quarry

12.21 Existing ancillary activities at the Old Quarry in Brownswood generate a large number of HGV and car movements in and out of the site. These ancillary activities include production of processed stone, concrete blocks, ready-made concrete and blacktop (asphalt).

12.22 In Table 12-1 below, a summary is provided of outputs (in tonnes) from established site activites in recent years. As would be expected in light of the current economic downturn, the data indicates a fall off in the demand for construction materials in recent years. Owing to commercial sensitivity, no breakdown has been provided of the respective output from each activity.

Table 12-1 Summary of Site Operations 2006-2010

Activity	2006	2007	2008	2009	2010
Export of Materials	922,925t	728,400t	310,300t	252,200t	343,800t

Materials exported off-site include stone, blocks, ready-mix concrete and asphalt

12.23 Based on Table 12-1 above, an estimate of the works (HGV) traffic generated by site activities in the years from 2006 to 2010 is provided in Table 12-2 below. Estimates are based on the total quantity of materials used at the site, the average payload of vehicles used to import / export this material and the number of working days in a year (assumed to be 5.5 working days a week for 48 weeks a year).

Table 12-2 Estimated Works Traffic Generation 2007-2010

Activity	Annual HGV Traffic Movements	Average Daily HGV Traffic Movements
	OUT	OUT
2010	16,838	64
2009	12,603	48
2008	13,926	53
2007	29,837	113
2006	37,530	142

12.24 Table 12-2 only presents data on laden trucks leaving the Old Quarry. In general, each movement of a laden truck out of the site generates a corresponding return movement by an empty HGV truck. Having regard to this, and assuming an average working day is 12 hours long, the total number of HGV movements generated in and out of the quarry for the years 2006 to 2010 is as indicated in Table 12-3 below.

Table 12-3 Estimated Daily / Hourly Works Traffic Generation 2006-2010

Activity	Average Daily HGV Traffic Movements		Average Hourly HGV Traffic Movements	
	IN	OUT	IN	OUT
2010	64	64	5	5
2009	48	48	4	4
2008	53	53	4	4
2007	113	113	9	9
2006	142	142	12	12

12.25 As can be seen from Tables 12-2 and 12-3 above, there has been a reduction in the annual and corresponding average hourly HGV movements in and out of

the Old Quarry at Brownswood in recent years. This reduction in traffic activity reflects the slowdown in the construction industry and the corresponding reduction in demand for construction materials over this period.

12.26 The fall off in traffic levels generated by activities at the Old Quarry will have had an impact on HGV traffic levels along the local road network and on the N11 National Primary Road in particular.

Existing Car Traffic to/from Brownswood Quarry

12.27 Car traffic movements to and from the Old Quarry is almost entirely via the junction and access road leading off the N11. Car traffic is generated through the comings and goings of staff, visitors, meter readers and other service providers.

12.28 Operations at the Old Quarry can commence between 06.00hours and 08.00hours. In general, staff traffic in the morning generally arrives prior to commuter traffic periods. The various activities undertaken at the site cease at different times of the day and late evening, with the result that staff traffic leaving the site in the evening generally leaves over an extended period of time, reducing the traffic impacts on the public road network.

12.29 Given existing staffing and visitor levels, it is estimated that the peak car traffic flow into the site comprises approximately 10 cars between 07.00hours and 09.00hours in the morning. Car traffic in and out of the site is generally lower and more variable over the course of the working day.

12.30 At these levels, car traffic movements along the N11 generated by staff and visitors travelling to and from the Old Quarry accounts for only a tiny proportion of existing traffic levels along the road.

IMPACT ASSESSMENT

12.31 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.

12.32 Within the Old Quarry, traffic movement to the worked-out void is initially up a slight gradient, past the wheelwash, weighbridge and site office. Thereafter traffic travels up a steeper gradient to the side of the maintenance shed to a mini-roundabout, at which point it turns east and runs across unpaved ground which falls slightly toward the haul road which leads into the former quarry.

12.33 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 works and is the subject of separate applications for planning permission from

Wexford County Council (WCC) and a waste licence from the Environmental Protection Agency (EPA).

12.34 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.

Forecast HGV Traffic Generation

12.35 The volume of material to be used in backfilling the quarry void, as envisaged by the restoration plan at the application site is approximately 700,000m^3. Of this, a relatively small volume, estimated at no more than 20,000m^3, will be sourced from stockpiles, perimeter screening berms and general site levelling works required for the final restoration. The remainder of the material will need to be imported.

12.36 The duration of backfilling activities at the quarry void will largely be dictated by the rate at which approximately 680,000m^3 (1,290,000 tonnes) of externally sourced inert soil and stone is imported to the site. The import volume is equivalent to approximately 64,500 HGV movements (at 20 tonnes per load).

12.37 The rate at which externally sourced material is imported to the site will be dependent on many factors, including, but not limited to,

- Availability of acceptable inert materials at construction sites
- Prevailing economic climate
- Construction industry output
- Distance of construction projects from the facility (and scale or duration of same)
- Logistical and/or 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
- Waste inspection / weighbridge processing constraints

12.38 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 possible that a large volume of proportion of inert soil could be sourced from construction of the M11 Gorey to Enniscorthy PPP Scheme and/or the N11/N25 Oilgate to Rosslare Harbour Road Improvement Scheme.

12.39 Roadstone Wood has defined a relatively optimistic scenario where 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, were a large scale infrastructure or development project to proceed at some stage within the surrounding catchment area during its operational life.

12.40 If an average importation rate of 200,000 tonnes / year is assumed, the expected operational life of the facility would be 6½ years. Although it is likely that it could take longer to fill the quarry void, as a result of recent scaling back in construction activity, the 6½ year scenario is considered sufficiently onerous for assessment of likely traffic impacts.

12.41 In view of the difficult economic climate which exists at the present time, intake tonnages may be lower over the initial years (2012-2013) and over that time, the facility may only operate on an intermittent or project-specific basis.

12.42 It is envisaged that all HGV lorries importing material to the proposed inert soil recovery facility at Brownswood will approach the site along the N11 National Primary Road.

12.43 An assumed annual average intake of up to 200,000 tonnes / year corresponds to an average hourly trip rate of 3 HGV movements into and 3 HGV movements out of the Old Quarry per hour. Should the rate of backfilling accelerate to 400,000 tonnes / year on account of a large scale development or infrastructure project (such as the M11 PPP Motorway or N11/N25 Road Improvement schemes), the hourly HGV trip rate could increase to approximately 6 HGV movements into and 6 HGV movements out of the site per hour.

Forecast Car Traffic Generation

12.44 It is envisaged that the proposed inert waste facility will generally sustain existing employment levels at the Brownswood Quarry Complex and could possibly facilitate employment of 1 or 2 additional personnel.

12.45 Although the number of car movements by visitors and service providers coming and going to the application site cannot be readily quantified, it is considered unlikely that they will generate any discernable increase in the number of existing car movements to and from the site.

12.46 As previously discussed, staff arrivals and departures account for a relatively minor proportion of traffic on the existing road network. A proportion of this traffic also arrives and departs outside the generally accepted peak commuter traffic periods.

12.47 When the proposed inert waste facility is operational, it is not therefore expected to generate any noticeable increase in car traffic levels along the N11 National Primary Road.

Traffic Impact Appraisal

12.48 The hourly HGV traffic movements assessed above compares with the current estimated hourly traffic rate of 5 HGV movements in each direction in and out of the Old Quarry. An average annual intake of 200,000 tonnes would therefore equate to a 60% increase in current (2010) inbound and outbound HGV movements to and from the quarry, while a maximum annual intake of 400,000 tonnes would equate to a 120% increase on current (2010) levels.

12.49 When compared against current (2010) HGV traffic levels generated by established site activities at Brownswood, the magnitude of the increase in HGV traffic movements generated by the proposed inert waste recovery facility is potentially significant. It is however important to appreciate that the scale of this impact arises principally as a result of a sudden and marked decline in HGV movements in and out of the quarry in recent years.

12.50 Were the proposed facility to be fully operational, the effect of an annual importation rate of 200,000 tonnes/year would be to increase existing hourly average traffic movements at the quarry site from 5 to 8 vehicles per hour in each direction (in total, from 10 to 16 per hour). At this level, HGV traffic

movements would be approximately 12% below estimated average hourly levels in 2007 and 33% below estimated average hourly levels in 2006.

12.51 The effect of an annual maximum importation rate of 400,000 tonnes/year would be to increase existing hourly average traffic movements at the Brownswood Quarry Complex from 5 to 11 vehicles per hour in each direction (in total, from 10 to 22 per hour). At this level, HGV traffic movements would be approximately 20% greater than estimated average hourly levels in 2007 and 8% below estimated average hourly levels in 2006.

12.52 Given that the public road network around the application site is of a high design standard and it has previously demonstrated its capacity to safely and efficiently carry HGV traffic levels in excess of those which may arise when the proposed inert waste recovery facility is fully operational, it is considered that the proposed development will have no significant impact on the road carrying capacity or on existing design service levels across the existing public road network.

12.53 In view of minor deficiencies identified by the recent traffic safety audit and in the absence of any mitigation, any increase in HGV movement over the local road network between the N11 and the Old Quarry could lead to a minor increase in traffic safety risks over and above present day levels.

12.54 A number of potential impacts associated with additional traffic could arise as a result of the proposed inert waste recovery facility. They include noise, vibration, air pollution and human impacts and each is considered in separate chapters of this EIS.

MITIGATION MEASURES

12.55 Given the high standard of existing national road infrastructure in and around the Brownswood Quarry complex, it is considered that the proposed development of an inert waste recovery facility at the site will have no negative or adverse impact on road carrying capacity or service levels. Consequently, there is no requirement for any traffic flow or road capacity improvement measures to be incorporated into this proposal.

12.56 In view of minor deficiencies in sightlines, road signage and road markings identified in a recent independent road safety audit undertaken by Roadplan Consulting Ltd., Roadstone Wood Ltd. has committed itself to implementing the following mitigation measures, all of which were recommended in the independent road safety audit report (reproduced in Appendix 12.1):

- Cutting back the vegetation obstructing the sightline to the south of the junction between the N11 and the local access road leading to the quarry;
- Cutting back the vegetation obstructing the sightline to the left (south) of the eastern arm of the crossroads along the access road to the quarry;
- Provision of a raised channelizing island with a STOP sign at the mouth of the N11 junction, subject to agreement with Wexford County Council.. The design of the channelizing island will be in accordance with the NRA Road Geometry Handbook (NRA TD 42/00);

- Removing the supplementary STOP sign at the crossroads and replacing the yield sign on the access road with a sign stating CAUTION – STOP AHEAD;
- Provision of STOP lining and markings at the N11 junction and crossroads in accordance with the requirements of the Traffic Signs Manual 2010.

12.57 When the safety recommendations outlined above are implemented, the residual impact on road traffic safety arising from operation of the proposed waste recovery facility at the Old Quarry in Brownswood is considered to be negligible.

FIGURES

APPENDIX 12-1
INDEPENDENT ROAD SAFETY AUDIT REPORT