

STREAM

B I O E N E R G Y



Chapter 16

Traffic and Transport

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TRAFFIC AND TRANSPORT 16

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SUMMARY

- 16.1 The Traffic and Transport Assessment provides a description of the transport arrangements for the proposed Huntstown Renewable Bioenergy Plant. From a road safety and accessibility perspective the subject site is considered to have a number of benefits. The primary benefit is that the site is located adjacent to the national primary road network, which will accommodate the vast majority of traffic coming to and from the site. Furthermore, the existing access is compliant with the Design Manual for Roads and Bridges (DMRB) for national primary roads. Using computer traffic modelling programmes PICADY and OSCADY a comprehensive analysis of the existing and future performance of the local road network has been undertaken. The assumptions adopted in preparing the traffic models have been clearly set out and are considered to result in a robust analysis; the results of which can be relied upon in determining the development traffic impact. In terms of capacity, queuing and delay, local junctions will not be adversely impacted upon as a result of the proposed development.

INTRODUCTION

- 16.2 This chapter of the Environmental Impact Statement (EIS) addresses matters relating to Traffic and Transportation and constitutes a Traffic and Transport Assessment (TTA) prepared by TrafficWise Limited.
- 16.3 The objective of this chapter is to investigate if the existing receiving road network can suitably cater for the forecast increase in traffic flows that may arise directly as a result of the proposed development of a Renewable Bioenergy Plant (henceforth referred to as the Plant) on lands within Huntstown Quarry, North Road, Finglas, Dublin 11.
- 16.4 The application area of 2.38 ha (circa 5.9 acres) encompasses the proposed plant which will occupy a footprint of 1.79 ha (the subject site). The remaining 0.59 ha includes the route of the foul sewer line from the plant to the municipal sewer connection point and locations where directional signage will be erected for the plant.

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- 16.5 A detailed description of the proposal including the plant layout, sections and elevations are presented in Chapter 2 of the EIS. In summary, the proposed 90,000 tonne per annum plant will comprise the following:
- The **Main Building** which will incorporate the waste reception, waste pre-treatment, digestate dewatering and storage areas. An odour control system will be located immediately adjacent to this building. Staff offices and welfare facilities will also be located within this building. The building will be approximately 14m tall in order to accommodate delivery/removal vehicles and to contain equipment used to treat the waste, and air treatment pipework.
 - The **Digestion Tank Farm** which will be bunded and will contain the pre-pasteurisation tanks (x2), digester feed buffer tanks (x2), digestion tanks (x4), post digestion treatment tanks (x2). The tallest tanks will be approximately 25m to the highest point.
 - A **Wastewater Treatment Tank Farm** which will be bunded and will host sequential batch reactors (x3), a process liquor tank a process water tank and a sludge tank.
- 16.6 A number of ancillary structures will be located outside these three areas including gas storage and treatment facilities, the Combined Heat and Power (CHP) engines and electricity transformers, a substation, pasteurisation units, heat exchangers, a storm water storage tank, and other storage facilities etc. There will also be a dedicated vehicle refuelling area, vehicle wash, wheelwash (x2) and weighbridge.
- 16.7 The process can be broadly divided into 3 main stages:
- Pre-treatment: after waste is delivered inside the main building, material that is unsuitable for treatment by AD will be recovered (e.g. metal, plastic etc.). This material will be exported off site for further treatment, recycling or disposal. The remaining organic material will then be blended with recycled process liquid to create an organic slurry which will be heated to 70°C for at least 1 hour to meet the requirements of the Animal By-Product Regulations.
 - AD treatment: following pasteurisation the slurry will be pumped to the digestion tanks where the organic material will be broken down in the

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absence of oxygen in enclosed sealed tanks to produce both biogas and digestate.

- Post treatment: in the final phase the biogas will be captured and combusted in CHP engines to produce renewable heat and electricity. The electricity will be exported to the national grid (approximately 3.8MW), enough renewable electricity to power 7,500 homes. The heat will be reused in the process and can also be made available to neighbouring activities which have a requirement for heat. The digestate will undergo moisture content reduction through the use of centrifuges to produce a cake-like material which, if derived from source separated material, can be used as a biofertiliser. The process liquor remaining after the centrifuge will be treated at the onsite WwTP which will reduce the ammonia and BOD content prior to re-use within the process with excess discharged to the municipal sewer.

STUDY METHODOLOGY

- 16.8 A pre-planning meeting held on 24th August 2011 with Fingal County Council (FCC) informed the scope of this TTA.
- 16.9 The assessment methodology accords with the Institution of Highways and Transportation (IHT) guidelines¹ and relevant national guidelines published by the National Roads Authority (NRA)² both of which represent a structured approach to the preparation of traffic assessments.
- 16.10 Traffic count surveys have been undertaken at the following junctions:
- Existing Site Access (North Road, R135);
 - Cold winters N2 Off-slip junction with North Road (Priority Junction);
 - North Road N2 On-slip Road (Signal Junction);
 - Kilshane Cross (Signal Junction).
- 16.11 The traffic count surveys were undertaken on Wednesday 7 March 2012 from 07:00-19:00hrs.
- 16.12 Analyses of the existing and future performance of the receiving road network are based upon surveys of traffic flows, together with estimates of future network traffic flows and estimates of traffic generation arising at the

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proposed development. Traffic flow modelling programs have been used to determine the incremental impact of the forecast assessment levels of new traffic. The traffic models provide a basis of comparison between current and future receiving road network performance.

- 16.13 Future network traffic flow scenarios are based upon forecasts of traffic arising at the proposed development together with forecasts of traffic arising from other committed and potential (zoned lands, current planning applications) developments. In addition to traffic arising from specific development proposals and land use zoning, NRA published network traffic growth factors⁹ have also been applied to the receiving road network.

CONSULTATION

- 16.14 Consultation in regards to traffic and transportation matters has been undertaken through pre-planning discussions with Fingal County Council's (FCC) Roads Department. Preplanning consultation was also undertaken with both statutory and non statutory consultees. Full details of the consultation process and feedback received are presented in Chapter 6 of the EIS.

- 16.15 Responses received which relate specifically to traffic and transportation are presented in **Table 16-1**. These responses have been considered within this chapter of the EIS.

Table 16-1 Statutory consultee responses relating specifically to traffic and transportation

Organisation	Response Received
Railway Procurement Agency	The RPA noted that a Park and Ride Facility accommodating approximately 1000 car parking spaces and dedicated bus set down is proposed as part of the Metro West scheme at the Kildonan stop. This will be accessed via the R135, North Road. Information on access arrangements and potential road upgrades was sought.

DIFFICULTIES ENCOUNTERED

- 16.16 No difficulties were encountered in carrying out the TTA.

LEGISLATIVE FRAMEWORK/PLANNING POLICY

- 16.17 This section provides an assessment of how the proposed development accords with national, regional and county policies and legislative framework from a transport perspective.
- 16.18 The following policy guidance documents have been considered as part of the transportation and accessibility implications of the proposed development:
- National Development Plan 2007-2013³
 - National Spatial Strategy for Ireland 2002-2020⁴
 - Regional Planning Guidelines 2010-2022⁵
 - Fingal Development Plan 2011-2017⁶

National Development Plan 2007-2013

- 16.19 The National Development Plan (NDP) sets out the roadmap to Ireland's future, integrating strategic development frameworks for regional development.
- 16.20 The report states that key to regional development will be efficient utilisation of planned investment, especially in infrastructure. It recognises the role that transport can play in fulfilling development potential.

National Spatial Strategy for Ireland 2002-2020

- 16.21 Physical networks of infrastructure such as roads, public transport, energy and communications are of particular relevance to the NSS, since they themselves have a spatial impact and also influence the location, timing and extent of development.
- 16.22 Section 3.3.1 'Consolidating the Greater Dublin Area' asserts that "...the continuing health of Dublin is critically dependent on concentrating employment intensive activities close to public transport corridors and road transport intensive activities close to the strategic road network...". Generating relatively modest traffic flows the current application site is well located in terms of the strategic road network, with links to the N2 and M50 within close proximity.

Regional Planning Guidelines for the Greater Dublin Area 2010-2022

Regional Planning Guidelines for Greater Dublin Area 2010-2022

- 16.23 The Regional Planning Guidelines (RPG's) for the Greater Dublin Area (GDA) cover the Councils of Dun Laoghaire-Rathdown, Dublin City, Fingal and South Dublin in the Dublin Region and Kildare, Meath and Wicklow County Council areas in the Mid-East Region.
- 16.24 Transport and Infrastructure strategy is considered within Chapter 6 of the RPG's for the GDA. The strategy highlights priority infrastructure investments and measures to enhance: regional competitiveness, the sustainability of development and to improve quality of life by improving accessibility and reducing travel times.
- 16.25 The document provides guidance to Local Authorities on the protection of existing and proposed road infrastructure including national primary, national secondary and strategic regional roads within the region which are described as being of critical importance for the movement of goods and services and to economic function and settlement. The guidelines advise therefore that it is essential that planning authorities make provision to protect the carrying capacity of these routes in the relevant Development Plans and do not compromise proposed road schemes, where road scheme planning has commenced.

Fingal Development Plan 2011-2017

- 16.26 The Fingal Development Plan (FDP) sets out FCC's policies and objectives for the proper planning and sustainable development of the County from 2011 to 2017.
- 16.27 Section 4.1, Transportation states that "*in developing an integrated land use and transportation policy it should be noted that land uses that generate large numbers of Heavy Goods Vehicles should be situated adjacent to good road networks and away from town centres.*"

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- 16.28 The application site is well located in terms of the strategic road network, and Heavy Goods Vehicles (HGVs) generated by the proposed development will not be required to route through residential areas/town centres. Additionally, the internal layout of the site will be designed in order to accommodate HGV volumes and vehicle turning requirements. The operation of the Plant will not result in vehicles stacking or queuing on the public highway whilst all vehicles shall enter and exit the site in forward gear.

Development Plan Land Use Zoning

- 16.29 The FDP sets out future development zoning objectives in the vicinity of the application site; these are shown on the FDP Map entitled 'Blanchardstown North Sheet No. 12'. An extract from Sheet No. 12 is shown in **Figure 16-1**.
- 16.30 Lands coloured blue are zoned for Heavy Industry, these lands include the application area.
- 16.31 Huntstown Quarry lands are coloured cyan which aims to protect and promote the development of agricultural and rural-related enterprise, biodiversity, the rural landscape, and the built and cultural heritage.
- 16.32 The lands coloured purple are zoned general enterprise and employment.
- 16.33 The FDP contains several numbered local development objectives in the vicinity of the application area as presented on **Figure 16-1**. These local objectives are set out in Appendix 6 of the FDP, 'Map-based Local Objectives' and are summarised in **Table 16-2** below:

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Table 16-2 Local Development Objectives in the vicinity of the Application Site

Local Objective	Description
405	Facilitate the development of infrastructure for waste management, including construction and demolition waste processing, biological treatment of organic waste, a sludge treatment facility and a waste transfer station.
409 428 450* 464	The quantum of development on these lands to be determined by the capacity of the road infrastructure. * This local objective refers to the application site
418	Provide for additional units to accommodate homeless persons.
484	Prepare a study on the long term optimum use of lands and the provision of employment-creating sites along the Metro West route. In the interim, planning applications will be assessed based on their merits with regard to the zoning objective and vision and the timeframe for delivery of Metro West.

Development Plan Strategic Infrastructure Objectives

16.34 Objectives relating to 'Physical Infrastructure' are set out in Chapter 4 of the FDP. **Figure 16-1** shows an indicative routing of the proposed Metro West (Objective TO29 and TO30) rail line and location of Kildonan stop adjacent to the M50 northern boundary. A proposed metro stop will be located at Kildonan approximately 850m south east of the subject site. The planning process on the Metro West project was suspended in September 2011 following a review by The Minister for Transport, Tourism and Sport as the capital required to construct the new railway will not be available in the foreseeable future.

16.35 As part of the proposed Metro West scheme a park and ride facility (for up to 1,000No. cars) is proposed adjacent to the stop proposed for Kildonan. The RPA has provided Trafficwise Ltd. with information from which to estimate the likely traffic characteristics of the facility.

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- 16.36 Notwithstanding the suspension of the rail project, estimates of the traffic arising from the proposed park and ride facility have been included in the robust assessment of the future operation and capacity of the receiving road network.
- 16.37 The N2-N3 Link Road includes sections from Tyrrelstown to Cherryhound and from Castaheany to Damastown. The link between Tyrrelstown and the Cherryhound Interchange was under construction at the time the traffic assessment was undertaken and will ultimately link the N3 at Damastown with the N2 at Cherryhound Interchange. The road scheme opened to the public in 2013. The EIS for the link road scheme has been reviewed in order to determine the likely impact of the link road scheme on existing traffic flows on the local road network.
- 16.38 FCC has future proposals to provide a western link from the Broughan Roundabout on the R135 (old N2) to Dublin Airport. This road scheme is set as a development objective in the Dublin Airport Local Area Plan, 2006⁷. It is envisaged that existing traffic flows at the signal controlled Kilshane Cross on the R132 (North Road) will significantly reduce, pending the construction of the airport link road scheme (principally due to the re-distribution of existing east-west traffic flows).

RECEIVING ENVIRONMENT

Site Access

- 16.39 The primary access to the subject site is provided from North Road, R135 (permitted under planning register reference F06A/0164). The internal access road from North Road into the quarry is currently shared by quarry traffic and traffic arising from Huntstown Power Station, see **Figure 16-2**.
- 16.40 North Road in the vicinity of the application area is subject to a 50kph speed limit.
- 16.41 The visibility envelope at the existing Huntstown Quarry access is measured to be in excess of 120m ('y' distance along carriageway) from a set back or 'x' distance of 3.0m. This is in accordance with the level of visibility required by national guidelines such as the NRA: Design Manual for Roads and Bridges (DMRB) and the Traffic Management Guidelines⁸.
- 16.42 The access road measures 7.3m in width over a distance of 130m from North Road at which point the access road becomes divided single carriageway. The divided carriageway width measures 3.7m for both inbound and outbound routes.
- 16.43 A walkover assessment of the current internal site road between North Road and the internal roundabout (at Huntstown Power Station) shows same to be in good repair with no significant surface deformation and none of the typical signs of sub-surface structural distress.
- 16.44 A secondary internal access road bypasses the local section of divided carriageway. This is the planned access road into the proposed development site. The access road had been used as a bypass of the main access road during the construction of Huntstown Power Station and has been disused for some time. The internal road was constructed to accommodate the HGV traffic generation of the quarry. A walkover assessment of the proposed access road shows it to be in good repair and capable of accommodating the volume of traffic arising at the proposed development.

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- 16.45 A secondary access to the quarry site is provided on Kilshane Road. Huntstown Power Station traffic is not permitted to use the Kilshane Road access. Similarly traffic arising from the proposed development will not be afforded use of the Kilshane Road access.

Condition of Road Pavement in the Vicinity of the Entrance

- 16.46 The existing road infrastructure in the vicinity of the application area is of a reasonably good quality. There are nonetheless some surface irregularities between the Coldwinters N2 off-slip and the N2 flyover, these are thought to have arisen principally from poor utilities reinstatement. The North Road is a single mainline carriageway of 7.0m width adjoined by a 2.0m wide footway on the eastern side. The footway extends from the south up to the N2 Coldwinters off-slip. There is no footway on the western side save for a short length outside and to the north of the Dogs Trust. The North Road has a relatively straight and flat alignment between the Coldwinters Cul-de-Sac and the Broughan Roundabout some 3km to the north.
- 16.47 The wearing surface of the road pavement in the vicinity of the site entrance is in good condition. Prior to the opening of the N2 dual carriageway in 2006 the North Road accommodated an Annual Average Daily Traffic Flow (AADT) of approximately 20,000 vehicles of which 15% or some 3,000 were HGV (source: www.nra.ie count site N02-23). It is reasonably expected that the sub-structure of the pavement of the North Road is satisfactory to accommodate the comparatively modest levels of current HGV traffic and that HGV traffic generated from the proposed Plant.

Routing to and from the Site

- 16.48 The subject site is located approximately 1km north west of the M50/N2 interchange and is provided with excellent accessibility to both of these strategic roads, see **Figure 16-3** for the road network in the vicinity of the application area.

Inbound Routing

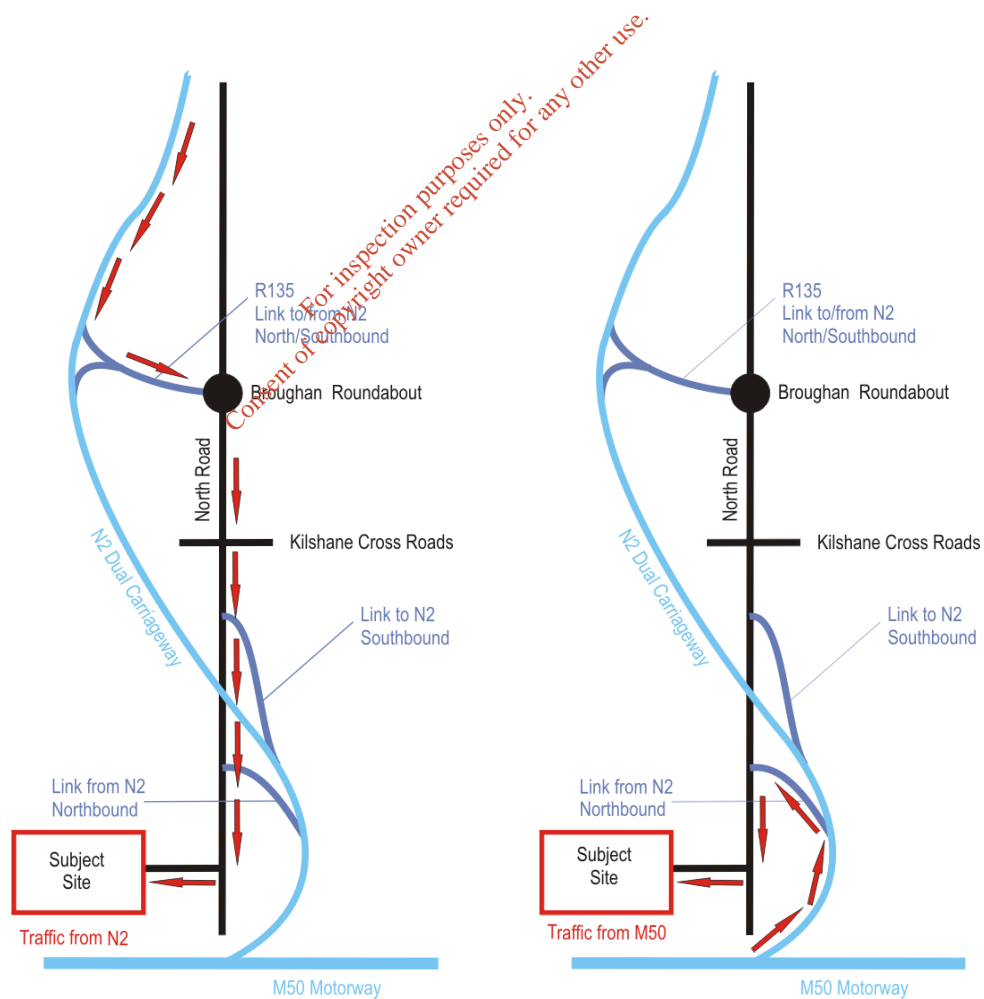
- 16.49 Refer to **Plate 16-1** for inbound routing from the national road network to the subject site.

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16.50 Traffic coming to the site from the N2 north (travelling southbound) must exit the N2 at the Cherryhound Interchange (St. Margarets/Blanchardstown Exit) and travel via the R135 link road to the Broughan Roundabout. Traffic travels south from the Broughan Roundabout along the R135 North Road for approximately 3km to access the primary entrance to the Huntstown Quarry lands.

16.51 Traffic coming to the site from the M50 must travel a short distance (900m) along the N2 before taking the Coldwinters exit. This slip road off the N2 forms a priority T-junction with the North Road approximately 400m to the north of the existing North Road entrance to the Huntstown Quarry lands.

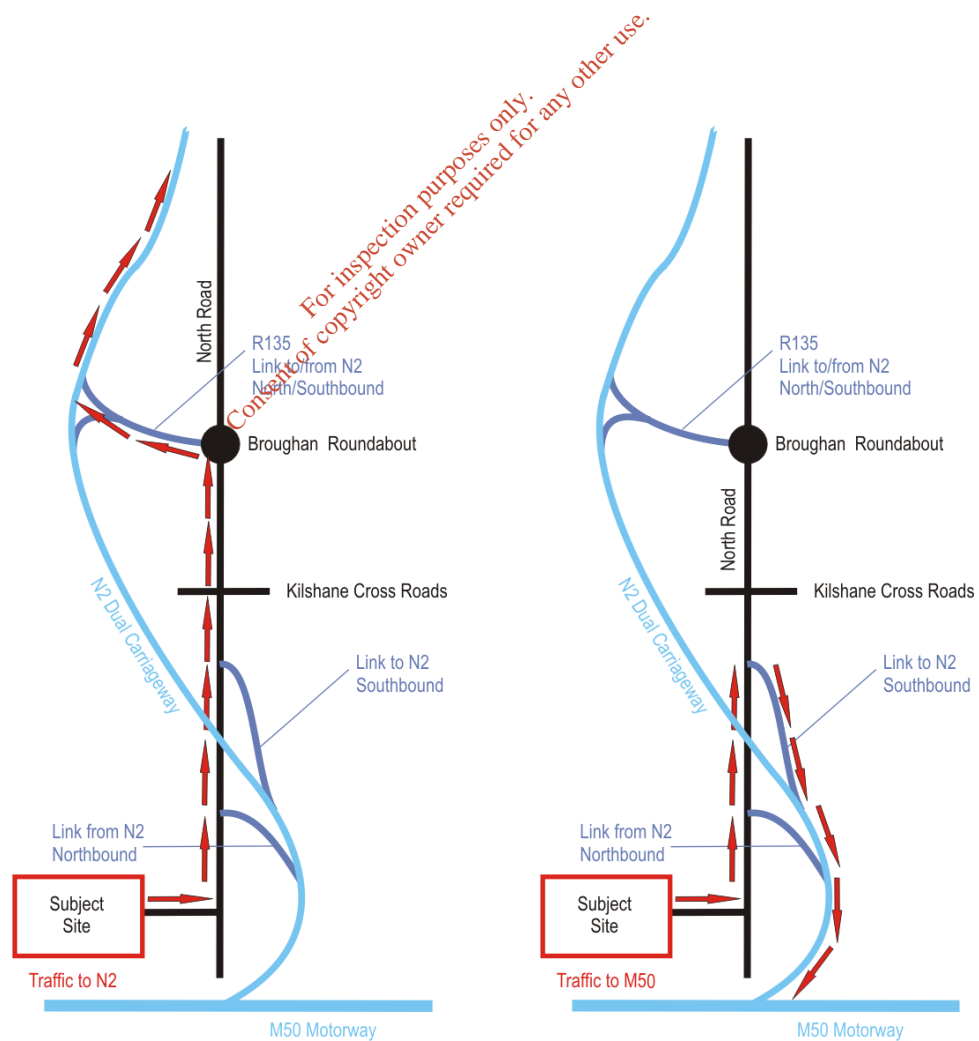
Plate 16-1 Inbound Routing to the Subject Site



Outbound Routing

- 16.52 Refer to **Plate 6-2** for outbound routing from the application site to the national road network.
- 16.53 Northbound traffic leaving the site along the N2 must travel northwards along the North Road for some 3km and take the first exit at the Broughan Roundabout to access the N2 via the R132 link road.
- 16.54 Southbound traffic leaving the site and travelling towards the M50 are provided with direct access onto the N2 via a slip road which is accessible at the North Road traffic signal junction located approximately 1.3km north of the existing North Road entrance.

Plate 16-2 Outbound Routing from the Application Site



Existing Traffic Flows on the Public Road Network

Overview of Traffic Count Surveys

16.55 Classified traffic turning count surveys were carried out on Wednesday 7th March 2012 from 07:00hrs to 19:00hrs by Abacus Transportation Surveys at the following junctions on the North Road (R135), see **Figure 16-4**:

- Kilshane Cross traffic signal junction.....Survey Site 1
- N2 On-slip road traffic signal junction.....Survey Site 2
- N2 Off-slip road/North Road T-junction.....Survey Site 3
- Huntstown Quarry Access (North Road).....Survey Site 4

16.56 The traffic flow data from the March 2012 surveys forms the basis of the assessments of future road network capacity. The base survey data is provided in **Appendix 16-1, Volume III**.

North Road Surveyed Traffic Flows

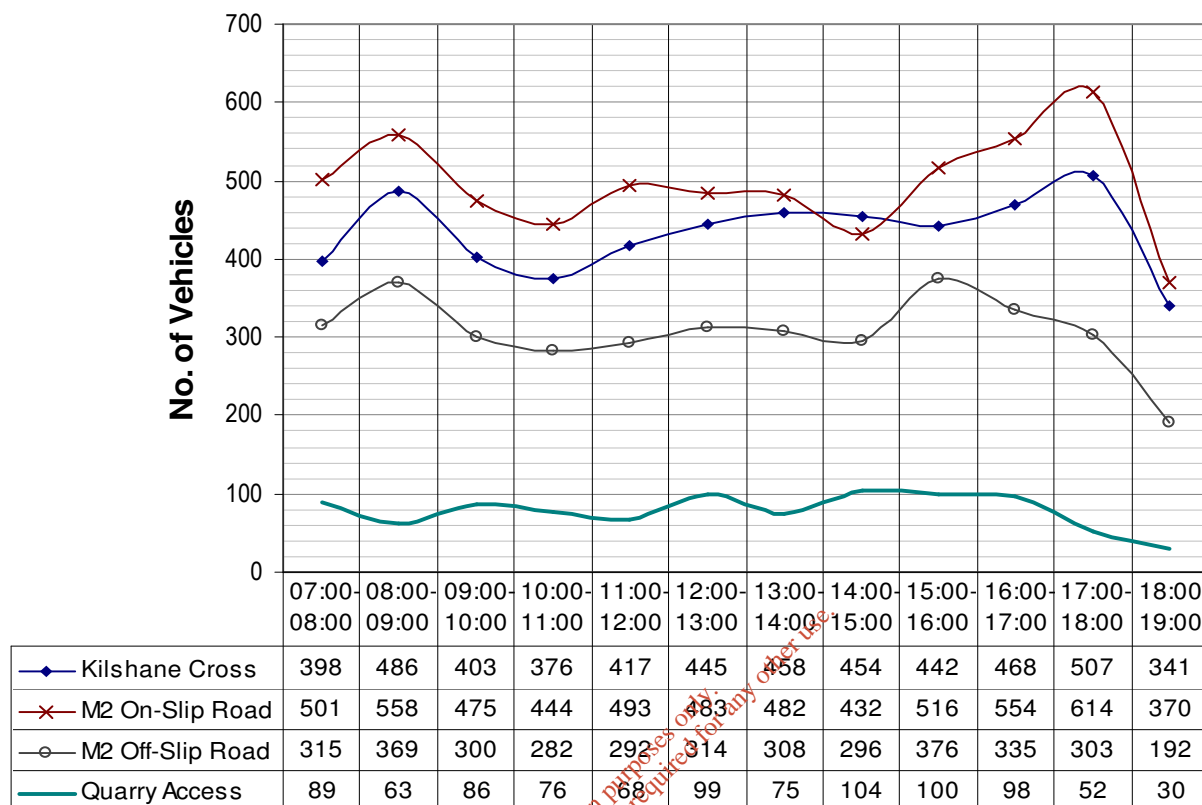
16.57 Traffic flows for the North Road were recorded at the four junctions listed above; the daily profile of link traffic flow along the R135 North Road is shown in **Plate 16-3**. In each case the profile of link road traffic is derived from the total two-way traffic flow recorded on the R135 to the north of each survey location.

16.58 **Plate 16-3** identifies that the typical commuter peak hours of 08:00-09:00hrs in the morning and 17:00-18:00hrs in the evening are generally the busiest hourly periods along the North Road between Kilshane Cross and the Huntstown Quarry access.

16.59 The most heavily subscribed junction of the 4No. surveyed was the N2 On-slip road traffic signal junction (Survey Site 2) which is located to the south of Kilshane Cross.

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Plate 16-3 North Road Two-way Traffic Flows



16.60 North Road peak hour and 12-hour traffic flows, together with calculated AADT values for each North Road link are shown in **Table 16-3** below. AADT values were calculated by applying published NRA expansion factors for urban commuter and non-commuter routes to traffic flows recorded between 08:00hrs and 19:00hrs.

Table 16-3 North Road Traffic Flow Characteristics

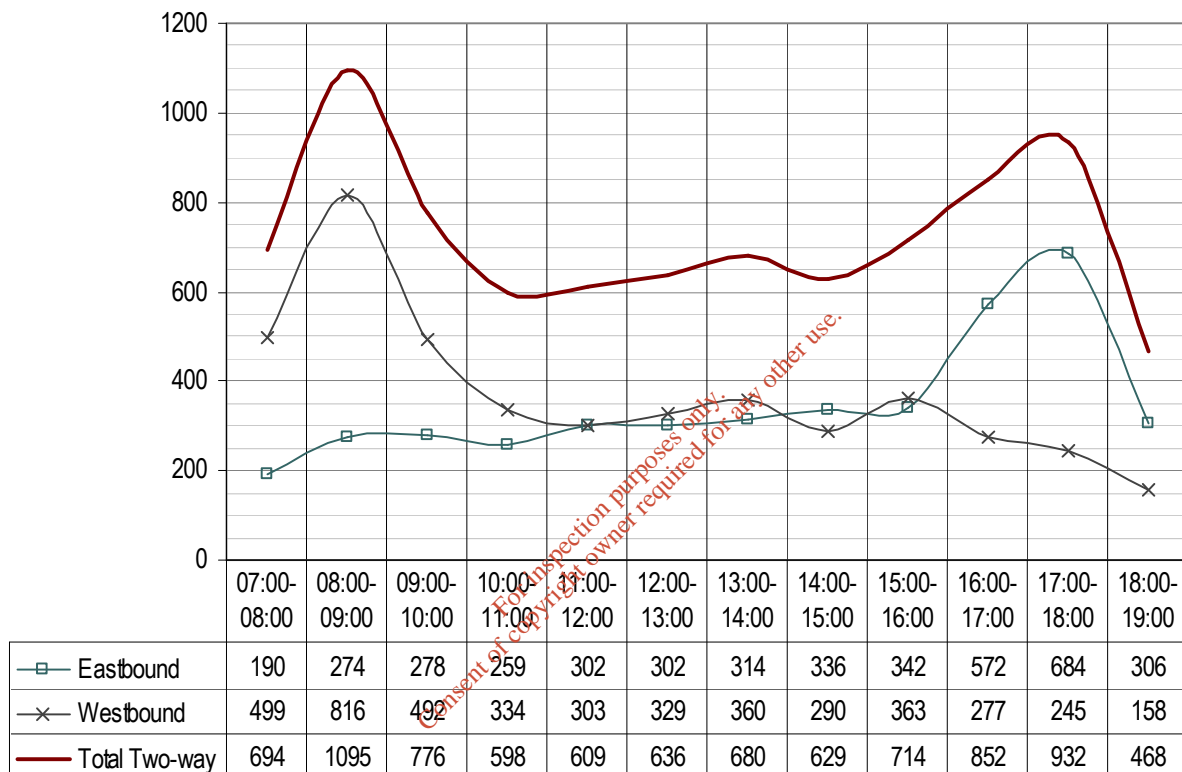
Survey Site	Section of North Rd (North of Each Site)	Peak Hour (Start)	Traffic Flow Characteristics (Two-way)			
			Peak Hour	12Hr	%HGV	AADT
1	North of Kilshane Cross	1700hrs	507	5,195	11.4%	6,812
2	North of N2 On-slip Road	1700hrs	614	5,922	19.9%	7,698
3	North of N2 Off-slip Road	1500hrs	376	3,682	21.7%	4,781
4	Huntstown Quarry Access	1400hrs	104	940	30.2%	1,072

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Kilshane Road Surveyed Traffic Flows

16.61 The Kilshane Road runs in a westerly then south-westerly direction from Kilshane Cross to the Cappagh Road. The daily traffic profile recorded on Kilshane Road (immediately west of Kilshane Cross at Survey Site 1) is shown in **Plate 16-4** below.

Plate 16-4 Kilshane Road Two-way Traffic Flows



16.62 The Kilshane Road morning peak hour is 08:00-09:00hrs during which a total of 1,095No. vehicles were recorded (two-way). The evening peak hour of 17:00-18:00hrs shows slightly lower traffic flows with the recorded two-way traffic flow being 932No. vehicles.

16.63 Prior to the opening of the N2 dual carriageway in 2006 the Kilshane Road carried a total of 1,116No. and 1,082No. vehicles in the respective morning and evening peak hours. This shows that the opening of the N2 dual carriageway resulted in modest traffic flow reductions on the Kilshane Road.

16.64 **Plate 16-4** shows that the majority of traffic travels westbound in the morning peak hour with the opposite the case in the evening peak hour.

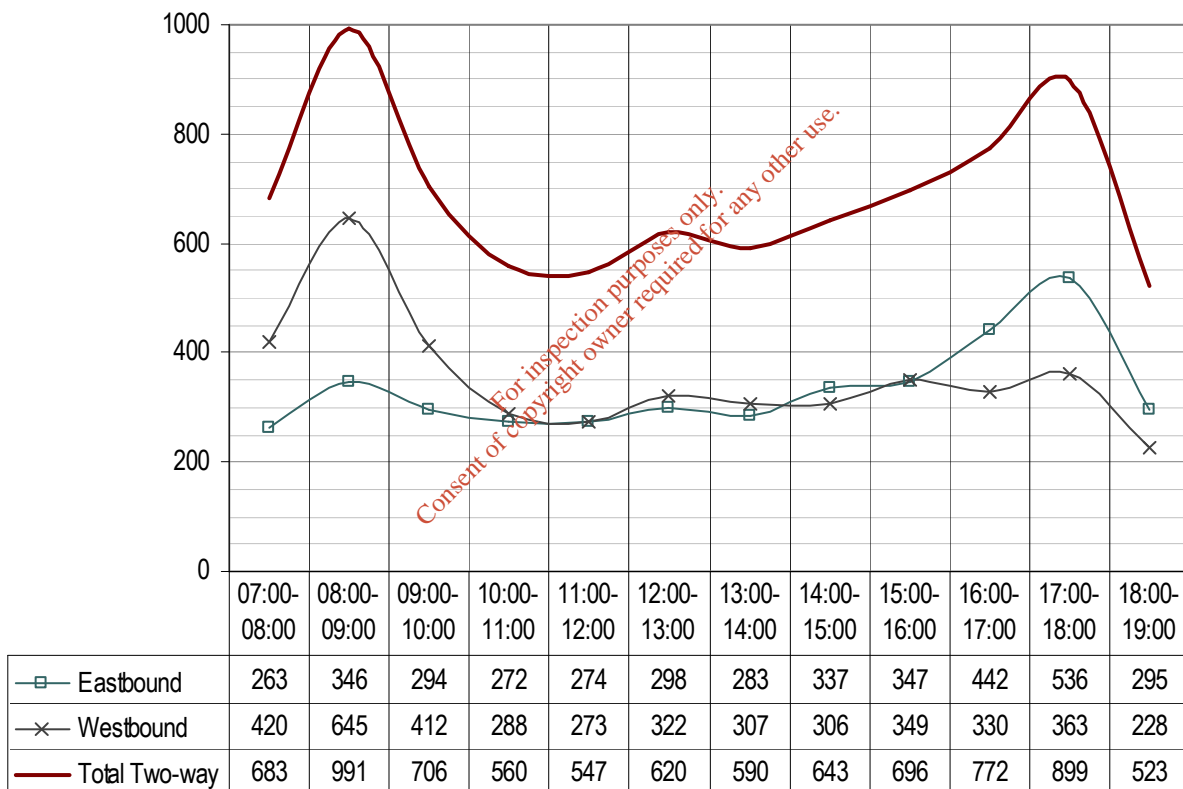
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16.65 A total of 8,683No. vehicles were recorded on the Kilshane Road during the survey period, of these 18.1% were HGV. The 2012 AADT is calculated to be 11,345No. vehicles.

R122 (St. Margarets) Link Road Surveyed Traffic Flows

16.66 The R122 (St. Margarets) Link Road runs in an easterly direction from Kilshane Cross to the R122. The R122 Link Road daily traffic profile is shown in **Plate 16-5** below. These traffic flows were those recorded immediately east of Kilshane Cross at Survey Site 1.

Plate 16-5 R122 Link Road Two-way Traffic Flows



16.67 **Plate 16-5** shows that the R122 Link Road has a similar traffic profile to that of the Kilshane Road. The morning peak hour of 08:00-09:00hrs recorded a total of 991No. vehicles. The evening peak hour of 17:00-18:00hrs recorded a total of 899No. vehicles.

16.68 Prior to the opening of the N2 dual carriageway in 2006 the R122 Link Road carried a total of 1,021No. and 1,142No. vehicles in the respective morning

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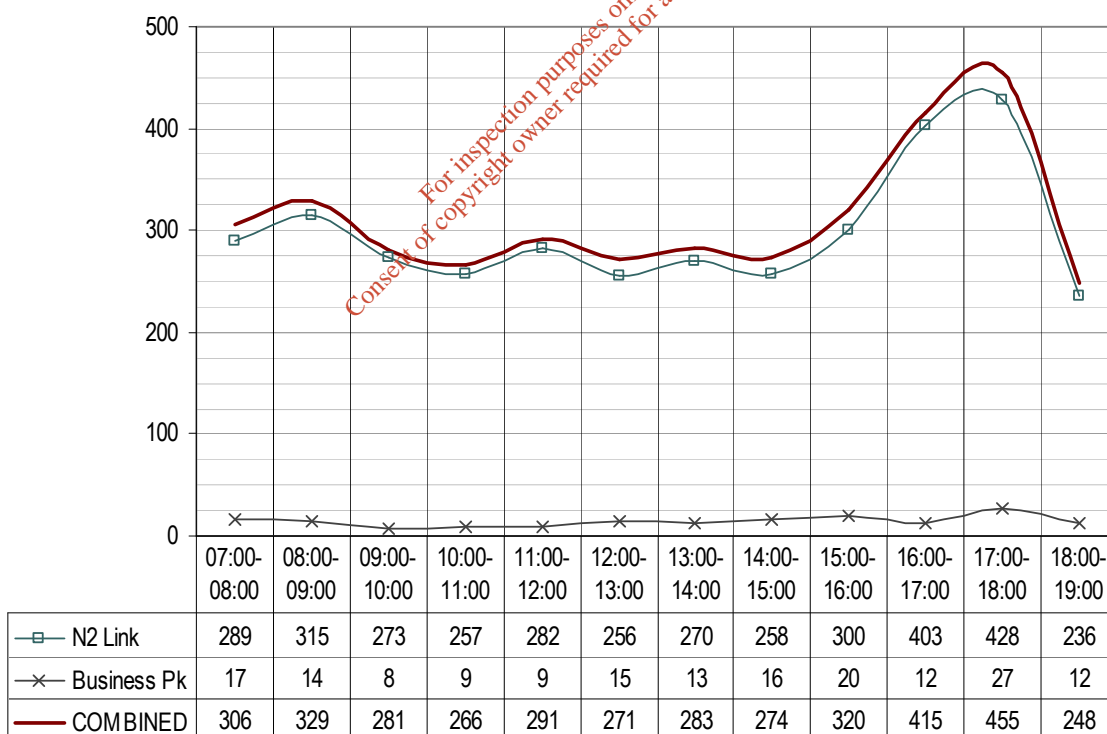
and evening peak hours. **Plate 16-5** above shows that the majority of traffic travels westbound in the morning peak hour with the opposite the case in the evening peak hour.

16.69 A total of 8,230No. vehicles were recorded on the R122 Link Road during the survey period, of these 10.9% were HGV. The 2012 AADT is calculated to be 10,717No. vehicles.

Link to N2 On-slip Road Surveyed Traffic Flows

16.70 The link to the N2 On-slip Road provides access to the N2 dual carriageway (southbound carriageway) and the Dublin Airport Logistics Park. The daily traffic profile of the link to the N2 On-slip Road is shown in **Plate 16-6** below. This traffic flow data was recorded immediately east of the traffic signal junction on the North Road, Survey Site 2.

Plate 16-6 Link to the N2 On-slip Road Traffic Flows



16.71 **Plate 16-6** shows that the link to the N2 On-slip Road carried a total of 329No. vehicles in the morning peak hour of 08:00-09:00hrs and a total of 455No. vehicles in the evening peak hour of 17:00-18:00hrs.

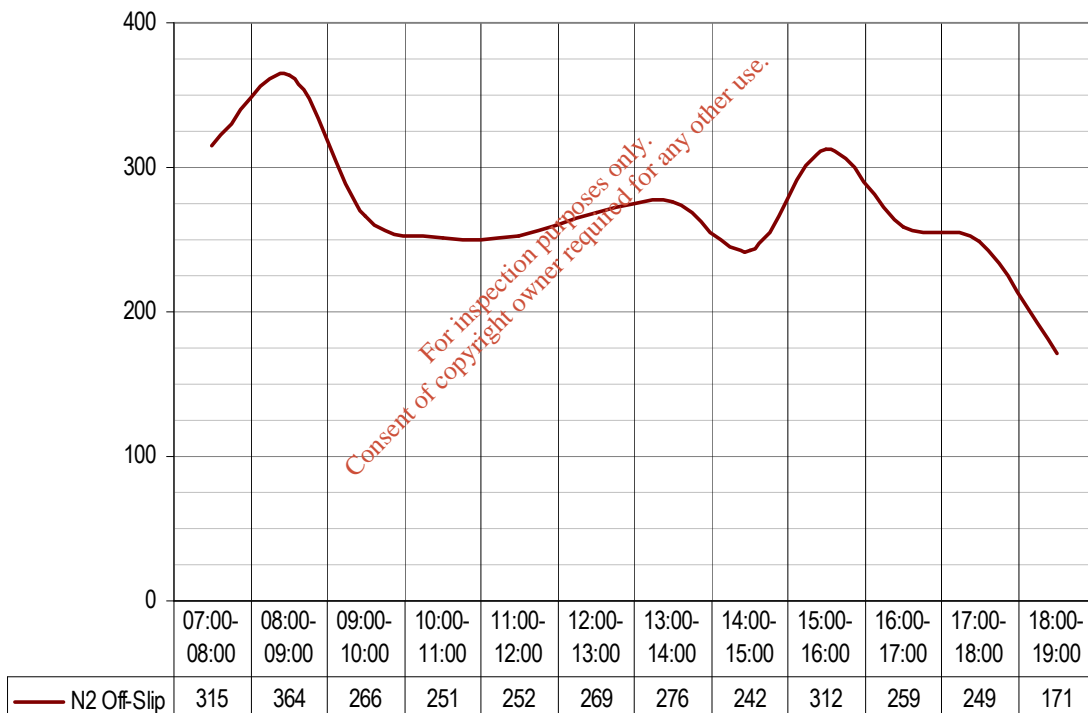
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16.72 A total of 3,739No. vehicles were recorded on the link to the N2 On-slip Road during the survey period, of these 19.3% were HGV. The 2012 AADT is calculated to be 4,875No. vehicles.

Link from N2 Off-slip Road Surveyed Traffic Flows

16.73 The N2 Off-slip Road provides access to Cold Winters and the North Road from the northbound carriageway of the N2. The daily traffic profile of the N2 Off-slip Road is shown in **Plate 16-7** below. This traffic was recorded immediately east of the priority intersection of the slip road with North Road, Survey Site 3.

Plate 16-7 Link to the N2 Off-slip Road Traffic Flows



16.74 **Plate 16-7** shows that the link from the N2 Off-slip road recorded a total of 364No. vehicles in the morning peak hour of 08:00-09:00hrs and a total of 312No. vehicles in the afternoon/evening peak hour of 15:00-16:00hrs.

16.75 A total of 3,226No. vehicles were recorded on the link from the N2 Off-slip road during the survey period, of these 23.3% were HGV. The 2012 AADT is calculated to be 4,134No. vehicles.

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Traffic Generated by the Existing Site

Existing On-Site Traffic Generating Activities

16.76 The Huntstown Quarry complex includes the following activities which contribute to traffic generation:

- Quarry;
- Crushing/Screening/Processing Plant;
- Block Manufacturing Facility;
- Machinery Maintenance Building;
- Concrete Batching Plant;
- Asphalt Plant;
- Paving Display Centre;
- Offices and Laboratories;

16.77 Traffic is also generated through the operation of Huntstown Power Station.

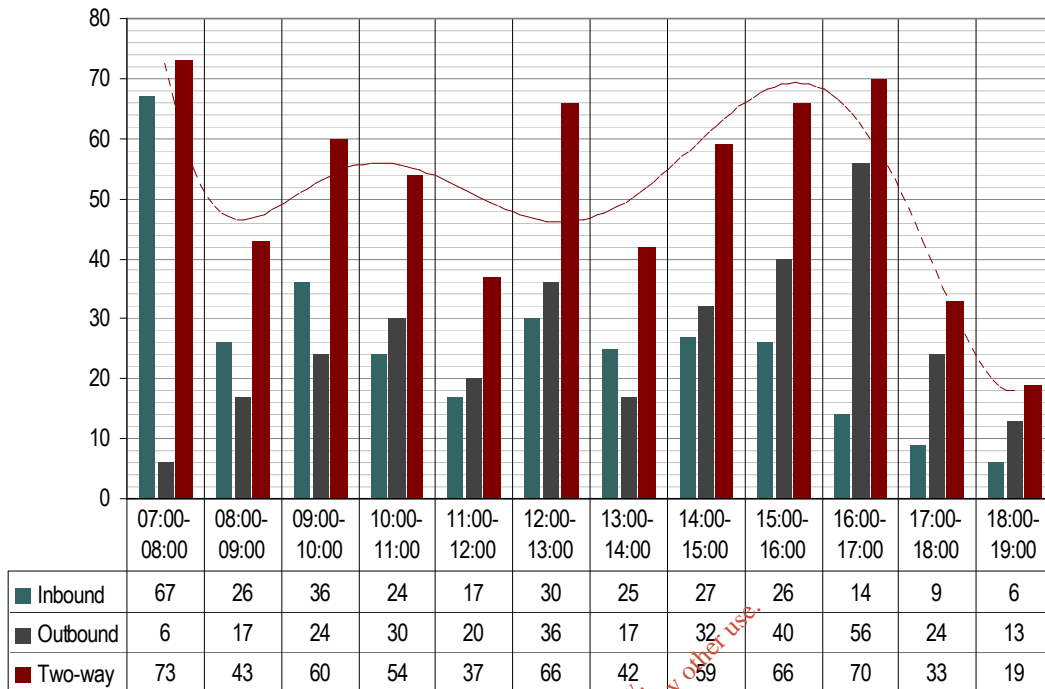
Surveyed Traffic Generation – North Road Access

16.78 The network traffic count surveys undertaken on Wednesday 7th March 2012 included the existing North Road access to the Huntstown Quarry lands, Survey Site 4, see **Figure 16-4**. This data includes the cumulative traffic flows currently generated at the North Road Access by the various activities.

16.79 **Plate 16-8** shows the North Road access inbound, outbound and combined traffic generation of the site for every hour during the survey. This Figure includes all vehicles generated i.e. cars, vans and HGVs.

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Plate 16-8 Traffic Flow Data recorded at North Road Access



16.80 The traffic count survey recorded a total of 622No. vehicle movements at the Huntstown Quarry North Road access (307 inbound, 315 outbound), over the 12 hour survey period.

16.81 The survey established that the peak activity for vehicles at the existing site occurred from 07:00-08:00hrs, during which a total of 73 vehicle movements were recorded. Of these, some 92% (67No.) travelled inbound and 8% (6No.) travelled outbound. The inbound morning peak hour flow is composed of over 90% cars which highlights that this period correlates with staff arrival/departure at the start of the day shift i.e. the period during which most staff travel to work.

16.82 Other relatively busy periods of traffic generation were 12:00-13:00hrs and 15:00-16:00hrs when in both cases a total two-way flow of 66No. vehicles were recorded. The period 16:00-17:00hrs was also considered relatively busy with a two-way flow of some 70No. vehicles recorded.

16.83 During the traditional commuter morning peak hour of 08:00-09:00hrs the Huntstown Quarry North Road access accommodated a total two-way flow of 43No. vehicles (26No. inbound and 17No. outbound). In the evening

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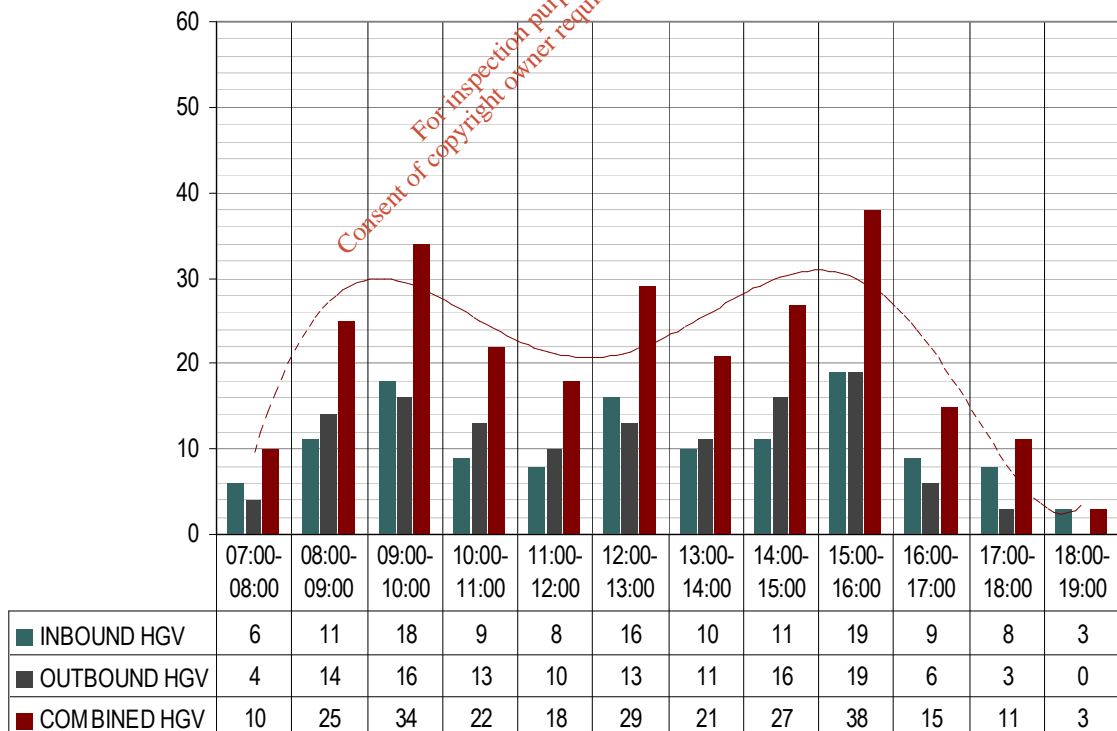
commuter peak hour period of 17:00-18:00hrs a total two-way flow of 33No. vehicles (9No. inbound and 24No. outbound) was recorded.

16.84 The average hourly total two-way traffic flow at the North Road access is 52 vehicles per hour (60% car, 40% HGV). In the context of existing commuter peak hour traffic flows and the existing receiving road environment it is clear that the Huntstown Quarry lands do not generally generate a significant volume of traffic.

16.85 The daily HGV traffic profile for the Huntstown Quarry North Road access is shown in **Plate 16-9** below. The profile figures include for all HGV movements generated by the site onto the North Road during the survey at Survey Site 4.

16.86 The survey data shows that a total of 253No. HGV movements were generated at the Huntstown Quarry North Road access.

Plate 16-9 HGV Recorded at North Road Access



16.87 **Plate 16-9** shows that HGV are generated continuously throughout the day from 0700hrs through to 19:00hrs, albeit that the level of HGV activity is

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generally greater in the morning/afternoon than in the evening. HGV traffic drops sharply after 16:00hrs.

16.88 The development peak hour for HGV traffic was recorded as 15:00hrs to 16:00hrs during which a total of 38No. HGV movements (19No. inbound, 19No. outbound) were generated at the North Road Access.

16.89 Over the 12 hour survey period 07:00-19:00hrs the site generated an average of 21No. HGV movements per hour.

16.90 HGV are sub-divided into two HGV classifications for the purposes of the traffic count surveys: OGV1 and OGV2.

- OGV1 include all rigid vehicles over 3.5 tonnes gross vehicle weight with 2 or 3 axles;
- OGV2 include all rigid vehicles with 4 or more axles and all articulated vehicles.

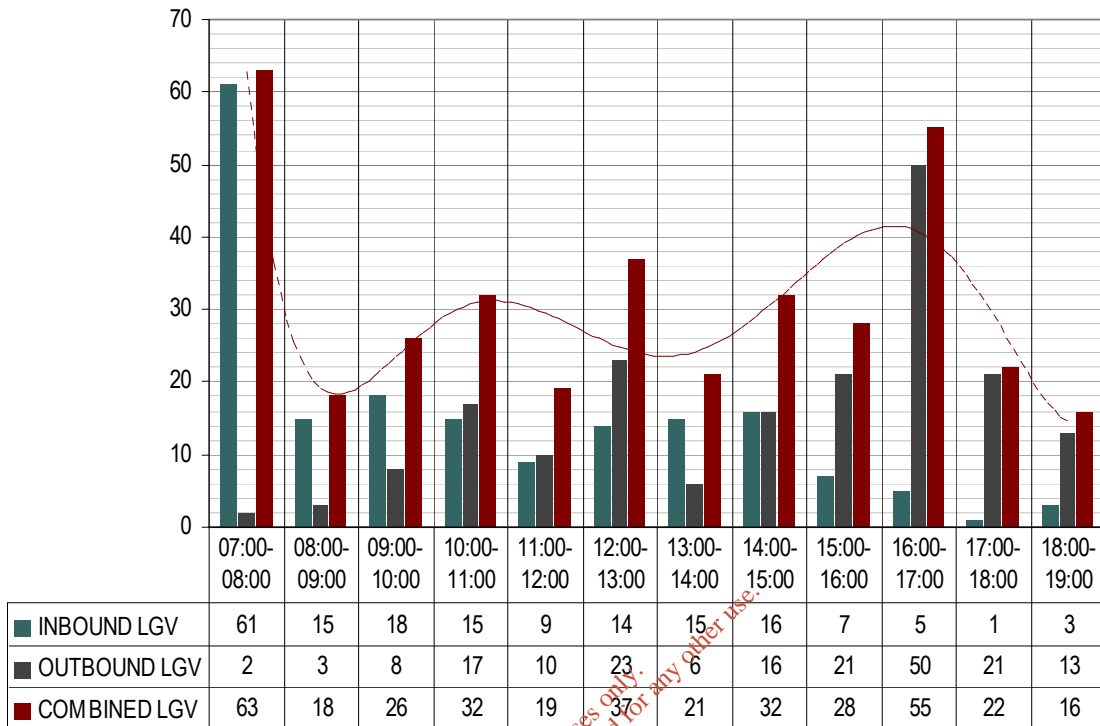
16.91 Of the total 253No. HGV recorded during the survey, 22% [55No.] were classified as OGV1 and 78% [198No.] were classified as OGV2.

16.92 The Huntstown Quarry, North Road access, accommodated a total of 622No. vehicles (LGV and HGV). Some 253No. of these vehicles were HGV so accordingly a total two way flow of 369No. LGV were generated throughout the entire survey. The average hourly two-way flow of LGV is 30 vehicles.

16.93 The daily LGV traffic profile for the Huntstown Quarry North Road Access is shown in **Plate 16-10** below. The profile figures include for all LGV movements generated by the site onto the North Road during the survey at Survey Site 4.

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Plate 16-10 LGV Recorded at North Road Access



16.94 There are two separate accesses serving the Huntstown Quarry lands from the public road network; a primary access on North Road and a secondary access on Kilshane Road. The response to further information provided on Planning File Reg. Ref.: FW12A/0022 for the continuance of quarrying reports upon typical total trip generation from the site based upon automatic traffic counter data. The EIS also reports upon the proportions of Roadstone and Huntstown Power traffic using the separate accesses. A review of the figures on the planning file confirms that the above survey data is representative of typical current daily traffic flow activity at the North Road access to the existing site.

Recent Planning Activity in the Vicinity of the Site

16.95 The assessment of the future operation of the receiving road network has taken into account the traffic volumes and distribution arising from the following permitted and proposed developments.

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Kilshane Cross Recycling Park – Fingal County Council

- 16.96 The site of the proposed Kilshane Cross Recycling Park is located approximately one kilometre to the northwest of the North Road access to the Huntstown Quarry site. The current FDP 2011-2017 attaches a Local Development Objective, 405, to the site as follows: *facilitate the development of infrastructure for waste management, including construction and demolition waste processing, biological treatment of organic waste, a sludge treatment facility and a waste transfer station.*
- 16.97 It was granted permission subject to conditions by An Bord Pleanála (PL06F.EL2045) for the following activities:
- A Construction and Demolition Waste Recovery Facility processing 75,000 tonnes per annum (tpa);
 - A Biological Waste Treatment Facility treating 45,000tpa of segregated domestic and commercial organic waste;
 - A Waste Transfer Facility processing 65,000tpa of municipal solid waste; and,
 - A Sludge Hub Centre treating 26,511tpa of municipal sludge.
- 16.98 The site is also licensed by the Environmental Protection Agency (EPA), Reg. No. W0223-01.
- 16.99 An access onto the North Road for the recycling park was recently partially developed by FCC. However, the site is not currently operational. The most recent Annual Progress Report (2009) for the Waste Management Plan for the Dublin Region 2005-2009 provides details on the status of Infrastructural Developments. Regarding Biological Treatment it states: *'In 2009 the Dublin Local Authorities decided to terminate the competition for the Dublin Biological Project at Kilshane. It had become apparent during the process that the Projects would not deliver value for money based upon its current specifications'*.

Soil Recovery/Inert Waste Facility – Roadstone Wood Ltd.

- 16.100 In February 2011 Roadstone Wood Ltd. applied to the EPA for a waste licence for a proposed soil recovery facility at the Huntstown Quarry site

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(EPA Reg. No. W0277-01). The licence application is currently being considered by the EPA.

Continuance of Quarry – Roadstone Wood Ltd.

16.101 Roadstone Wood Ltd. submitted a planning application to Fingal County Council in March 2012 proposing the continuance of existing authorised facilities and activities at the Huntstown Quarry site for a period of 35 years (Planning Reg. Ref.: FW12A/0022). Permission was granted by FCC in February 2013. This application is the subject of an appeal to An Bord Pleanála (PL06F.241693).

Metro West Park & Ride at Kildonan

16.102 The RPA has provisional proposals for a 1,000No. space park and ride facility at Kildonan, the location of which is shown on **Figure 16-1**. The facility will be accessed from North Road (Coldwinters Cul-de-sac) to the south of the Huntstown Quarry access. The Metro West project has recently been suspended indefinitely.

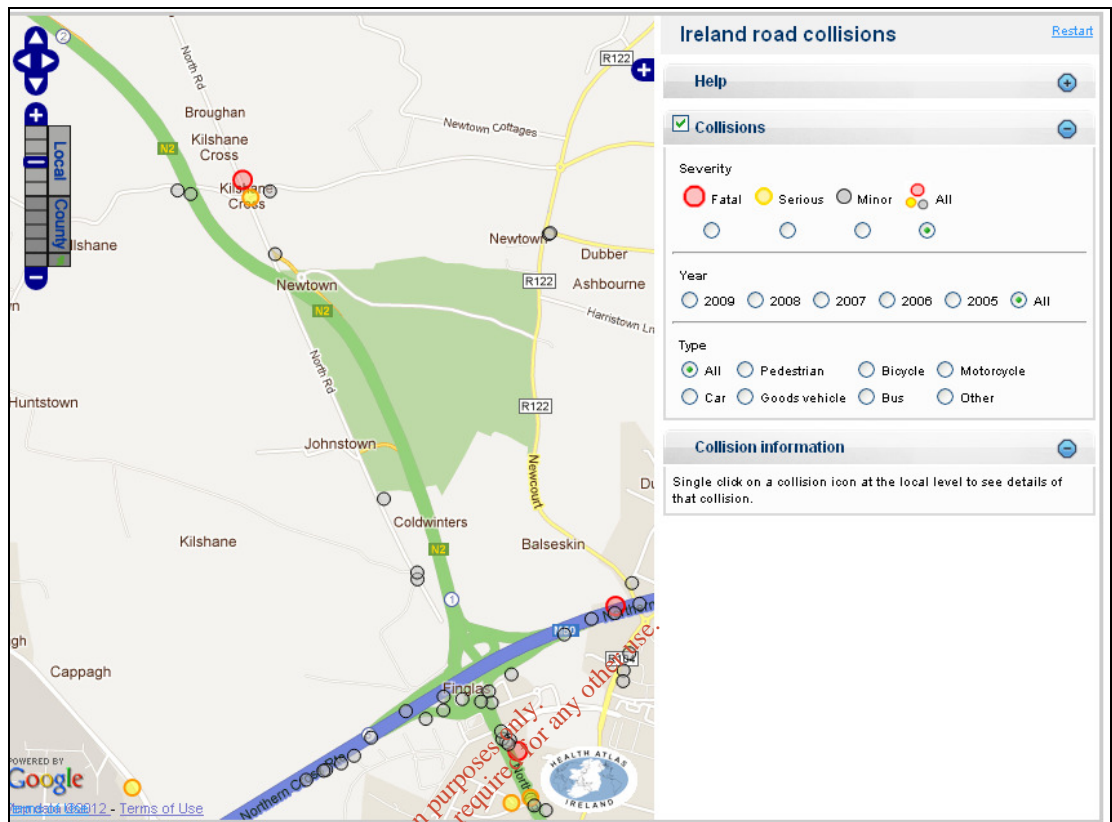
Review of Road Safety Authority (RSA) Collision Data

16.103 The RSA website, www.rsa.ie, provides an online record of collision statistics recorded from 2005 to 2011. A search of a particular cordon shows the location and number of accidents mapped together with basic details. Accidents are categorised based upon severity which is classified as fatal, serious or minor injury.

16.104 The RSA data shows that six collisions were recorded on the North Road between Kilshane Cross and the end of the Cul-de-Sac at Coldwinters between 2005 and 2009. A plot of all the recorded collisions is shown in **Plate 16-11** below whilst further detail for individual accidents is provided in **Appendix 16-2, Volume III**.

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Plate 16-11 Road Traffic Collisions in the vicinity of the Site (2005-2009)



16.105 Collisions resulting in fatalities are marked with red circles; those resulting in serious injury are marked with yellow circles and those resulting in minor injury are marked with grey circles.

16.106 **Plate 16-11** shows that a single fatality was recorded at Kilshane Cross in 2005. This was before the opening of the N2 dual carriageway. The collision resulted in the death of a motorcyclist undertaking a right turn manoeuvre at the junction during the evening commuter period.

16.107 A serious injury accident also occurred at Kilshane Cross in 2008, after the N2 dual carriageway had opened. This involved a heavy goods vehicle and occurred in the early hours of a Saturday morning.

16.108 **Plate 16-11** shows that two minor injury collisions occurred on the North Road in the vicinity of the existing Huntstown Quarry access. One of the collisions involved a motorcycle and occurred in 2005 before the N2 dual carriageway was open. The other minor injury collision occurred in 2006

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when the speed limit on the North Road had been reduced to 80kph and the N2 dual carriageway was open. This was a head-on collision involving a heavy goods vehicle.

16.109 The RSA data shows only one further minor collision reported on North Road for the period 2010 to 2011. This single vehicle collision is recorded to have occurred in the daytime about 200m north of Kilshane Cross.

16.110 In summary the RSA collision data indicates that there is not a serious accident potential along the stretch of the North Road in the vicinity of the site. Since the opening of the N2 dual carriageway a single serious accident occurred at Kilshane Cross and a single minor injury accident occurred in the vicinity of the existing quarry access.

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IMPACT ASSESSMENT

Overview

16.111 It is proposed that the plant will process source separated organic waste, but it will also be capable of handling residual organic waste. Traffic assessments typically investigate the worst case i.e. the criteria under which the proposed plant is likely to generate most traffic. The processing of source separated waste has the potential to generate more traffic than if the plant were to process only residual waste. Therefore, the processing of only source separated waste will result in a higher value of traffic generation than an alternative scenario where only residual waste or indeed a combination of source separated waste and residual waste were to be accepted. Accordingly, the volume of traffic generation to process only source separated organic waste gives rise to the worst case scenario in terms of likely traffic generation to the receiving road network.

Proposed Access Arrangements

16.112 Inbound vehicle access to the subject site is proposed from an existing internal road which diverges from the main Roadstone internal access route at approximately 160m from North Road and thus at a point beyond where the access road divides. The proposed access route measures 7.3m in width and runs parallel to the primary access road serving the quarry and Huntstown Power Station.

16.113 Outbound vehicle access is proposed at the existing large diameter internal roundabout located approximately 700m along the primary internal road from the North Road. The existing four arm roundabout serves Huntstown Power Station and the quarry. This proposal will use the southern arm of the existing roundabout for exit only from the site.

16.114 Proposed access arrangements are shown on **Figure 16-2**.

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Forecast Future Traffic Generation

Staff Traffic Generation

16.115 It is assumed that the Plant will reach the proposed processing capacity of 90,000 tonnes per annum in 2015 (Opening Year). The proposed plant will receive waste and export digestate and non-organics recovered from the pre-treatment of the waste between the hours of 07:00hrs and 18:00hrs Monday to Saturday, approximately 300No. days per annum.

16.116 The proposed plant is estimated to employ some 16No. staff working over three pre-determined shifts.

16.117 For the purposes of the traffic assessment it is conservatively assumed that each staff member will generate 1No. LGV trip per day (entering the site before the start of shift and exiting after the end of shift). The shifts and resulting traffic generation are shown in **Table 16-4** below.

Table 16-4 Forecast Development LGV Generation

Shift Time	No. of Staff	Forecast LGV Traffic Generation	
		Arrivals	Departures
07:00-16:00hrs	7	7 (06:00-07:00hrs)	7 (16:00-17:00hrs)
13:00-22:00hrs	6	6 (12:00-13:00hrs)	6 (22:00-23:00hrs)
22:00-07:00hrs	3	3 (21:00-22:00hrs)	3 (07:00-08:00hrs)
Daily	16	16	16

16.118 **Table 16-4** shows that traffic generated by staff will be spread over the entire working day. In total the proposed plant is forecast to generate a total of 16No. staff related LGV trips per day (16No. arrivals and 16No. departures).

16.119 The greatest impact arising from staff is forecast to occur in the periods of 06:00-07:00hrs and 16:00-17:00hrs when, in both cases, a total of 7No. LGV movements are likely to be generated.

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Traffic Arising from Processing of Feedstock

- 16.120 It is assumed that the 90,000 tonnes of feedstock will arrive on site in refuse collection vehicles. Based upon manufacturers specifications for typical refuse collection vehicles payloads for source separated waste are expected to be in the region of 12 tonnes. In the interest of using 85th percentile or 'upper value' HGV traffic generation for the proposed Plant it has been assumed that payloads will be lower. An average payload of 10 tonnes per vehicle has been assumed.
- 16.121 It is estimated that the plant has the potential to produce approximately 10,500 tonnes per annum of digestate to be exported for use as a fertiliser. The digestate could be exported on articulated vehicles in loads of up to 23 tonnes; nonetheless in the interests of a robust assessment it has been assumed that the fertiliser will be exported off site on smaller payloads of 8 tonnes.
- 16.122 The source separated waste will potentially include other low volumes of non-organic waste types which are unsuitable for processing (refer to Chapter 2 of the EIS). These waste types will be segregated before being exported off site for further processing. It is assumed that these waste types will be exported off site in skip lorries carrying an average payload of 4 tonnes.
- 16.123 Surveys show that Huntstown Quarry (combined with Huntstown Power Station) generates the equivalent of approximately 10% of its daily HGV traffic generation in the morning peak hour and approximately 4% of its daily HGV traffic generation in the evening commuter peak hour. Based upon this factor and experience at other waste treatment/handling facilities it is assumed that 10% of the total daily HGV traffic generation of the proposed Plant could be manifest on the receiving road network in the assessment commuter peak hour.
- 16.124 **Table 16-5** shows the breakdown in tonnages and forecast HGV traffic generation for the proposed plant under the above assumptions.

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Table 16-5 Forecast Development HGV Generation

	Import	Export		Total HGV Trips
	Feedstock	Digestate	Ancillary	
Annual Tonnages	90,000	10,500	3,800	
Daily HGV Trips	30	5	4	39
Peak Hour HGV Trips	3	1	1	5

16.125 The following **Table 16-6** provides a summary of the total daily and peak hour traffic generation arising from the processing of feedstock at the proposed Plant and includes for all sources of traffic generation.

Table 16-6 Forecast Development Traffic Generation

Time Period	Development Site Traffic Generation		
	HGV Trips	LGV Trips	Total Trips
Daily	39	16	55
Peak Hour	5	0	5

Construction Traffic Generation

16.126 A construction period of 12 months is envisaged for the proposed plant. The primary generators of traffic during the construction phase will be construction staff and the delivery of construction materials. Construction materials are expected to be predominantly structural steel, cladding and concrete.

16.127 Based on experience of similar projects it is estimated that no more than 25No. HGV trips per day would be required to cater for the delivery of these materials to the site during the most intensive construction period. Much of the construction materials will be sourced from the adjacent quarry which will reduce the impact of construction traffic upon the local road network. The construction phase is therefore estimated as likely to generate an average of 15No. HGV trips per day on the local road network.

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16.128 Construction traffic is expected to mainly consist of rigid body vehicles, 8-wheel tippers, concrete wagons and articulated vehicles.

16.129 Construction staff will also generate LGV trips in travelling to and from the site. It has been assumed that the general workforce for construction would constitute no more than 30No. staff. It is assumed that each construction staff member could potentially generate 1 LGV trip per day, resulting in a total of 30No. LGV trips per day.

16.130 It is typical for traffic assessments to address robust scenarios. The volumes of traffic generated under the operational assessment scenario exceed that quantum of traffic expected to be generated during the construction period. It follows that construction traffic is likely to have a lesser impact upon the receiving road network than operational traffic.

Forecast Distribution of Proposed Development Traffic

16.131 It is assumed that the majority of development generated traffic will use the N2 dual carriageway in travelling to/from the site. Notwithstanding this a proportion of development generated traffic has been applied to roads other than the N2 dual carriageway in the vicinity of the site.

16.132 Development generated traffic is assumed to be distributed as follows:

Inbound Traffic

- 90% from the N2 northbound off-slip road;
- 5% from Kilshane Road;
- 5% from R122 (St. Margarets) Link Road.

Outbound Traffic

- 80% to the N2 southbound on-slip road;
- 10% to the N2 northbound (via Kilshane Cross/Broughan Roundabout);
- 5% to Kilshane Road;
- 5% to R122 (St. Margarets) Link Road.

16.133 Development traffic distribution in terms of the numbers of vehicles (LGV and HGV) generated is shown in the following **Appendix 16 Figures, Volume III**:

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- Morning Peak Hour Distribution: **Appendix 16-3** Figure C3;
- Evening Peak Hour Distribution: **Appendix 16-4** Figure D3;
- Daily Distribution: **Appendix 16-5** Figure E3.

Traffic Model Assumptions

Overview

16.134 The capacity of any road network is dictated by the operation of the links and junctions within that network. Traffic flow models of key junctions on the local road network have been set up to analyse the performance of these junctions during the surveyed road network peak periods of 08:00-09:00hrs and 17:00-18:00hrs.

16.135 In line with IHT guidelines¹, upper value development generated traffic flows (typically 85th percentile or representative thereof) have been added to the local road network for all future year junction capacity analyses. This section outlines the assumptions adopted in the traffic modelling assessments whilst the following section provides a summary and discussion of the results of the traffic modelling analysis.

Junctions Analysed

16.136 Traffic models of the following junctions were prepared to determine the likely development impact over the lifetime of the scheme:

- Kilshane Cross traffic signal junction;
- N2 On-slip Road traffic signal junction;
- N2 Off-slip Road/North Road T-junction;
- Huntstown Quarry North Road Access.

Assessment Years

16.137 In line with national guidelines for the preparation of traffic assessments, traffic flows at the above junctions have been derived for the following assessment timescales:

- Surveyed 2012;
- 2013 (after Opening of proposed N2-N3 Link Road);

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- Opening Year 2015;
- Opening Year +5yrs 2020;
- Opening Year +15yrs 2030.

Scenarios Analysed

16.138 Traffic flow scenarios for both 'with development' and 'without development' have been prepared for the above assessment timescales i.e. 'Do Nothing' and 'Do Something' scenarios. These scenarios are provided so that the incremental impact of traffic from the proposed development can be evaluated against a baseline where no development was to occur at the site.

16.139 The 'Do Nothing' baseline scenarios do nonetheless include for the future realisation of development plan zoned lands and other committed and/or expected developments in the vicinity of the site. The following developments are assumed to be in place for the assessment timescales:

Opening Year 2015:

- Continuance of Quarry – Roadstone Wood Ltd. (Planning Reg. Ref. FW12A/0022);
- N2-N3 Link Road Scheme;
- Proposed Soil Recovery Facility at Huntstown Quarry (EPA Reg. No. W0277-01, application currently pending).

Opening Year +5yrs 2020:

- Continuance of Quarry – Roadstone Wood Ltd. (Planning Reg. Ref. FW12A/0022);
- N2-N3 Link Road Scheme;
- Proposed Kilshane Recycling Park (EPA Reg. No.: W0223-01, planning permission granted PL06F.EL2045).

Opening Year +15yrs 2030:

- Continuance of Quarry – Roadstone Wood Ltd. (Planning Reg. Ref. FW12A/0022);
- N2-N3 Link Road Scheme;
- Metro West Park & Ride at Kildonan (See **Figure 16-1**; planning process suspended, September 2011);

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- General Enterprise zoned lands in the current FDP 2011-2017 between the North Road and the N2 dual carriageway (See **Figure 16-1**; no application pending).

Assumed Traffic Generation of Committed/Expected Developments

16.140 Traffic generation arising from the potential future developments listed above has been based upon published data contained in the respective EIS for each scheme where such exists. The following sets out assumptions regarding the traffic generation characteristics of lands where no EIS or planning application exists and only preliminary scheme data or zoning objectives are known.

Soil Recovery Facility (EPA Reg. No. W0277-01)

16.141 The EIS for the proposed Soil Recovery Facility at Huntstown Quarry (EPA Reg. No. W0277-01) forecasts that the facility has the potential to generate some 66No. HGV trips per day.

16.142 This EIS estimate of 66No HGV trips per day is based upon an importation rate of some 400,000 tonnes of inert waste per annum, an average import load of 20 tonnes and the facility being operational for some 300No. days per annum. In terms of the peak hour traffic flows the EIS estimates that 7No. HGV trips (7No. HGV in and 7No. HGV out) would be generated. The EIS also estimates that the proposed Soil Recovery Facility will not generate any additional LGV traffic.

Kilshane Cross Recycling Park (EPA Reg. No. W0223-01 Planning Reference PL06F.EL2045)

16.143 The Kilshane Cross Recycling Park EIS provides estimates of traffic generation for the entire development when fully operational and estimates a traffic generation rate in the order of 225No. vehicle trips per day. The Kilshane Cross Recycling Park EIS estimates that the daily traffic stream will comprise 70No. LGV trips and 155No. HGV trips. For the purposes of the traffic assessments herein it has been assumed that 10% of the daily traffic generation could reasonably be manifest in both the morning and evening peak hour assessment periods.

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Metro West Park & Ride at Kildonan

16.144 The RPA has provisional proposals for a 1,000No. space park and ride facility at Kildonan. The facility will be accessed from the Coldwinters Cul-de-sac at a location somewhere to the south of the Huntstown Quarry lands. No layout plans have been prepared by the RPA. In order to estimate the forecast traffic generation of the proposed park and ride facility reference has been made to the EIS for the section of the proposed Metro West scheme extending from Old Blessington Road, Tallaght to Dardistown.

16.145 The Metro West EIS estimates that the proposed 1,000 space Kildonan Park & Ride Facility could be operating at 70% capacity in the assumed opening year of 2019. This is assumed to result in 700No. vehicle arrivals between 07:00hrs and 10:00hrs in the morning and an equivalent number of departures between 16:00hrs and 19:00hrs in the evening. The Metro West EIS further assumes that 50% of these or 350No. vehicles would be likely to be generated during the typical commuter peak periods of 08:00-09:00hrs in the morning and 17:00-18:00hrs in the evening.

16.146 Notwithstanding the above the proposed Metro West project has been suspended indefinitely. For the purpose of the modelling analysis nonetheless it is assumed that the proposed Park & Ride Facility at Kildonan could be in place and operating in the future assessment year of 2030.

Zoned Lands

16.147 Despite the ongoing economic situation, for the purposes of the traffic analyses it is assumed that the lands zoned in the Fingal Development Plan 2011-2017 for General Enterprise (**Figure 16-1**) which have frontage onto the North Road between Kilshane Cross and Coldwinters cul-de-sac will be realised over the lifetime of the scheme.

16.148 It has been assumed that industrial units similar to those at the existing Dublin Airport Logistics Park (on the opposite side of the N2 dual carriageway) will be developed on these lands. It is assumed that the ratio of gross floor area to site area for each industrial unit will be 0.314 which is

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approximately the ratio at Dublin Airport Logistics Park (Planning File Ref. F05A/0582).

16.149 Based upon the existing layout of the road network and general access requirements to North Road it is estimated that the future industrial units on these lands could be developed as three distinct sites, see **Table 16-7**.

16.150 The TRICS database (Trip Rate Information Computer System) is the UK and Ireland's national system of trip generation analysis, containing over 6,300 directional transport surveys at over 100 types of development. The TRICS database has been used to estimate representative traffic generation rates arising at the zoned lands. **Table 16-6** provides a summary of the assumed development criteria together with TRICS rates and corresponding forecast of daily traffic generation.

16.151 Column one of **Table 16-7** sets out criteria for each of the three distinct sites. Based upon site accessibility, each development site is identified by its position relative to the traffic count survey sites along North Road. The traffic count survey sites are as follows (see **Figure 16-4**)

- Kilshane Cross traffic signal junction.....Survey Site 1
- N2 On-slip road traffic signal junction.....Survey Site 2
- N2 Off-slip road/North Road T-junction.....Survey Site 3
- Huntstown Quarry Access (North Road).....Survey Site 4

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Table 16-7 Forecast Traffic Generation of Zoned Lands

Zoned Lands	Site Area (m ²)	Estimated GFA (m ²)	TRICS Daily Trip Rate (Per 100m ²)	TRICS Daily Trips	TRICS Forecast Daily Movements		
					Total	HGV	LGV
South of Survey Site 4	23,905	7,507	3.35	252	504	101	403
Between Survey Sites 3 & Site 4	25,800	8,102	3.35	272	544	109	435
Between Sites 2 & Site 3	52,950	16,627	3.35	558	1,116	223	893

Continuance of Quarry – Roadstone Wood Ltd.

16.152 The recently granted approval for continuance of quarrying activities at Huntstown Quarry (Planning Reg. Ref.: FW12A/0022) shows that when operating at its peak it generated more than twice the surveyed current traffic flow. It is reasonable to presume that the N2 and associated infrastructure which opened in 2006 would have been designed to cater for such flows as existed. Since the N2 opened there have been no capacity issues reported at Huntstown Quarry entrance even when traffic flows were significantly higher.

16.153 This assessment allows for continued traffic generation arising from quarrying activities as were recorded in the traffic surveys but does not however specifically address the absolute peak traffic generation manifest at the quarry during the building boom times as these flows are considered highly unlikely to arise from quarrying activity alone for a long time, if ever. In any case the analysis allows robust traffic generation rates associated with the realisation of significant zoned lands and the Metro West. These developments, which are equally unlikely to materialise in the next 10-15 years are nonetheless assumed in this assessment to generate robust quanta of traffic in their own right and such traffic flows are several multiples of the highest quantum of traffic ever recorded at Huntstown Quarry during the boom times. Metro West and Zoned lands are assumed to generate in

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the region of 2,500 vehicle movements per day. It is reasonable therefore to conclude that the assessment figures used in this study are extremely robust in the context of both the receiving road network and the long-term (20 years) economic outlook.

N2-N3 Link Road Scheme

16.154 The N2-N3 link road will connect the N2 Cherryhound Interchange with Tyrellstown and the N3 Damastown Interchange. The road scheme was officially opened in May 2013.

16.155 Following the realisation of this scheme, traffic flows on the local road network are expected to reduce and redistribute given the emergence of a more direct link between these two national roads. Traffic flows at Kilshane Cross are expected to be significantly reassigned as a result of the scheme.

16.156 For the purposes of this assessment **Appendix 16-3** of **Volume III** Figures C2 (morning peak hour) and **Appendix 16-4** of **Volume III** Figure D2 (evening peak hour) show the reductions and re-distribution of traffic assumed after opening of the N2-N3 link road scheme.

Assumed Traffic Growth

16.157 It is assumed that the levels of development traffic generation will not fluctuate appreciably over time. The figures used in the assessments are not average but upper value figures which can reasonably be considered to account for typical daily and seasonal fluctuations.

16.158 Notwithstanding the likelihood that following the opening of the proposed N2-N3 link road scheme North Road traffic flows are likely to significantly decrease, background traffic flows on the public road network have been assumed to grow in accordance with the latest growth factors published by the NRA.

16.159 NRA Medium growth factors have been applied to the surveyed traffic count data. The NRA medium growth factors assume traffic growth of 0.5% per annum for LGV and 0.4% per annum for HGV.

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- 16.160 The above medium growth factors should be viewed as extremely optimistic in the short to medium term. Ireland is currently in a period of unprecedented economic turmoil with significant unemployment. Recent NRA traffic counter data shows a trend of traffic flows decreasing nationally over the past two to three years.
- 16.161 Further to this the medium growth factors have been directly applied to peak hour traffic data. It can nonetheless be appreciated that growth factors are not always directly applicable to peak hour periods (the peak hour generally spreads out as opposed to intensifying). Ignoring this factor and adding growth directly to the peak hour results in robust calculations which should ensure a meaningful assessment.
- 16.162 In light of the above considerations it can be assumed that the figures used in the peak hour analysis are robust in terms of the likely future levels of traffic on the local roads network in the vicinity of the proposed development.

Traffic Model Results

Modelling Software

- 16.163 The Transport Research Laboratory (TRL) suite of computer modelling programs PICADY and OSCADY have been used to prepare a comparative assessment of the performance of junctions in the vicinity of the site under existing and future scenarios.
- 16.164 The TRL programs provide information relating to capacity, queuing and delay. 'Ratio of Flow to Capacity' (RFC) is calculated as the traffic demand divided by the junction capacity. Each arm of the junction will have its own RFC, and the worst RFC for the junction is taken, as is customary. The NRA Design Manual for Roads and Bridges suggests that a reserve capacity of 10-15% corresponding to an RFC of 0.850-0.900 is generally considered acceptable for simple priority junctions and accesses in urban areas (0.700 Rural); however, this figure should not be taken in isolation and should be considered together with other computer model output values relating to queuing and delay.

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16.165 A copy of the full traffic model output data for each of the assessments carried out on the local road network can be provided upon request.

Road Network Traffic Flow Diagrams

16.166 Road network traffic flow diagrams showing existing network traffic flow together with 'Do Nothing' and 'Do Something' future assessment traffic flow scenarios are provided as follows.

16.167 Assessment traffic flows during the am peak hour of (08:00-09:00hrs) are provided in **Appendix 16-3 of Volume III:**

- Figure C1: Existing 2012 surveyed traffic flows;
- Figure C2: Forecast re-distribution of traffic arising from proposed N2-N3 link road scheme in 2013;
- Figure C3: Proposed development traffic flows;
- Figure C4: Opening year 2015 do nothing traffic flows;
- Figure C5: Opening year 2015 do something traffic flows;
- Figure C6: Opening year +5 years 2020 do nothing traffic flows;
- Figure C7: Opening year +5 years 2020 do something traffic flows;
- Figure C8: Opening year +15 years 2030 do nothing traffic flows;
- Figure C9: Opening year +15 years 2030 do something traffic flows.

16.168 Assessment traffic flows during the pm peak hour of (17:00-18:00hrs) are provided in **Appendix 16-4 of Volume III:**

- Figure D1: Existing 2012 surveyed traffic flows;
- Figure D2: Forecast re-distribution of traffic arising from proposed N2-N3 link road scheme in 2013;
- Figure D3: Proposed development traffic flows;
- Figure D4: Opening year 2015 do nothing traffic flows;
- Figure D5: Opening year 2015 do something traffic flows;
- Figure D6: Opening year +5 years 2020 do nothing traffic flows;
- Figure D7: Opening year +5 years 2020 do something traffic flows;
- Figure D8: Opening year +15 years 2030 do nothing traffic flows;
- Figure D9: Opening year +15 years 2030 do something traffic flows.

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16.169 Daily traffic flows (AADT) on the receiving road network are shown in the following diagrams in **Appendix 16-5** of **Volume III** :

- Figure E1: Existing 2012 surveyed traffic flows;
- Figure E2: Forecast re-distribution of traffic arising from proposed N2-N3 link road scheme in 2013;
- Figure E3: Proposed development traffic flows;
- Figure E4: Opening year 2015 do nothing traffic flows;
- Figure E5: Opening year 2015 do something traffic flows;
- Figure E6: Opening year +5 years 2020 do nothing traffic flows;
- Figure E7: Opening year +5 years 2020 do something traffic flows;
- Figure E8: Opening year +15 years 2030 do nothing traffic flows;
- Figure E9: Opening year +15 years 2030 do something traffic flows;

Capacity of Huntstown Quarry Access

16.170 The results of the PICADY modelling analyses of the North Road site access under the various traffic flow scenarios are summarised in **Table 16-8** below.

Table 16-8 PICADY Output Data – Huntstown Quarry Access

Year	Description	RFC	
		AM Peak Hr	PM Peak Hr
Existing 2012	Existing	0.054	0.039
Opening Year 2015	Do Nothing	0.076	0.060
	Do Something	0.095	0.077
Opening Year +5 2020	Do Nothing	0.076	0.060
	Do Something	0.095	0.077
Opening Year +15 2030	Do Nothing	0.101	0.071
	Do Something	0.125	0.092

16.171 Given that an RFC value of less than 0.850 generally indicates that a junction is operating within capacity in the urban environment (0.700 in rural areas), it is reasonable to conclude from the results of the modelling exercise that the

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Huntstown Quarry access (North Road) junction will operate within capacity over the lifetime of the scheme. Queuing and delay as forecast by the traffic models are negligible in all instances.

16.172 The traffic model has assumed that the proposed development will contribute an additional 6No. HGV movements in and out of the site (12No. in total) during both the morning and evening peak hours. No LGV movements are likely to be generated by the proposed development during these periods since they do not coincide with shift start or end times. In reality it is expected that the proposed development will generate even less than the assumed 12No. HGV movements during the peak periods, which would indicate that the real traffic impact could reasonably be less than forecast.

16.173 Given the optimistic assumption of the realisation of zoned lands and the Metro West and the assumed significant future traffic flows arising therefrom on the North Road, it can be appreciated from the modelling results that not only will the proposed development have a practically negligible impact upon the operation of the existing access, but the access also has significant reserve capacity to cater for significantly greater daily traffic volumes (say those that might have been generated during the economic boom times as reported in the application for continuance of quarrying activities Planning Reg. Ref.: FW12A/0022).

Capacity of the N2 Off-Slip Road/North Road T-Junction

16.174 The results of the PICADY modelling analyses of the N2 Off-slip road/North Road T-junction under the various traffic flow scenarios are summarised in below.

Table 16-9 PICADY Output Data – N2 Off-slip Road/North Road

Year	Description	Ratio Flow to Capacity	
		AM Peak Hr	PM Peak Hr
Existing 2012	Existing	0.660	0.490
Opening Year 2015	Do Nothing	0.474	0.368
	Do Something	0.490	0.383

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Year	Description	Ratio Flow to Capacity	
		AM Peak Hr	PM Peak Hr
Opening Year +5 2020	Do Nothing	0.525	0.415
	Do Something	0.540	0.430
Opening Year +15 2030	Do Nothing	1.065	0.582
	Do Something	1.082	0.598

16.175 **Table 16-9** shows that the forecast impact of the proposed development at this T-junction is to increase the RFC by 1.5-1.7% for all am and pm peak hour assessment scenarios. In the context of typical day-to-day fluctuations in traffic flows such a minor increase does not constitute a significant impact on the operation of the junction.

16.176 In the Opening Year +15 (2030) do nothing scenario it has been assumed that the Kildonan Park & Ride Facility (south of the Huntstown Quarry access) and the lands zoned for enterprise and employment (between the North Road and the N2 dual carriageway) will be fully developed. The traffic demand arising from these potential future developments is forecast to result in the T-junction being over capacity in the morning peak hour in 2030. If these developments are not realised then the T-junction will operate satisfactorily over the lifetime of the scheme.

16.177 In the Opening Year +15 (2030) scenarios the link which is forecast to be over capacity is the N2 Off-Slip road. The model forecasts a queue of 31No. vehicles in the do nothing scenario, which increases to 35No. vehicles in the do something scenario (note: once capacity is reached $RFC > 1$ the mathematical equations of capacity break down thus very small increases in traffic can result in the program showing disproportionate impact upon capacity).

16.178 The PICADY model output data shown in **Table 16-9** above have assumed that the N2 Off-slip road has a single lane width of 5.0m. The PICADY models have since been re-run to analyse the performance of the T-junction under a scenario where the N2 Off-slip road is upgraded to a 7.0m width to

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facilitate a left and right turn lane approaching the junction with the North Road. Under the improved junction scenario the RFC values at the junction in the do nothing and do something scenarios were found to have respective values of 0.744 and 0.747. The upgrade of the N2 Off-slip road would significantly reduce queues on the slip road to 3No. vehicles for both Opening Year +15 (2030) do nothing and do something scenarios.

16.179 Given the above it is recommended that the N2 Off-slip road should be upgraded to two lanes on approach to the North Road T-junction in order to accommodate the development of the Kildonan Park & Ride Facility and the full realisation of the lands zoned for enterprise and employment which lie between the North Road and the N2 dual carriageway.

16.180 It is reasonably expected that when permission is sought for the Kildonan Park & Ride Facility or significant zoned lands accessed from North Road a detailed traffic assessment of those proposals will demonstrate the need to improve the N2-Off-slip road junction with North Road. In the meantime, such junction improvement is not warranted to facilitate existing traffic combined with that traffic forecast as arising from the proposed development.

Capacity of the N2 On-Slip Road/North Road Traffic Signal Junction

16.181 The results of the OSCADY modelling analyses of the N2 On-slip road/North Road traffic signal junction under the various traffic flow scenarios are summarised in **Table 16-10** below.

Table 16-10 OSCADY Output Data – N2 On-slip Road/North Road

Year	Description	Ratio Flow to Capacity	
		AM Peak Hr	PM Peak Hr
Existing 2012	Existing	0.347	0.468
Opening Year 2015	Do Nothing	0.311	0.365
	Do Something	0.317	0.371
Opening Year +5 2020	Do Nothing	0.335	0.388

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Year	Description	Ratio Flow to Capacity	
		AM Peak Hr	PM Peak Hr
	Do Something	0.341	0.394
Opening Year +15 2030	Do Nothing	0.467	0.636
	Do Something	0.473	0.639

16.182 Given that an RFC value greater than 0.900 generally means that urban traffic signal junctions are over capacity, the results show that the N2 Off-slip road/North Road traffic signal junction is likely to continue to operate well within capacity over the lifetime of the scheme.

16.183 **Table 16-10** shows that the forecast impact of the proposed development at the traffic signal junction is to increase the RFC by 0.3-0.6% in both the morning and evening peak hours for all assessment scenarios. In the context of typical day-to-day fluctuations in traffic flows such a minor increase does not constitute a significant impact on the operation of the junction.

16.184 The impact of the proposed development traffic upon queuing and delay at the junction for all traffic scenarios is forecast as negligible.

Capacity of the Kilshane Cross Traffic Signal Junction

16.185 The results of the OSCADY modelling analyses of Kilshane Cross signal controlled junction under the various traffic flow scenarios are summarised in below.

Table 16-11 OSCADY Output Data – Kilshane Cross

Year	Description	RFC	
		AM Peak Hr	PM Peak Hr
Existing 2012	Existing	0.938	0.947
Opening Year 2015	Do Nothing	0.892	0.859
	Do Something	0.892	0.859

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Year	Description	RFC	
		AM Peak Hr	PM Peak Hr
Opening Year +5 2020	Do Nothing	0.895	0.870
	Do Something	0.895	0.870
Opening Year +15 2030	Do Nothing	0.986	0.931
	Do Something	0.987	0.932

16.186 Given that an RFC value greater than 0.900 generally means that urban traffic signal junctions are over capacity, the results show that the existing junction is currently over capacity in both morning and evening peak hour periods.

16.187 The imminent opening of the N2-N3 link road scheme in 2013 will have an impact on the existing quantum of traffic using Kilshane Cross roads. The assumed reduction and redistribution of traffic in both morning and evening peak hour periods is shown in **Appendix 16-3** Figure C2 and **Appendix 16-4** Figure D2 of **Volume III**. Once this new road scheme is open Kilshane Cross roads is expected to operate within capacity.

16.188 In the Opening Year +15 (2030) assessment scenarios the OSCADY model forecasts that the cross roads will once again be over capacity during the morning peak hour period, with RFC values of 0.986 and 0.987 for the respective do nothing and do something scenarios. Similarly the cross roads is forecast to have RFC values of 0.931 and 0.932 in the Opening Year +15 (2030) evening peak hour assessment period.

16.189 The most significant queuing and delay at the junction for all traffic scenarios is forecast to manifest on the eastern arm of the junction i.e. the link road between Kilshane Cross and the R122 (St. Margaret's). Queues of 33No. vehicles in the morning peak hour and 21No. vehicles in the evening peak hour are forecast for the Opening Year +15 (2030) assessment scenarios.

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- 16.190 The OSCADY model of the Kilshane Cross roads has not taken account of the future link road from the R132 Broughan roundabout to Dublin Airport. This proposed scheme is set as a development objective in the Dublin Airport Local Area Plan 2006⁷. There is no timeline for construction of this scheme but once opened it will significantly reduce traffic at Kilshane Cross roads.
- 16.191 At any rate the quantum of development traffic using Kilshane Cross in the morning and evening peak hour periods is forecast to be negligible. Figures C3 of **Appendix 16-3** and D3 of **Appendix 16-D** as presented in **Volume III** forecast 2No. HGV to use the Cross roads during both peak hour periods. In the context of typical day-to-day fluctuations in traffic flows such minor increases are reasonably considered not to constitute a significant impact on the operation of the junction.

Internal Site Layout

HGV Accessibility

- 16.192 Drawing No. **PL07** shows the general layout of the internal roads system serving the proposed development. Delivery vehicles will enter the site from the south and circulate the main building in a clockwise direction on an internal one-way system.
- 16.193 Upon entry, delivery vehicles are weighed at either of the two weighbridges located on the western side of the main building. A weighbridge bypass facility parallels the proposed weighbridges as is typical at similar facilities. The bypass can also double as an inspection area. After being weighed the vehicles will enter the main building's reception area through automatic rapid open/shut doors into the reception area. Following unloading of the feedstock, vehicles will exit the building in a clockwise direction and proceed to the wheelwash or vehicle wash facility located on the eastern side of the main building.
- 16.194 To exit the site vehicles continue clockwise back to the weighbridge before leaving the site at the existing roundabout serving Roadstone and Huntstown Power Station. A further wheelwash facility is located between the weighbridges and the site exit.

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- 16.195 Vehicles collecting product can be facilitated to travel through the building in forward gear from the north-west to the south-west or can simply follow the circulation regime and reverse into the main building near the south-east corner.
- 16.196 A comprehensive assessment of the circulation and turning facilities at the subject site has been undertaken using the proprietary software package 'AutoTrack'. AutoTrack predicts vehicle swept path requirements and has been used to illustrate how those delivery and collection vehicles expected to serve the facility are satisfactorily accommodated.
- 16.197 Swept path analyses have been undertaken for a Freight Transport Association 'Design Articulated Vehicle' which is representative of the largest vehicle likely to be generated at the development. The AutoTrack output assessment is provided on Drawing No. **PL07** General Layout with Track Overlay and shows the various manoeuvres required of the largest delivery and collection HGV attending the proposed facility. These include the following manoeuvres:
- Entering the site using either weighbridge and/or weighbridge bypass
 - Exiting the site from either weighbridge and/or weighbridge bypass
 - Circulating the north-west corner of the main building
 - Entering the north-west of the main building and travelling through in forward gear to the southern side, thereafter exiting via weighbridge
 - Reversing from the delivery yard into the north side of the main building and exiting the building in forward gear
 - Exiting the north of the building circulating the north-east corner and using either the wheelwash or vehicle wash facility on the eastern side of the main building
 - Circulating the south-west corner of the main building and exiting via either weighbridge or the weighbridge bypass

Traffic Management Measures

- 16.198 The traffic circulation regime at the site will be clearly marked using road markings augmented with a comprehensive schedule of complimentary signing erected on both individual poles and on the buildings/fixtures (i.e.

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on/over delivery doors etc.). Clearly the weighbridge operator can issue any special instructions to each driver entering the site.

16.199 To maintain the delivery and collection areas near the building free of through traffic and to guide HGV around the perimeter of the site, build-out areas are provided at each corner of the main building. This measure will keep circulating vehicles away from the northern and southern active faces of the building and away from the footway around the main building thus making the active perimeter of the building a less intimidating environment for site operatives. The proposed feature will also aid in preventing large articulated vehicles cutting the corners and potentially damaging the building.

Pedestrians and Vulnerable Road Users

16.200 The proposed site layout includes for a continuous 1.8m wide footway around the perimeter of the main building and along the western side of the pasteurisation and gas treatment area.

16.201 Zebra crossings are proposed at each corner of the main building to the ancillary facilities on the opposite side of the internal circulating route. Each crossing is intended as a continuation of the line of the footways along the northern and southern facades of the main building. The crossings are accordingly located on expected desire lines whilst pedestrians will be able to see the crossings when walking along the footways.

Cycling

16.202 There is little demand for cycling at the neighbouring Roadstone and Huntstown Power developments and it is likely that there will be relatively low demand to travel to the proposed site by bicycle. It is nonetheless expected that staff might be encouraged to cycle at least some of the time when weather conditions permit.

16.203 The development includes for showering and changing facilities and staff lockers, all of which are measures typically associated with the encouragement of bicycle use.

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16.204 Bicycle stands will be provided on a hard standing area inside and to the west of the main entrance gate. The cycle parking is so located in order to avoid insofar as practicable mixing cycle and site traffic on the circulation route and to discourage cyclists entering the site and cycling contra the circulation flow. Having parked their bicycles, cyclists will use the crossing and southern footway to access the office area.

Parking

16.205 Commercial car parking standards are set out in Table TO3b of the Fingal Development Plan 2011-2017. This Table provides a guide to the maximum number of off street parking spaces for new commercial developments.

16.206 Table TO3b does not however specify the maximum for the specific type of development proposed. In such circumstances, the Plan states that the Planning Authority will determine the parking requirement based upon first principles.

16.207 The type of development proposed is not labour intensive based upon floor area. From empirical data relating to similar operations elsewhere in Europe and based upon the Applicant's estimates it is expected that there would be a maximum of 7 on site per shift. Accordingly, allowing for all staff from both shifts to be on site at the same time during a transition period (not usually the case) would suggest a maximum parking requirement of 13 spaces. This proposal allows for 21 parking spaces and one disabled parking space. At all times the car park can be expected to satisfactorily accommodate visitors and daily service vehicles such as the postman etc.

MITIGATION MEASURES

16.208 Given the travel distance on the internal roads system it is unlikely that debris would reach the public road, nevertheless, during the construction period the developer will maintain the public road in the vicinity of the existing site access on North Road clean of detritus and debris associated with construction activities as part of the Construction Environmental Management Plan (CEMP).

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16.209 It has been shown that the traffic impact of the proposed development will result in the generation of 55No. additional vehicular trips (39No. HGV and 16No. LGV) on the local road network. These are upper value assessment figures in excess of the likely daily average traffic generation. The traffic models used to assess the development impact during the morning and evening peak hour periods have demonstrated that the existing local road network in the vicinity of the site is satisfactory to accommodate the additional demand.

16.210 Following on from this the mitigation measures outlined below are required to facilitate traffic arising directly from the proposed development:

- the developer will adhere to a routing policy to ensure all movements are made via the strategic road network to avoid HGV passing through residential areas as far as is practical; and
- a policy of safety and environmental awareness for all HGV drivers accessing the site will be employed.

16.211 Existing traffic flows combined with traffic forecast as arising from the proposed development is suitably accommodated by existing infrastructure accordingly infrastructure improvement measures are not required to facilitate the proposed development.

CONCLUSIONS

- 16.212 From a road safety and accessibility point of view the site is considered to have a number of benefits. The primary benefit is that it is located adjacent to the national primary road network, which will continue to accommodate the vast majority of traffic coming to and from the site.
- 16.213 The traffic assessment provides a comprehensive analysis of the existing and future performance of the local road network. Traffic models for the junctions of the Quarry access, the N2 Off-slip road/North Road, the N2 On-slip road/North Road and Kilshane Cross roads show that in terms of capacity, queuing and delay these junctions are unlikely to be adversely impacted as a direct result of the traffic generated by the proposed development. The assumptions adopted in preparing the traffic models have been clearly set out and are considered to result in a robust analysis; the results of which can be relied upon in determining development traffic impact.
- 16.214 The existing quarry access is compliant with the DMRB standards for national primary roads and recent accident records show that the relocation of the original quarry access has not resulted in increased traffic hazard on the North Road. Only a single minor injury accident has been recorded in the vicinity of the access between 2005 and 2011 (the N2 dual carriageway opened in 2006). Given the safety record of the existing access, it is reasonable to presume that the modest intensification in vehicular use is unlikely to create a significant traffic hazard.
- 16.215 On balance the development proposals are considered likely to have a negligible impact in terms of highways and transportation.

REFERENCES

- 1 **The institution of Highways and Transportation (1994)** Guidelines for Traffic Impact Assessment;
- 2 **The National Roads Authority (2007)** Traffic and Transport Assessment Guidelines;
- 3 **Government Publications (2006)**, National Development Plan 2007-2013, the Stationary Office;
- 4 **The Department of the Environment and Local Government (2001)**, National Spatial Strategy for Ireland 2002-2020, the Stationary Office;
- 5 **Dublin Regional Authority and Mid-East Regional Authority (2009)**, Regional Planning Guidelines for the Greater Dublin Area 2010-2022, The Regional Planning Guidelines Office;
- 6 **Fingal County Council (2010)**, Fingal County Development Plan 2011-2017
- 7 **Fingal County Council (2006)**, Dublin Airport Local Area Plan
- 8 **The Department of the Environment and Local Government (2003)**, Traffic Management Guidelines, the Stationary Office;
- 9 **The National Roads Authority (2011)** Project Appraisal Guidelines, Unit 5.5 Link-Based Traffic Growth Forecasting;

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Figures

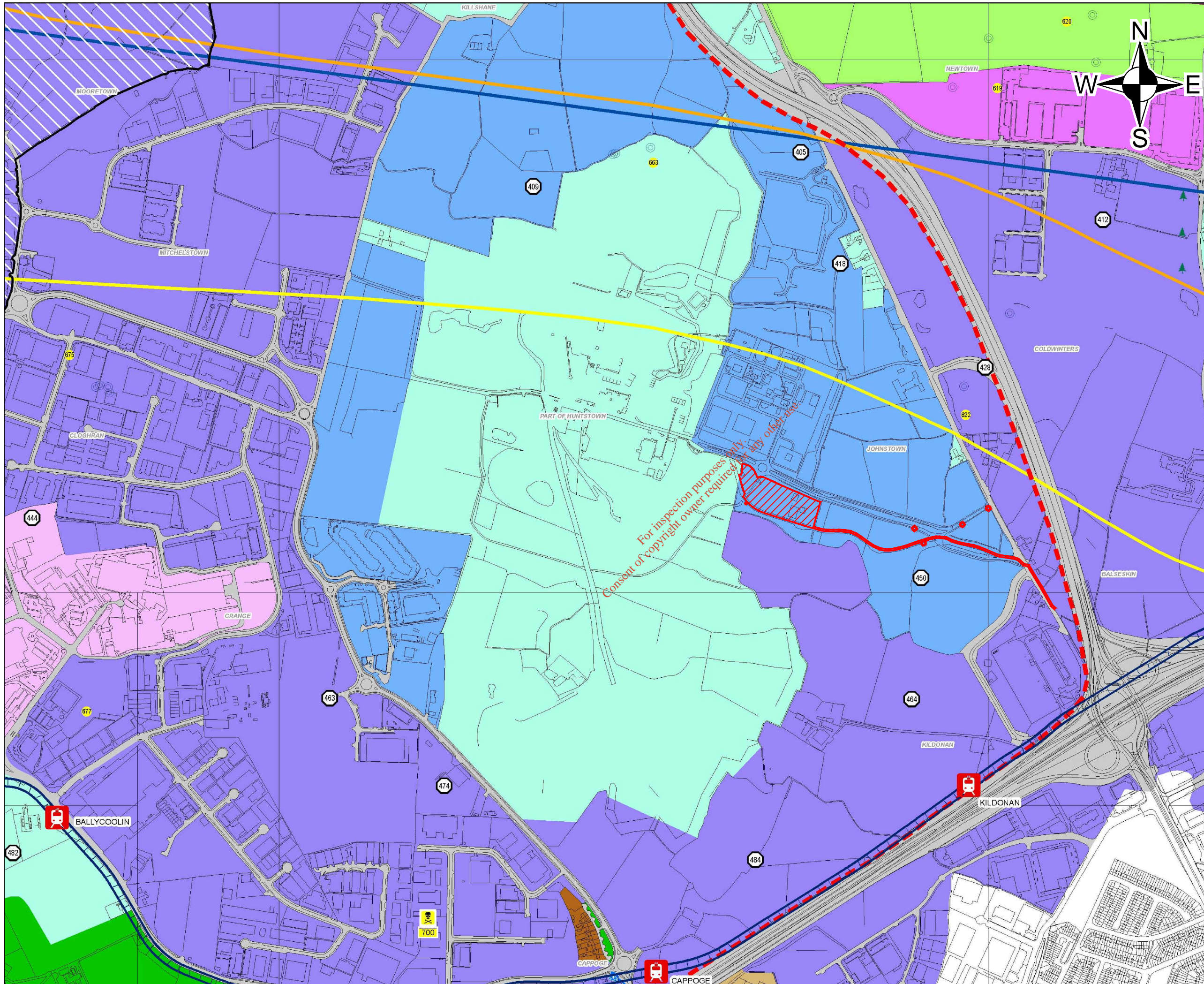
Figure 16-1 Landuse Zoning of Application Area and Surrounds

Figure 16-2 Internal Traffic Flow

Figure 16-3 Road Network in the Vicinity of the Application Area

Figure 16-4 Location of Traffic Survey Turning Count

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NOTES

1. EXTRACT FROM 1:50000 ORDNANCE SURVEY IRELAND DISCOVERY SERIES MAPPING - MAP NO's. - OS3024_D & OS3022_D
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU0000713 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

- Huntstown Renewable Bioenergy Plant Application Area
- Huntstown Renewable Bioenergy Plant Subject Site
- Location of Directional Signage

OBJECTIVES

- Objective GB - Protect for and provide for a greenbelt
- Objective GE - Provide opportunities for general enterprise and employment
- Objective HI - Provide for heavy industry
- Objective HT - Provide for office, research and development and high technology/high technology manufacturing type employment in a high quality built and landscaped environment
- Objective LC - Protect, provide for and/or improve local centre facilities
- Objective OS - Preserve and provide for open space and recreational amenities
- Objective RU - Protect, promote in a balanced way, the development of agriculture and rural-related enterprise, biodiversity, the rural landscape, and the built and cultural heritage
- Objective WD - Provide for distribution, warehouse, storage and logistics facilities which require good access to a major road network within a good quality environment
- Local Objectives
- Inner Airport Noise Zone
- Outer Airport Noise Zone
- Outer Public Safety Zone
- Development Boundary
- Proposed Metro

Extract from: Sheet 12 Blanchardstown North, Fingal Development Plan 2011-2017

Revision	Drawn By	Chkd By	Date	Comments
A	PG	MB	July 13	

CLIENT:

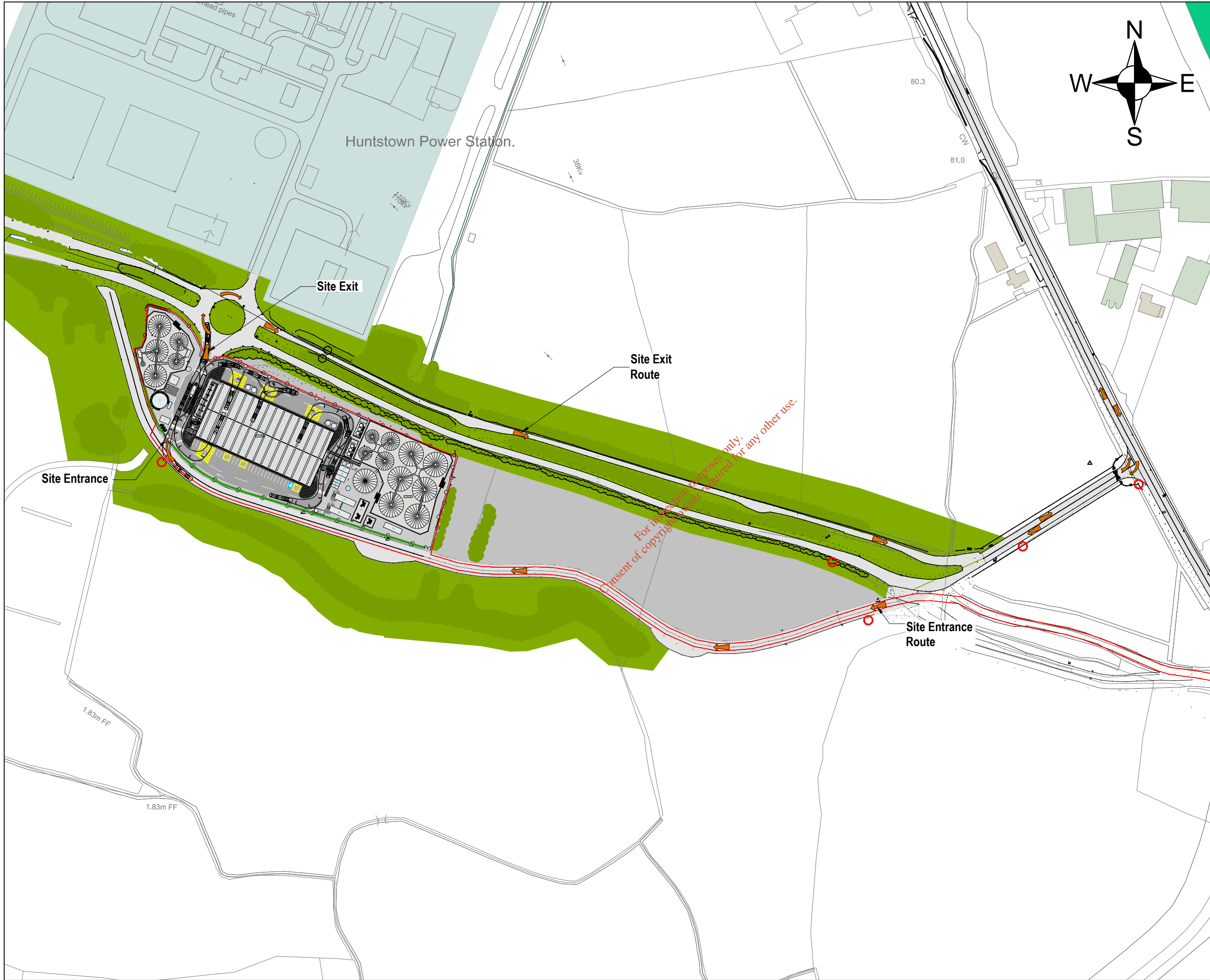
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Proposed Huntstown Renewable Bioenergy Plant
Huntstown, North Road,
Finglas, Dublin 11

Title - Landuse zoning of application area and surrounds

Figure 16-1

Scale: 1:10000 / A3	Date: July 2013
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NOTES

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LEGEND

- Huntstown Renewable Bioenergy Plant Application Area.
- Location of Directional Signage
- ➔ Direction of Traffic Flow

Revision	Drawn By	Chkd By	Date	Comments
-	RD	JK	July'13	

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Proposed Huntstown Renewable Bioenergy Plant
Huntstown, North Road, Finglas, Dublin 11

Title - Internal Traffic Flow

Figure 16-2

Scale: 1:2000 / A3 Date: July 2013



NOTES

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LEGEND

- Huntstown Renewable Bioenergy Plant Application Area.
- Location of Directional Signage

Revision	Drawn By	Chkd By	Date	Comments
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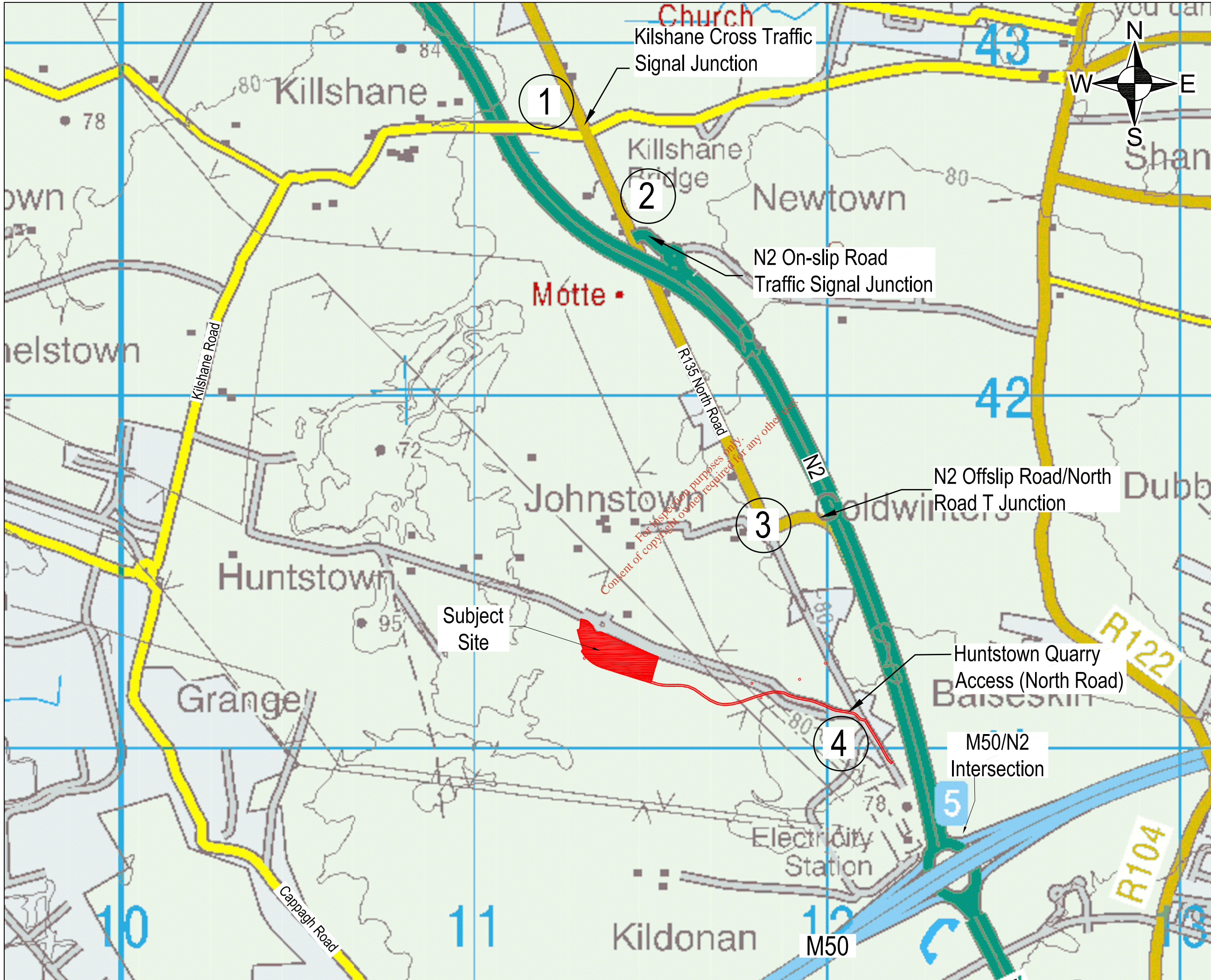
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Proposed Huntstown Renewable Bioenergy Plant
Huntstown, North Road, Finglas, Dublin 11

Title - Road Network in Vicinity of Application Area.

Figure 16-3

Scale: 1:20000 / A3 Date: July 2013



NOTES

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LEGEND

- Huntstown Renewable Bioenergy Plant Application Area.
- Location of Directional Signage
- 3 Location of Traffic Survey Turning Counts

-	RD	JK	July 13	
Revision	Drawn By	Chkd By	Date	Comments

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CLIENT: **BIOENERGY**

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Proposed Huntstown Renewable Bioenergy Plant
Huntstown, North Road, Finglas, Dublin 11

Title - Location of Traffic Survey Turning Counts

Figure 16-4

Scale: 1:20000 / A3	Date: July 2013
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APPENDICES (SEE VOLUME III)

Appendix 16-1 Traffic Count Survey Data

Appendix 16-2 Road Safety Authority Collision Data

Appendix 16-3 Proposed Development Traffic Distribution

Appendix 16-4 Assessment Traffic Flows during PM Peak Hour

Appendix 16-5 Daily Traffic Flows (AADT) on Receiving Road Network

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Chapter 17

Interactions of the Foregoing

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INTERACTIONS OF THE FOREGOING 17

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INTRODUCTION

- 17.1 This chapter of the Environmental Impact Statement (EIS) describes the interactions between the various impacts identified in the previous chapters of the EIS, during both the construction and operational phases of the proposed development at Huntstown, North Road, Finglas, Dublin 11.
- 17.2 The project team assessed the potential impacts arising from the construction and operation of the proposed development. The interaction of environmental aspects was clearly identified, at an early stage in the project, to be an important factor to be considered in the full evaluation of the environmental impact associated with the proposed development.
- 17.3 A matrix method has been used, in which the environmental components addressed in the previous sections of this statement have been placed on both axes of a matrix, **Table 17-1**.
- 17.4 Where a potential for interaction has been identified, the following legend has been used:
- During the construction phase - 'C';
 - During the operational phase - 'O';
 - During both construction and operation - 'CO'; and
 - Where it is considered that there is no potential for an interaction, this is indicated by a '-'
- 17.5 The purpose of the effects matrix is to identify potential interactions. Actual interactions and their significance are dealt with in the relevant chapter of the EIS with a brief overview of some of the more pertinent interactions provided in this chapter.

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Table 17-1 Matrix of Impact Interactions

	Human Beings	Air Quality & Climate	Landscape & Visual	Noise & Vibration	Flora & Fauna	Soils & Geology	Hydrology	Hydrogeology	Cultural Heritage	Traffic & Transport
Human Beings		CO	CO	CO	C	-	-	-	-	CO
Air Quality & Climate	CO		-	-	CO	-	-	-	-	CO
Landscape & Visual	CO	-		-	O	-	-	-	-	CO
Noise & Vibration	CO	-	-		C	-	-	-	-	CO
Flora & Fauna	C	CO	CO	C		C	CO	-	-	-
Soils & Geology	-	C	-	-	C		C	-	-	C
Hydrology	-	-	-	-	-	C		-	-	C
Hydrogeology	-	-	-	-	-	C	-		-	C
Cultural Heritage	-	-	-	-	-	-	-	-		-
Traffic & Transport	CO	CO	CO	CO	-	-	-	-	-	

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Legend

C	Construction	O	Operational
CO	Construction and Operation	-	No interaction

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POTENTIAL INTERACTIONS

Human Beings

- 17.6 Construction activities such as excavation, earth moving and backfilling can generate dust, particularly in dry weather conditions. Using a screening assessment tool, the Air Quality and Climate assessment (Chapter 8) considers that at a minor to moderate construction site there is a risk that dust may cause an impact at sensitive receptors within 25m of the source of the dust generated. The nearest residential sensitive receptor to the centre of the subject site is located at a distance of over 500m. Therefore, the interaction is considered to be imperceptible.
- 17.7 The primary interaction between human beings and air quality during the operational phase will be as a result of the release of emissions to air associated with the combustion of biogas and emissions from vehicles travelling to and from the facility. However, on effective implementation of the proposed mitigation measures, no residual impacts are anticipated as a result of the proposed development.
- 17.8 Scheduled emission points operated within the proposed plant will be regulated through the EPA Licensing process. The Air Quality and Climate assessment demonstrates that the level of emissions arising from the proposed plant will not result in any air quality impact. This is in line with Irish and European assessment criteria limits, which have been set for the protection of human health.
- 17.9 An odour impact assessment was undertaken and is presented in Chapter 8. The predicted odour values at each residential and commercial receptor in the vicinity of the proposed plant, when all processes are operating, were assessed. The worst case odour impact is determined to be the receptor with the highest recorded ground level concentration (GLC) of odour at the 98th percentile of hourly averages for the worst case meteorological year, Dublin Airport 2004. Of all the receptors evaluated, Huntstown Power Station, is identified as the worst case receptor with a maximum predicted GLC of odour less than or equal to 0.88 Ou_E/m^3 at the 98th percentile of hourly averages for

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the worst case meteorological year. This is just 58% of the odour impact criterion of $1.5 \text{ Ou}_E/\text{m}^3$ stated in Irish EPA Guidance AG4 (page 70).

- 17.10 Impacts during construction may arise from site development works, emergence of new structures and from general construction activity and traffic. Noise and site lighting arising from such activities also tend to draw attention to the works and as such has the effect of increasing visual awareness. However, the subject site is located on the edge of an urban environment and adjoins existing industrial development which is already illuminated at night.
- 17.11 When operational, the proposed development will be viewed as an extension of the industrial development in the area, most particularly Huntstown Power Station, which is of appreciably greater scale.
- 17.12 The Noise and Vibration assessment (Chapter 10) considers the impact of the noise generated during both the construction and normal operational phases of the proposed plant on the nearest noise sensitive locations (NSL's). Impacts at the nearest residential NSL's will be barely perceptible to the human ear and will be temporary in nature.
- 17.13 The operational noise assessment of fixed plant associated with the proposed plant demonstrates that there will be an imperceptible impact at the nearest NSL's. While the operational noise assessment of HGV movements associated with the site has established that the impact on the nearest residential receptors as a result of traffic movements will be imperceptible.
- 17.14 During the construction and operational phases, species using habitats in close proximity to the development site may experience an increase in disturbance as a result of increased human activity. However, to a certain extent the wildlife within these areas will be habituated to varying degrees of disturbance due to existing quarrying operations, the operation of Huntstown Power Station and other levels of human disturbance including light pollution throughout the wider surrounding area.

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17.15 The Traffic and Transport assessment (Chapter 16) demonstrates that the impact of the operational phase of the proposed development will result in the generation of 55No. additional vehicular trips (39No. HGV and 16No. LGV) on the local road network. These are upper value assessment figures in excess of the likely daily average traffic generation. Given the context of the application area within an already established industrial area, the interaction with human beings is not considered to be significant.

Air Quality and Climate

17.16 The potential interaction between air quality and human beings is described in section 17.6 to 17.9 above.

17.17 The Air Quality and Climate assessment, presented in Chapter 8, indicates that provided industry standard dust mitigation measures are employed at the site during construction, it is highly unlikely that dust would affect vegetation based on guidance published by the National Roads Authority for a major scheme.

17.18 Emissions as a result of increased traffic movements associated with both the construction and operational phases have been assessed within Chapter 8 of this EIS. The model demonstrates that emissions will remain well within the air quality limits for the protection of human health.

Landscape and Visual

17.19 The interaction between landscape and visual and human beings is described in section 17.10-17.11 above.

17.20 The subject site is located alongside an identified nature development area (NDA) within the Green Infrastructure Plans (Sheet 15) of the Fingal Development Plan 2011 – 2017. While no part of the application area is identified as part of the NDA, protection and enhancement of 'green infrastructure' / ecological corridors is recommended. To this end the existing hedgerow and other planting outside of the northern boundary will not be impacted by the proposed development and will be maintained to retain a green infrastructure network. A hedgerow will be planted along the southern

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boundary of the site comprising 80% Hawthorn and 20% Field Maple. This will serve to augment the existing hedgerow network within the area and will act as an ecological corridor supporting both mammals and birds.

- 17.21 The plant will be lit at night by 5m high light standards fitted with cut off horizontal cowls to minimise light spill and direct light downwards. The area surrounding the subject site is already subject to artificial lighting and any additional lighting at the plant is unlikely to add significantly to the extent and overall levels of light pollution within the local area. It is considered that the majority of species within the immediate and surrounding area will be habituated to the existing levels of light and they would readily adapt to the additional lighting at the Plant.
- 17.22 Additional traffic movements arising as a result of both the construction and operation of the proposed plant may interact with visual amenity. However, there is an established presence of HGV's within the area as a result of the operation of Huntstown Quarry and Power Station.

Noise and Vibration

- 17.23 The interaction between noise (both traffic and fixed plant) and human beings is described in section 17.12-17.14 above.
- 17.24 The operational noise assessment of HGV movements associated with the site has established that the impact on the nearest residential receptors as a result of traffic movements will be imperceptible.

Flora and Fauna

- 17.25 Construction activity, such as noise and movement created by people and machinery will generate a certain amount of disturbance to local mammals and birds. Birds and mammals in this area will already be habituated to noise as a result of operations at the quarry and power station.
- 17.26 Interactions between flora and fauna and emissions associated with the plant during the construction phase are outlined in section 17.7 above.

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- 17.27 The Air Quality Assessment presented in Chapter 8 of the EIS, indicates that the predicted cumulative process emissions would not exceed the annual lower assessment threshold limits set for the protection of vegetation for NO_x and SO₂, in accordance with the Air Quality Standard Regulations 2011.
- 17.28 Existing drainage at the application area is predominantly through ground percolation. Whilst there is small section of open ditch flowing along part of the western boundary which lies outside the application site, this appears to remain dry, except after heavy and prolonged rainfall and no longer has a drainage function. Although any pollution incident, as a result of silt mobilisation, fuel spillages, oil leakages or other accidents, has the potential to affect water quality in the drainage system(s) and their associated habitats and species, it is considered that the environmental risk is small and would be further reduced by the implementation of mitigation measures..
- 17.29 All construction works near water have an associated risk of pollution as a result of fuel spillages, oil leakages and other accidents that could lead to an adverse impact on water quality and consequently the habitats and species present in any such affected watercourse. The stripping of vegetation, ground disturbance and improper storage of stripped soils near to a watercourse increases the risk of large volumes of material being washed into watercourses during periods of heavy and prolonged rainfall or flood events indirectly affecting water quality through increased turbidity levels and sedimentation as well as the potential mobilisation of a variety of substances that may be contained within the soils. Where soil stripping occurs the resulting excavated materials will be separated into topsoil and subsoil stockpiles. Temporary storage of spoil and hardcore will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment. Storage of soils will not be carried out in any location where runoff can occur into watercourses.

Soils and Geology, Hydrology and Hydrogeology

- 17.30 Construction activities such as excavation, earth moving and backfilling can generate dust, particularly in dry weather conditions. The extent of dust generation is dependent on the nature of the material (soils, peat, sands,

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gravels, silts etc.) and the location of the construction activity. In addition, the potential for dust dispersion depends on the local meteorological factors such as rainfall, wind speed and wind direction. The construction phase of this proposal is deemed for the purposes of this assessment to be of a minor to moderate scale. Using this screening assessment tool, at a minor to moderate construction site there is a risk that dust may cause an impact at sensitive receptors within 25m of the source of the dust generated. The nearest residential sensitive receptors to the centre of the subject site is located at a distance of over 500m, therefore, the impact from construction activities can be considered to be imperceptible.

- 17.31 The interactions between soils and geology with ecology are described section in 17.30.
- 17.32 During construction there will be plant and machinery required on site and as a result it is appropriate to adopt best working practices and measures to protect the local surface water. Accidental spillage of fuels or chemical reagents and the generation of suspended solids on site pose a potential contamination risk. To minimise this risk mitigation measures identified in Chapters 12, 13 and 14 will be incorporated into the Construction Environmental Management Plan (CEMP). These measures which ensure include the reduction or elimination of pollution risk.

Cultural Heritage

- 17.33 As specified within Chapter 15, Cultural Heritage, there is potential for previously unrecorded findings of cultural heritage value to be discovered during the construction phase of the proposed development. Potential interactions cannot therefore be quantified at this stage. All groundworks associated with the proposed development will be archaeologically monitored under licence to the Minister for the Environment, Community and Local Government.

Traffic and Transport

- 17.34 Potential interactions associated with increased traffic movements as a result of the construction and operation of the proposed plant with human beings,

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air quality, landscape and visual and noise and vibration are addressed in the preceding sections of this chapter.

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