

ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE DEMOLITION OF AGRICULTURAL STRUCTURES AND THE DEVELOPMENT OF A MATERIALS RECOVERY FACILITY AT DERRYARKIN, RHODE, CO. OFFALY

VOLUME 2 – MAIN BODY OF THE EIRAR CHAPTER 13 – TRAFFIC AND TRANSPORTATION

Prepared for: **Oxigen Environmental Unlimited Company**



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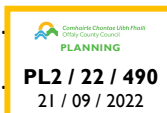
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TABLE OF CONTENTS

13.	EXISTING AND PROPOSED DEVELOPMENT	1
13.1	Introduction.....	1
13.2	Proposed Development.....	1
13.3	Statement of Competency.....	1
13.4	Assessment Methodology	2
13.4.1	Relevant Guidance	2
13.4.2	Consultation	2
13.4.3	Impact Appraisal Methodology.....	2
13.4.4	Evaluation Criteria	3
13.4.5	Desk Study.....	3
13.4.6	Field Assessments	3
13.4.7	Scope of Assessment.....	4
13.5	Receiving Environment.....	5
13.5.1	Site Location	5
13.5.2	Site Access	5
13.5.3	Heavy Goods Vehicles (HGV) Routing	5
13.5.4	Planning Policy and Development Control.....	10
13.5.5	Surveyed Network Traffic Flows.....	11
13.5.6	Road Collision Data Analysis	19
13.6	Potential Effects.....	23
13.6.1	Review of Existing and Permitted Development.....	25
13.6.2	Development Traffic Impact.....	30
13.6.3	Decommissioning phase.....	41
13.6.4	Cumulative Effects.....	42
13.7	Mitigation Measures	43
13.7.1	Construction Phase	43
13.7.2	Operational Phase	43
13.8	Residual Impacts.....	44
13.8.1	Construction Phase	44
13.8.2	Operational Phase	44
13.9	Monitoring.....	45
13.9.1	Construction Phase	45



13.9.2 Operational Phase	45
13.10 Interactions.....	45
13.10.1 Noise and Vibration.....	45
13.10.2 Air Quality and Climate	45
13.11 References	46

LIST OF APPENDICES

Appendix 13-1: Traffic Survey Data

Appendix 13-2: Network Traffic Flow Diagrams

Appendix 13-3: Kilmurray Letter of Consent / Junction Improvement Drawings / RSA

Offaly County Council, Planning Dept. - Inspection Purposes Only

LIST OF FIGURES

Page

Figure 13-1: Forecast Waste/Collection Import Haul Routes (MSW).....	6
Figure 13-2: Forecast Waste/Collection Import Haul Routes (C&D)	7
Figure 13-3: Forecast Waste/Collection Import Haul Routes (C&I, DMR).....	9
Figure 13-4: Traffic Survey Sites (Source: Google Maps 2022 annotated by Trafficwise Ltd.).....	13
Figure 13-5: R400 (North) Surveyed Total Daily Traffic Flows (14-20 Sept 2021).....	14
Figure 13-6: R400 (North) Surveyed Average Hourly Weekday Flows (14-20 Sept 2021)	15
Figure 13-7: R400 (North) Surveyed Daily HGV Flows (14-20 Sept 2021)	15
Figure 13-8: R400 (North) Surveyed Average Hourly HGV Flows (14-20 Sept 2021)	16
Figure 13-9: R400 (North) Surveyed Average Hourly Weekday Flows (14-20 Sept 2021)	21

LIST OF TABLES

Table 13-1: R400 ATC Surveyed Traffic Flows September 2021	12
Table 13-2: Surveyed Traffic Flows 2021 (Factored)	17
Table 13-3: Network Forecast 2024 Traffic Flows (Year of Opening)	18
Table 13-4: Network Forecast 2029 Traffic Flows (Year of Opening +5yrs).....	18
Table 13-5: Network Forecast 2039 Traffic Flows (Design Year).....	19
Table 13-6: Road Safety Authority Traffic Collision Data 2005 - 2016	22
Table 13-7: Forecast Daily Traffic Generation (90,000t/a).....	24
Table 13-8: Forecast Development Traffic Flows (90,000t/a).....	24
Table 13-9: Forecast Traffic Arising from Permitted Development	28
Table 13-10: Baseline Do Nothing Scenario Forecast 2024 Traffic Flows (Year of Opening).....	29
Table 13-11: Baseline Do Nothing Scenario Forecast 2029 Traffic Flows (Year of Opening +5yrs)	29
Table 13-12: Baseline Do Nothing Scenario Forecast 2039 Traffic Flows (Design Year)	30
Table 13-13: Do Something Scenario Forecast 2024 Traffic Flows (Year of Opening).....	32
Table 13-14: Do Something Scenario Forecast 2029 Traffic Flows (Year of Opening +5yrs)	32
Table 13-15: Do Something Scenario Forecast 2039 Traffic Flows (Design Year).....	33
Table 13-16: Forecast Incremental Increases in Traffic	33
Table 13-17: Junction 2 – R400/L10091 Site Access Road Junction Capacity Assessment Results.....	37
Table 13-18: Junction 3 – M6 Junction 3 Southern Roundabout Capacity Assessment Results.....	39
Table 13-19: Junction 3 – M6 Junction 3 Northern Roundabout Capacity Assessment Results.....	40



13. EXISTING AND PROPOSED DEVELOPMENT

13.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) is a Traffic Impact Assessment (TIA) and provides details of the traffic characteristics of the existing developments and proposed developments at Derryarkin, Rhode, Co. Offaly and provides a comprehensive review of the potential significant traffic effects of the proposed development.

Appendices 13.1, 13.2, 13.3 and 13.4 have been prepared in support of this Chapter. They are included in Volume 3 of this EIAR. These Appendices are listed below:

- Appendix 13-1 - Traffic Survey Data;
- Appendix 13-2 - Network Traffic Flow Diagrams;
- Appendix 13-3 - Junction Improvement Drawings/RSA/ Letter of Consent from Kilmurray Precast Concrete Ltd.

13.2 Proposed Development

The proposed development is defined in Chapter 1 'Introduction' of Volume 2 of this EIAR and a detailed description of the proposed development is set out in Chapter 4 'Description of the Existing and Proposed Developments' of Volume 2 of this EIAR. The assessments in this Chapter examine the existing and developing transportation infrastructure serving the site and the wider receiving road network serving the development site at Derryarkin, Rhode, Co. Offaly. It sets out the existing and baseline traffic environments and forecasts travel demand characteristics of the proposed development and provides an assessment of the existing, baseline and forecast impact on the receiving environment and assesses the ability of the transportation network to accommodate the traffic arising both directly and indirectly. The potential significant effects of the proposed development are assessed having taken account of mitigation measures to reduce or eliminate any residual impacts on the surrounding and receiving transport network.

13.3 Statement of Competency

This Chapter of the EIAR was prepared by Julian Keenan, a Director of Trafficwise Ltd. Julian Keenan has over thirty years engineering experience including approximately seven years in Local Government in the UK and over 23 years of private engineering consultancy services in Ireland. Holding a principal degree in Civil Engineering from UCG, Julian has specialised in Roads Design and Traffic & Transportation Planning for approximately 25 years. Consultancy experience includes advising clients in relation road schemes, residential, commercial, industrial and leisure developments for which the key work involves the provision of professional services in the design and appraisal of schemes including the preparation of planning applications and appeals. Julian has represented clients at An Bord Pleanála oral hearings for commercial development, strategic infrastructure development and represented landowners and stakeholders in relation to various road schemes and infrastructural works. He has given sworn evidence before the Property Arbitrator and has provided expert witness testimony in the High Court.





13.4 Assessment Methodology

The approach to the study accords with policy and guidance both at a national and local level. The adopted methodology responds to current best practices and guidance as promoted in the Transport Infrastructure Ireland (TII) (2014) '*Traffic and Transport Assessment Guidelines*' which advocates this method of analysis.

13.4.1 Relevant Guidance

This assessment has been carried out in accordance with relevant local government policy and in accordance with national guidelines and standards of best practice. In completing this assessment reference has been made to the following publications:

- Offaly County Development Plan (2021 – 2027);
- Department of Transport, Tourism and Sport (2019) '*Traffic Signs Manual*';
- Transport Infrastructure Ireland (TII) (2014) '*Traffic and Transport Assessment Guidelines*', referred to hereafter as the TTA Guidelines;
- TII (2016) Project Appraisal Guidelines for National Roads Unit 16.1 – '*Expansion Factors for Short Period Traffic Counts*';
- TII (2019) Unit 5.3 Project Appraisal Guidelines for National Roads Unit 5.3 – '*Travel Demand Projections*';
- TII (2017) '*Rural Road Link Design*' DN-GEO-03031;
- TII (2017) '*Geometric Design of Junctions*' (priority junctions, direct accesses, roundabouts, grade separated and compact grade separated junctions) DN-GEO-03060-02.

13.4.2 Consultation

The scope for this assessment has been informed by consultation with statutory consultees, bodies with environmental responsibility and other interested parties as summarised in Chapter '*Scoping and Consultation*' in Volume 2 of the EIA. The following consultation responses have been considered in the preparation of this chapter:

- Offaly County Council Roads and Transportation Section;
- Transport Infrastructure Ireland (TII).

13.4.3 Impact Appraisal Methodology

The development assessment methodology can be summarised as follows:

- Review of Existing Receiving Road Network Traffic Flows;
- Establish Baseline Receiving Road Network Traffic Flows;
- Review of Existing and Proposed Site Operational Traffic;
- Review of Existing and Programmed/Planned Road Network and Travel Infrastructure;
- Calculate the trip generation arising from the proposed development;





- Calculate the trip generation arising from permitted development;
- Assess/evaluate network performance identifying potential effects and cumulative effects;
- Identify and assess potential effects and recommend mitigation measures.

Chapter 4 ‘Description of the Existing and Proposed Developments’ of Volume 2 of this EIA sets out that there will be additional infrastructure development at the site which will principally consist of the demolition of existing site agricultural sheds and structures and site clearance and the construction of a Materials Recovery Facility and ancillary site services, so this Chapter appropriately provides assessment of the operational phase and construction stage. This Chapter assesses potential impacts upon the receiving transport network arising from the proposed development, it also examines the cumulative impact of the proposed development together with other permitted developments.

13.4.4 Evaluation Criteria

This Chapter is based upon the specific guidance on the evaluation of impact set out in the TII (NRA) Traffic and Transport Assessment Guidelines (2014) and this is the primary reference for the assessment of the magnitude and significance of the forecast traffic impact of the proposed development on the receiving transport network.

13.4.5 Desk Study

This Chapter is based principally upon the assessment of forecast traffic generation and analyses of relevant traffic flow data gathering at the site and on the roads network in the study area. Some preliminary desktop based locational and haul route assessment and appraisal has been undertaken at the initial stages. This Chapter is also informed by a review of the Offaly County Council online planning register for permitted developments considered likely to directly affect the receiving road network as set out at 13.6.5.

13.4.6 Field Assessments

Classified turning count surveys and automatic traffic counter surveys were undertaken in September and November 2021 at the existing site access and at a series of junctions on R400 between Rhode and Rochfortbridge. Site visits were conducted in June 2021 and December 2021 and included drive-over surveys of the principle haul routes and the network of regional roads including:

- Regional Road R400 (Rochfortbridge – R402);
- National Secondary Road N52 (M6 Jn. 4 – Delvin) and (Tullamore – M6 Jn. 5);
- Regional Road R402 (M4 Jn. 9 – Tullamore);
- Regional Road R401 (Rathangan - Edenderry);
- Regional Road R403 (Prosperous – Allenwood - Carbury).



13.4.7 Scope of Assessment

This Chapter of the EIAR constitutes a Traffic Impact Assessment (TIA) and provides an assessment of the existing and forecast proposed traffic conditions on the local roads network in the vicinity of the proposed development at Derryarkin, Rhode, Co. Offaly. The assessment compares the traffic scenario arising from (1) a baseline scenario without the development, and (2) the proposed development which comprises a Materials Recovery Facility.

This traffic assessment is based upon September and November 2021 classified turning count surveys and automatic traffic counter (ATC) surveys of the receiving local road traffic flows. This assessment includes a review of exiting traffic characteristics and forecast traffic generation arising at the proposed development at Derryarkin, Rhode, Co. Offaly and evaluates the influence of same upon the capacity and operation of the receiving road network. The study also examines site infrastructure and access arrangements serving the application site.

Automatic traffic counter surveys and junction turning surveys undertaken on the receiving road network identify existing traffic conditions. The September 2021 traffic surveys were carried out by Traffinomics (formerly Abacus Transportation Surveys) on behalf of Trafficwise Ltd. Further traffic surveys undertaken by Traffinomics in November 2021 in connection with Planning Reg. Ref. PL2/21/247 are also referenced in this study with the consent of Kilmurray Precast Concrete Ltd. In the interest of a comprehensive appraisal of the receiving road traffic characteristics, this Chapter provides an assessment of the traffic flow variations recorded on the R400 which is the principal haul route to Derryarkin.

As a frame of reference this Chapter provides an evaluation of the relative level of impact on the local road network without the proposed development. Baseline network traffic flows are derived from the survey data and reflect a 'do-nothing' scenario where the site remains undeveloped. From this baseline the traffic assessment evaluates the existing traffic, and this is compared with the forecast potential traffic arising from the proposed development when operating at capacity also referred to as the 'do-something' scenario.

This Chapter identifies how traffic arising from the proposed development can be accommodated on the local road network. Where considered appropriate, measures are discussed regarding the management of traffic generated by the proposed development.

The advice to Local Authorities in Spatial Planning and National Roads (Guidelines for Planning Authorities – January 2012), Chapter 3, '*Development Management and Roads*' is to make sure that development located close to national roads and/or their junctions can be catered for by the design assumptions underpinning such roads and junctions, thereby avoiding potentially compromising the capacity and efficiency of the national road. The assessments provided in this traffic study will examine if the traffic generated by the proposed development has the potential to give rise to a premature or unacceptable reduction in the level of service available to road users on national roads or their junctions in the vicinity of the existing development. Preliminary analyses suggest that the proposed development can proceed complementary to safeguarding the capacity, safety and operational efficiency of the national road network. Based upon consultations with the Local Authority, Transport Infrastructure Ireland (TII) and reference to TII programmes the proposed development is considered unlikely to not have a significant effect upon existing or future national road schemes.



13.5 Receiving Environment

13.5.1 Site Location

The proposed development site is located in the townland of Derryarkin, Rhode, Co. Offaly. The site is located 4 km south-south-east of Rochfortbridge, Co. Westmeath and 5.5 km north-west of Rhode, Co. Offaly. The site is 3 km south of the M6 motorway and 2 km west of the R400 regional road. The location of the site is presented in EIA Figure 4-1.

The site is located in a largely rural setting with limited industrial/commercial activity in the wider area. A piggery is located immediately north/north-west of the development site. Access to the pig farm is via private access road which bounds the development site to the east and north. An active quarry is located c. 80m west of the site (at its closest point).

13.5.2 Site Access

The proposed development site is located on the southern side of the R400 Regional Road and is provided with direct vehicular access to a private access road connecting directly to R400 2.5 km east of the site at a priority junction arrangement which includes Local Road L10091. Measured along the private access road the proposed development site is approximately 2.47km from R400. The private access road is signed for 'Kilmurray Sand & Gravel' and 'BD Flood Readymix'. The existing private road serves a number of existing commercial enterprises which are detailed herein. All traffic generated by the proposed development both for construction and for the day-to-day operation of the site will be accommodated by the private access road.

Based upon the exiting business of the Applicant the distribution of traffic arising from the proposed development is estimated to have the greatest impact upon the section of the R400 between the private site access road junction and the M6 Junction 3 to the southeast of Rochfortbridge, Co. Westmeath. The relative influence of new traffic arising will have differing degrees of impact both north and south of the existing private site road. Under the future scenario the forecast distribution to Regional Road R400 of all development generated HGV traffic associated with the transport of materials to and from the proposed development will be comprise approximately 56% of all imports and over 95% of all exported material to/from the north of the site (M6 Junction 3) and the remainder from the south.

13.5.3 Heavy Goods Vehicles (HGV) Routing

13.5.3.1 General

For clarity it is proposed that HGV will use the R400 and extended regional and national road network. Except in the case of potential local refuse collection and skip collection. No HGV traffic arising at the proposed development will be required to use the local road network or county roads. The following routing for site generated HGV traffic is based upon the current commercial activities of the Applicant. The volume of material transported to the facility is commercially driven and sources may vary as contracts arise and expire as is the nature of such operations. The rate of materials arising in any one particular area can fluctuate over time. The following traffic distribution figures are based upon examination of existing commercial activities and collection routes. It is accepted that local pick-up routes will alter nevertheless the macro picture of haul routes to and from the site is considered likely to be representative over the long-term.



13.5.3.2 Domestic and Commercial Municipal Solid Waste (MSW)

The following Figure 13-1 shows the haul routes forecast to be used for acceptance of Domestic and Commercial Municipal Solid Waste (MSW) materials to the site and includes for midlands ‘local’ (Routes not requiring the use of National Roads) domestic routes (coloured green), where access to the Derryarkin facility will be via R400 and network of regional roads to the southeast of Rhode. Figure 13-1 also Includes midlands ‘regional’ domestic routes, where access to the Derryarkin facility will be via M6 Motorway Junction 3 and the R400. Existing domestic routes are broadly based on a fortnightly collection for each municipal solid waste type. Household and commercial collections will arrive to the site principally via M6 Junction 3 and R400. As highlighted in Figure 13-1 waste arising from kerbside and commercial backdoor collections in local rural areas in County Offaly including Rhode, Edenderry and surrounding locations and adjoining County Kildare locations including Carbury, Allenwood and surrounding locations will use the regional road network and will ultimately be diverted through Rhode on R400 to the Derryarkin site. Figure 13-1 shows the percentage of the total MSW traffic on each of the haul routes. The flows on inbound routes to a particular area do not tally with the route leaving the area and this is accounted for in the arisings from that area, for example the cumulative inflow to Tullamore is 6% (N52), 3% (N80) and 11% (R420) whilst the route from Tullamore to M6 has a total 35% (N52) indicating 15% arisings in the Tullamore area. A small proportion of MSW traffic uses the R441 and this is traffic arising in Edenderry.

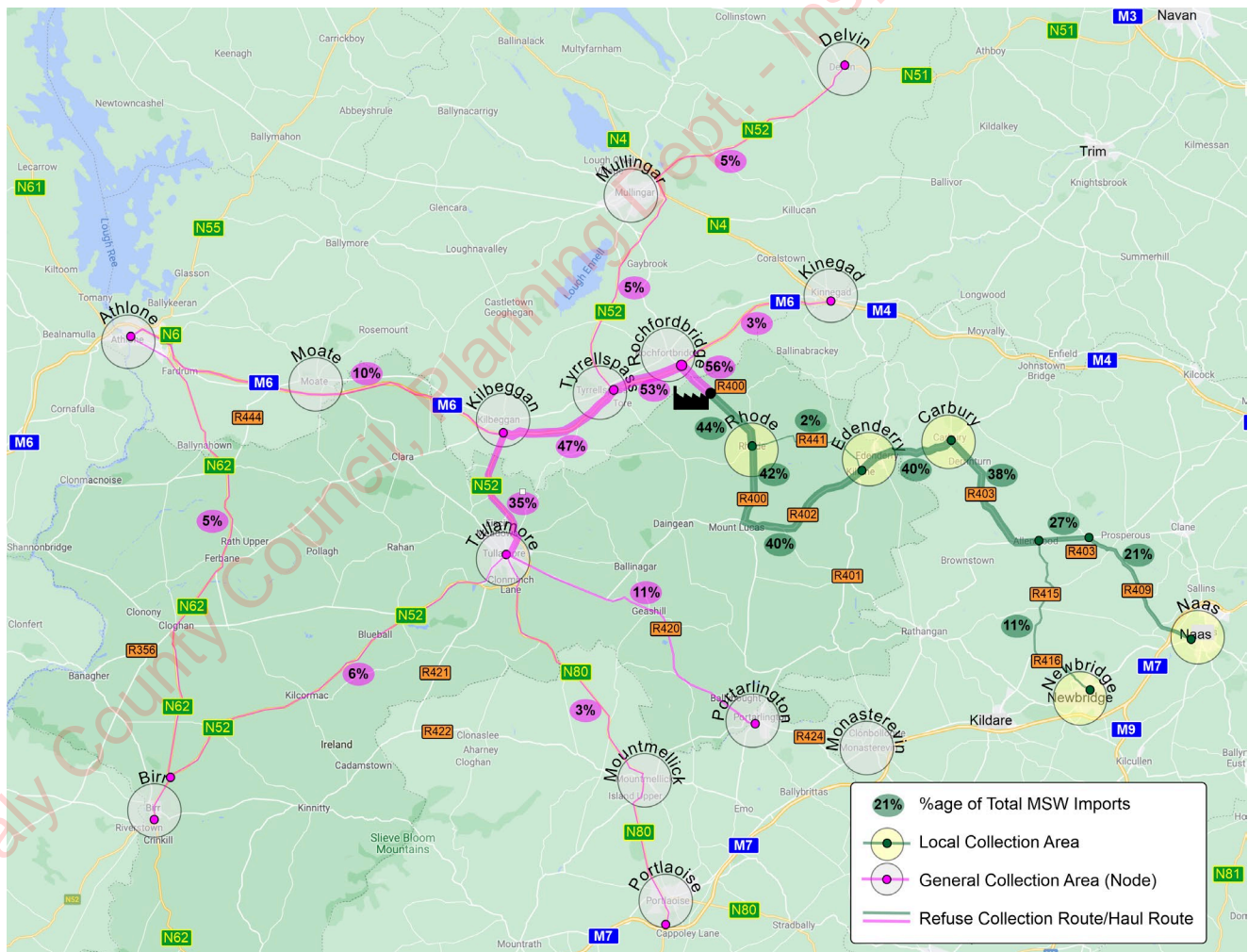



Figure 13-1: Forecast Waste/Collection Import Haul Routes (MSW)


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13.5.3.3 Construction and Demolition (C&D) and Commercial and Industrial (C&I) Skip Waste

Figure 13-2 shows the forecast distribution for the acceptance of C&D and C&I skip waste. The sources of this waste generally arise from skip collections from construction sites and from both household and commercial properties where skips can range from 6 yd skips to 40 yd skips depending on customer needs.

The estimated split based on current operations on where these collections will approach the Derryarkin site, will be 75% from the M6 direction and 25% from the Rhode direction. The latter collections arise from a central area broadly defined as between the M6/N80/M7/N7&M4 and includes the towns and surroundings of Rhode, Daingean, Edenderry, Carbury, Rathangan, Naas and Newbridge. The 75% arriving from the north of the site via M6 Junction 3 includes collections in and around the towns of Mullingar and surrounding areas north of M6 & M4, Athlone, Tullamore, Birr, Portlaoise and Portarlington.

In addition to areas highlighted in Figure 13-2 some element of skip collection will also arise in other areas in Kildare to include Newbridge, Kildare Town, Kilcullen etc. such collections from outside the local area will be diverted via Tullamore to M6 and along R400 from M6 Junction 3. The proposed Derryarkin site will cover commercial skip collection from within County Offaly and also Counties Laois, Westmeath and parts of Kildare and Meath. The Applicant operates a facility in Dundalk serving parts of County Meath and much of Kildare is serviced by their existing facilities in Dublin.

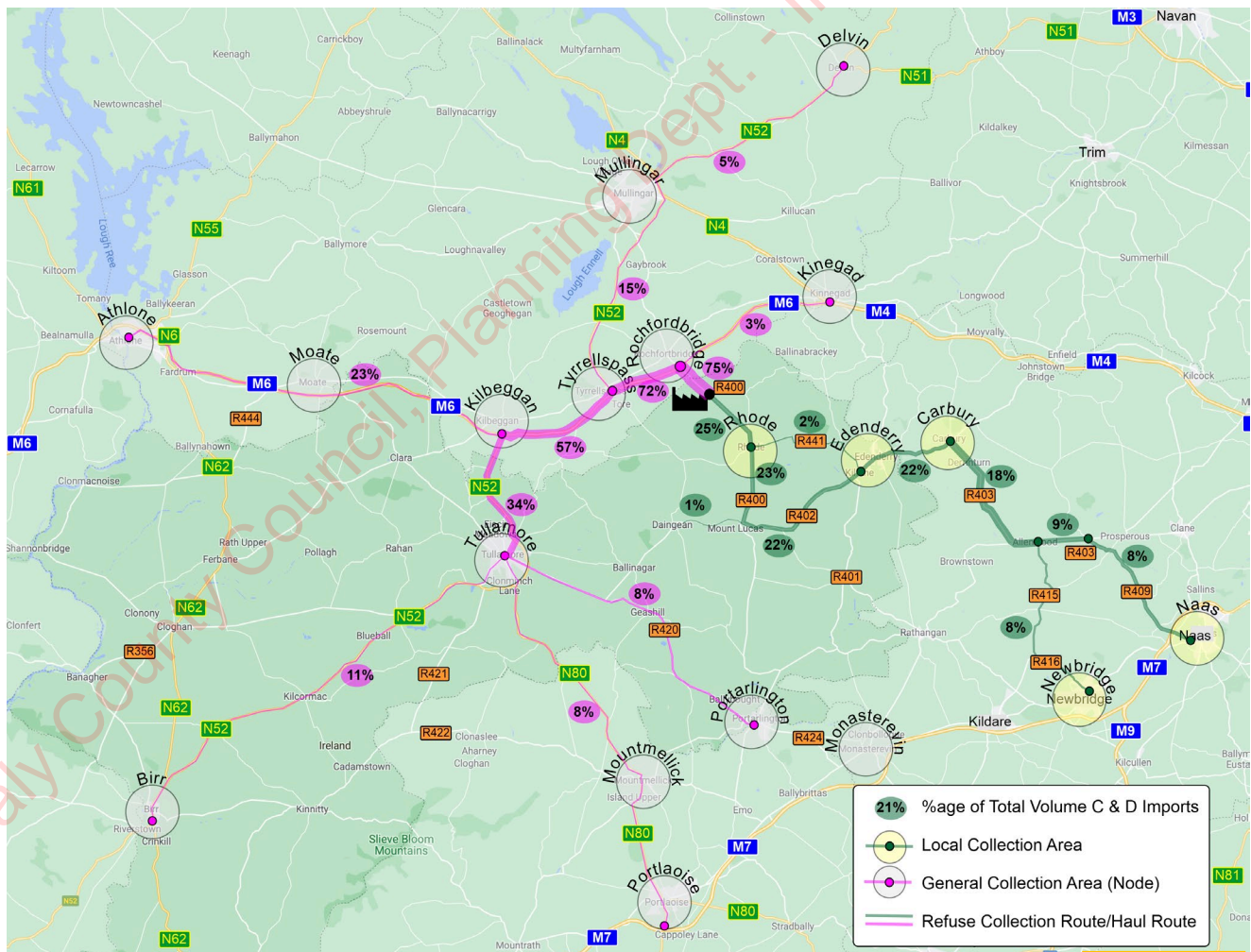


Figure 13-2: Forecast Waste/Collection Import Haul Routes (C&D)

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13.5.3.4 Dry Mix Recyclables (DMR)

Dry Mix Recyclables (DMR) sources include compactor skip collections from commercial customers, open skip containers and skip compactors from Local Authority Civic Amenity sites (CAS) together with curtain sided trailer collections of cardboard and bailed recyclables from commercial customers. The forecast haul routes for these wastes is shown in Figure 13-3.

Figure 13-3 includes waste arising from Co. Offaly and Co. Meath Civic Amenity Sites (CAS) that are currently serviced under contract by the Applicant. It should be acknowledged that sources of waste in this regard will likely change with time depending upon the expiration and award of contracts. Local Authority sites that may come under contract in the future include:

- County Offaly: Tullamore, Edenderry and Birr CAS;
- County Meath: Navan, Kells & Trim CAS;
- County Laois: Portlaoise & Portarlington CAS;
- County Westmeath: Ballydonagh Athlone & Mullingar CAS;
- County Kildare : Silliot Hill, Kilcullen CAS & Athy CAS.

Save for the Edenderry CAS which would be a local delivery and would be routed along the R400 from the south the majority of the listed sites would give rise to traffic from the north via M6 Junction 3 and R400. The network model derived from the current activities of the applicant are considered sufficiently accurate for the assessment of potential traffic impacts. Some elements of intercompany waste movements between sites operated by the Applicant are included for in the haul routes outlined in both Figure 13-2 and Figure 13-3.

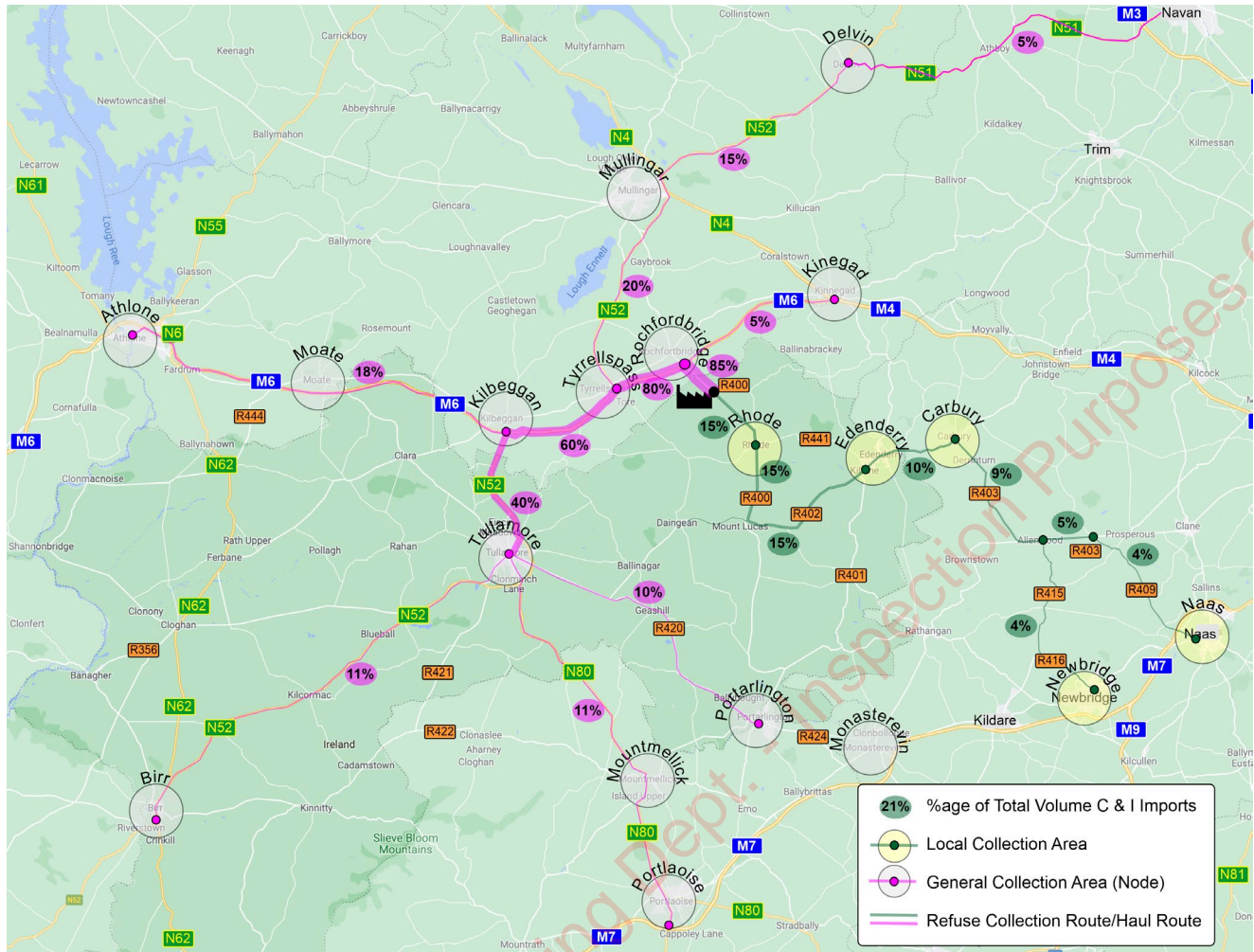


Figure 13-3: Forecast Waste/Collection Import Haul Routes (C&I, DMR)

Practically all waste exported from the proposed development will be transported north along C R400 to M6 Junction 3 thereafter along the motorway network as follows:

- Municipal Solid Waste (MSW) will be exported to Poolbeg Waste to Energy Facility but may occasionally be redirected to Drehid Landfill as necessary. All MSW will be transported via R400 and M6/M4.
- DMR/Cardboard will be exported to Tullamore via M6/N52 and also to Dublin via M6/M4/M50.
- Food waste will be transported to Carlow via M6 and N52/N80 Tullamore and also to Kilmainwood via M6/N52 Mullingar
- Residual C&D and C&I wastes will be transported to Dublin and Drehid Landfill via M6 Junction 3.
- Bulky materials will be brought to Drehid Landfill.
- Recycled C&D metals will be exported to Dublin via M6 Junction 3. Soil/Stone/Rubble will be transferred locally to Kilmurray Sand & Gravel.



13.5.3.5 R400

The R400 is a regional road running generally north-south and linking Mullingar in County Westmeath to Corbetstown and R419 in County Offaly. It is 43 km in length. Starting in the centre of Mullingar R400 crosses the N52 approximately 3.5km south of the town. To the east of Rochfortbridge centre the R400 joins the R446 (former N6) briefly and then heads southward to a flyover crossing of the M6 motorway at Junction 3. Continuing south it enters County Offaly approximately 1km south of M6 Junction 3. The R400 follows the western edge of the Bog of Allen connecting to the village of Rhode to the south (approx. 4.5km south of development access road junction), thereafter crossing the Grand Canal at Rhode Bridge. The R400 intersects the R402 at a ghost island staggered crossroad near Mount Lucas, skirting the villages of Walsh Island and Cushina before terminating at the R419 near Corbetstown and close to the border of County Offaly with County Kildare.

Offaly County Development Plan (2021 – 2027) Table 8.4 and corresponding Figure 8.10 identify R400 from Rhode to the county boundary with Westmeath as a 'Restricted Regional Route'. The Development Plan highlights such regional routes as being of strategic importance to the county and region and outlines that in the case of these regional routes, especially those that carry higher volumes of traffic, the Council adopts a restrictive policy in relation to new development in the interests of preserving the traffic capacity and in order to avoid the creation of traffic hazards.

The County Development Plan acknowledges the Council's support for the upgrading of the status of certain regional roads in the midlands which perform functions akin to National Secondary Routes examples of which are the R420 Tullamore to Monasterevin road and the routes that link Tullamore to the M6 at Enfield via Edenderry, namely the R420 and R402.

R400 is constructed over bog and in places the condition and structure of the road is considered poor. Offaly County Council Planning File Ref. PL2/21/291 provides as part of a Response to A Request for Further Information dated 10-May-2021 a comprehensive Road Condition Survey for the R400 between R402 and the M6 Motorway Junction 3 which was undertaken by PMS Ltd. The survey includes a Structural Evaluation and Pavement Investigation together with Road Surface Profile Survey. The PMS reports are dated September 2021.

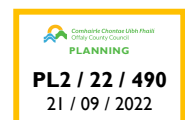
An Bord Pleanála Case Ref. 19.PA0032 is for the proposed construction of a wind farm known as Yellow River Wind Farm. Offaly County Council has indicated that construction is expected to commence later in 2022. The permission granted by An Bord Pleanála dated 03-July-2014 under Condition No. 8 requires that prior to commencement of the development a condition survey of the R400 roads and bridges is to be carried out both before and after construction of the wind farm development. These surveys are required to include a schedule of required works to enable the haul routes, including R400, to cater for construction-related traffic.

13.5.4 Planning Policy and Development Control

13.5.4.1 *Offaly County Development Plan 2021-2027*

Offaly County Development Plan 2021-2027, Table 8.4 'Restricted Regional Routes in County Offaly' lists R402 between Ballina and Edenderry as restricted and the reason is on account of carrying capacity. The R400, R420 are similarly listed in the plan. Offaly County Development Plan 2021-2027, Figure 8.10 provides a map showing all restricted regional routes throughout the county.

The R400, R420 and R402 are all routes that are highlighted in Offaly County Development Plan 2021-2027, Figure 13-1 as those facilitating transport of materials to the proposed development site.





Since household and commercial waste must be collected at source waste arising will be transported from those sources (i.e. household kerbside collections) by the roads of higher order capacity to maximise efficiency. In the case of the proposed development this means the use of the extensive network of regional routes in and around Offaly and the use of the M6 strategic corridor.

13.5.5 Surveyed Network Traffic Flows

To assess the current traffic characteristics of the receiving road Automatic Traffic Counter (ATC) surveys were carried out by Traffinomics (formerly Abacus Transportation Surveys). ATC equipment was installed on the R400 to the north of the existing private access road serving the development site and Kilmurray Sand and Gravel. The ATC recorded traffic data for one week starting at midnight on Monday 13-Sept-2021 and ending at midnight on Monday 20-Sept-2021. In addition, classified turning count surveys were undertaken at the existing site access and at junctions on R400 between Rhode and Rochfortbridge. These were undertaken in September and November 2021. Comprehensive summaries and analyses of the survey data are presented in this Chapter and a full copy of the base traffic survey data is provided in Appendix 13-1 which includes figures showing the junction count locations and location of ATC count sites are identified by Google Map co-ordinates.

Traffic data was collected for the following locations shown on Figure 13-4 where the prefix 'J' signifies a classified junction turning count and 'S' signifies an ATC survey site where both speed and volume was recorded for one week:

- Site 1: Roundabout Junction R400/L1009 (North of Rhode);
- Site 2: Development Site Access (Private Road Junction)/L10091;
- Site 3: M6 Motorway Junction 3;
- Site 4: R446/R400 Rochfortbridge (West);
- Site 5: R446/R400 Rochfortbridge (East);
- Site 6: Rhode Crossroad R400/R441.

The ongoing Covid-19 Pandemic measures did not include for travel restrictions during the traffic surveys. TII traffic statistics for the M4 motorway show that ordinary traffic characteristics in 2021 have returned to near pre-Covid levels. Given that the pandemic may still have had some effect on surveyed network traffic flows we have examined the 5-day moving average traffic flow statistics for M4. The traffic surveys were undertaken in the first week in November. Comparing the TII statistics for that week in 2019 and 2021 confirms that the current flows are close to pre-pandemic values. The statistics show that car traffic in 2021 is 4% lower than in 2019 whilst HGV traffic is practically the same. To account for the possible effects of Covid-19 the base traffic flow data has been factored. The 2019 and 2021 TII data sets show similar profiles and similar volumes of HGV traffic. Based on this assessment the September and November 2021 traffic data is considered valid for use in these analyses.



Table 13-1: R400 ATC Surveyed Traffic Flows September 2021

Day of Week	Northbound		Southbound	
	Total	HGV	Total	HGV
Tue-14-Sept	1185	172	1189	168
Wed-15-Sept	1186	189	1168	165
Thurs-16-Sept	1163	168	1177	139
Fri-17-Sept	1287	169	1244	160
Mon-20-Sept	1115	159	1125	125
Average (Weekday)	1187	171	1181	151

Table13-1 shows day-by-day the traffic flows recorded by the ATC located on R400 north of the existing private access road junction to Kilmurray Sand and Gravel. The ATC equipment has been used over the course of one week in the interest of acquiring a representative sample size and to provide a profile of weekly traffic flows to compliment the one day classified turning count data. In relation to the records of vehicle speeds, automatic traffic counter data was gathered in accordance with guidance provided in the Design Manual for Roads and Bridges CA-185.

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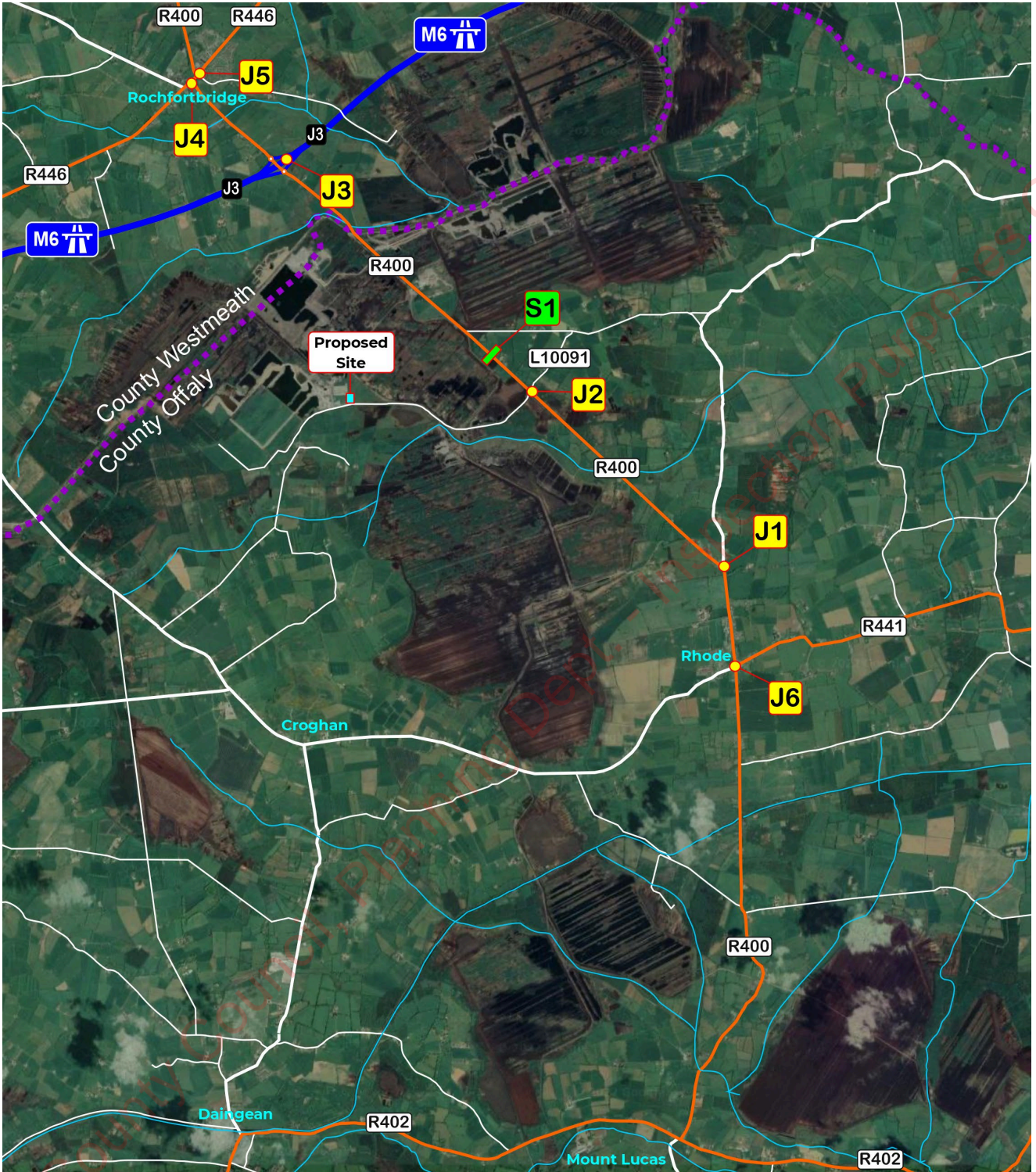


Figure 13-4: Traffic Survey Sites (Source: Google Maps 2022 annotated by Trafficwise Ltd.)



13.5.5.1 Daily Traffic Characteristics R400

Analysis of the traffic flow data recorded by ATC located on R400 north of the L10091 is summarised in the graphical output of Figure 13-5 which shows the total daily traffic flow by direction for each day of the week and in Figure 13-6 which shows the average hourly traffic flow by direction on weekdays.

By direction, the recorded average weekday total daily traffic flow on the R400 to the north L10091 is 1,148 vehicles per day northbound (toward M6) and 1,141 vehicles per day southbound (toward Rhode). The lowest daily traffic flow occurred on Sunday with 608 vehicles northbound and 636 southbound over a 24-hour period, whilst the highest daily flow occurred on Friday with 1,244 vehicles northbound and 1,202 southbound.

The profile for the average daily weekday flows in Figure 13-6 shows some evidence of a tidal commuter traffic pattern typically observed on regional and national roads which tend to show peaks in one direction at the traditional commuting periods in the morning with a reversal in the predominant direction of flow during the evening peak. The graph for both directions of flow follows a normal distribution with discernible morning or evening peak hour periods.

The average traffic flow recorded for each hour of the weekday over the course of the survey between the hours of 07:00 and 19:00hrs is 77 vehicles northbound and 78 vehicles southbound per hour.

The weekday morning peak hour during the traditional commuter peak hour period of 08:00 to 09:00hrs shows the road carries 107 vehicles northbound and 103 vehicles southbound. The weekday evening peak hour period is shown to occur earlier than the traditional commuter peak and shows the road carries 96 vehicles northbound and 108 vehicles southbound in the period 16:00-17:00hrs. The evening peak is however spread over a 3-hour period from 15:00-18:00hrs.

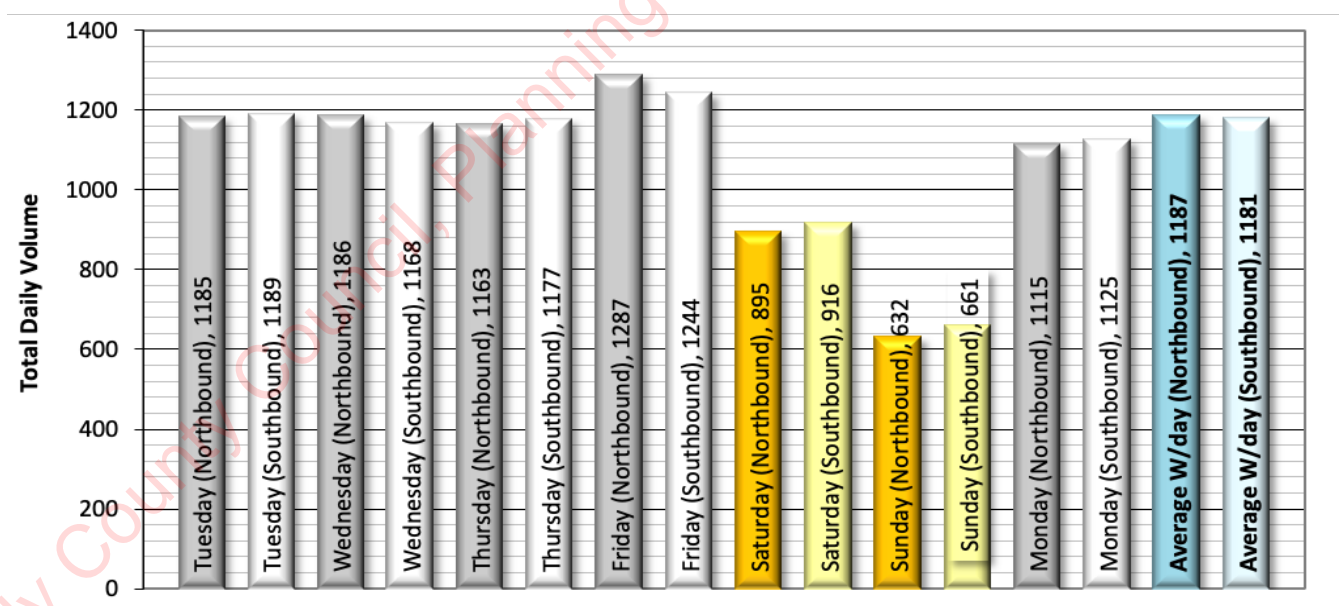


Figure 13-5: R400 (North) Surveyed Total Daily Traffic Flows (14-20 Sept 2021)

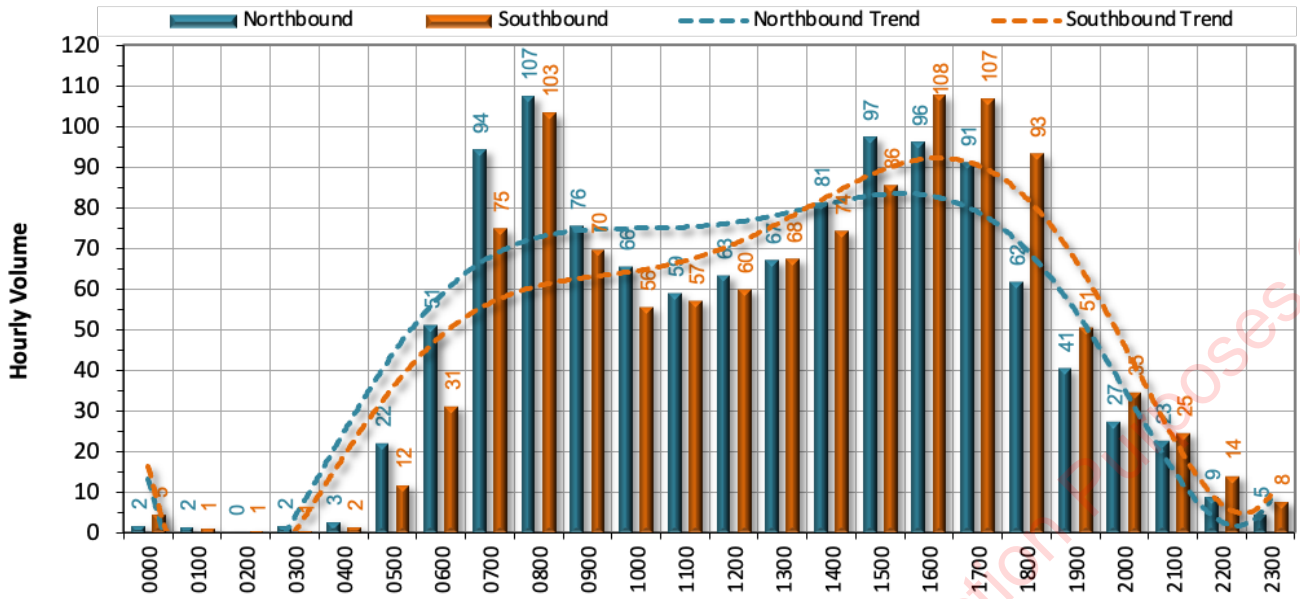


Figure 13-6: R400 (North) Surveyed Average Hourly Weekday Flows (14-20 Sept 2021)

13.5.5.2 Daily HGV Traffic Characteristics R400

The volume of HGV traffic recorded in the surveys is summarised in the graphical output provided in Figure 13-7. Existing commercial enterprises at Derryarkin were open and operational at the time of the traffic surveys and the traffic data is considered representative of typical generation rates. The surveys can therefore be used to establish the appropriate baseline traffic flow scenario.

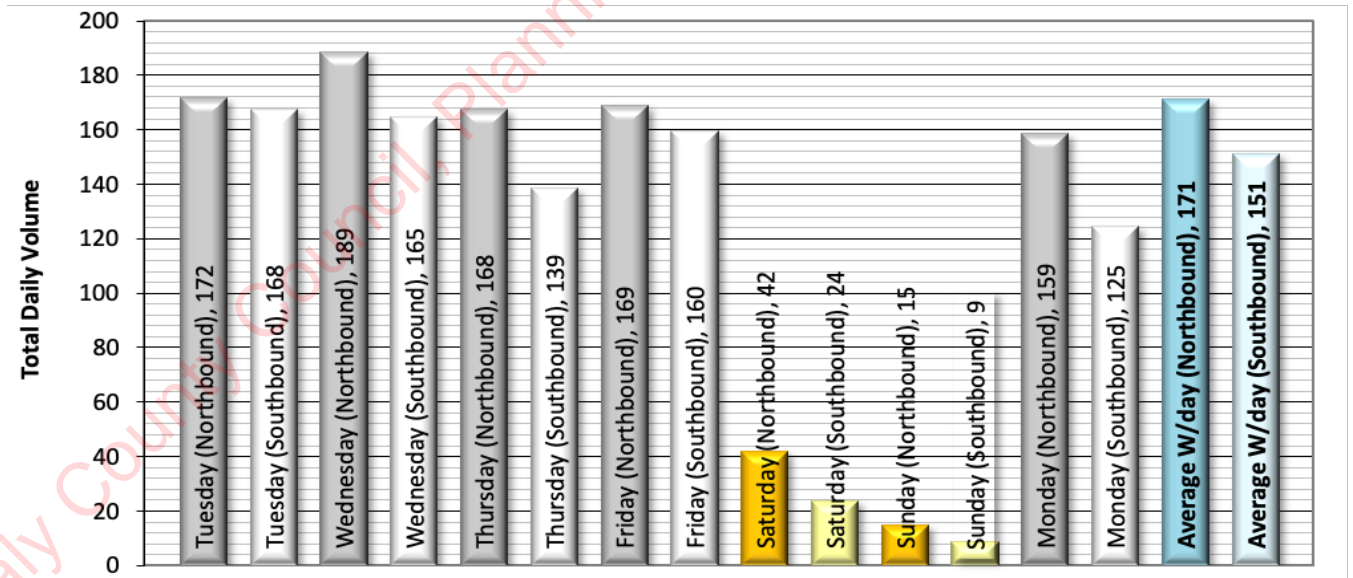


Figure 13-7: R400 (North) Surveyed Daily HGV Flows (14-20 Sept 2021)

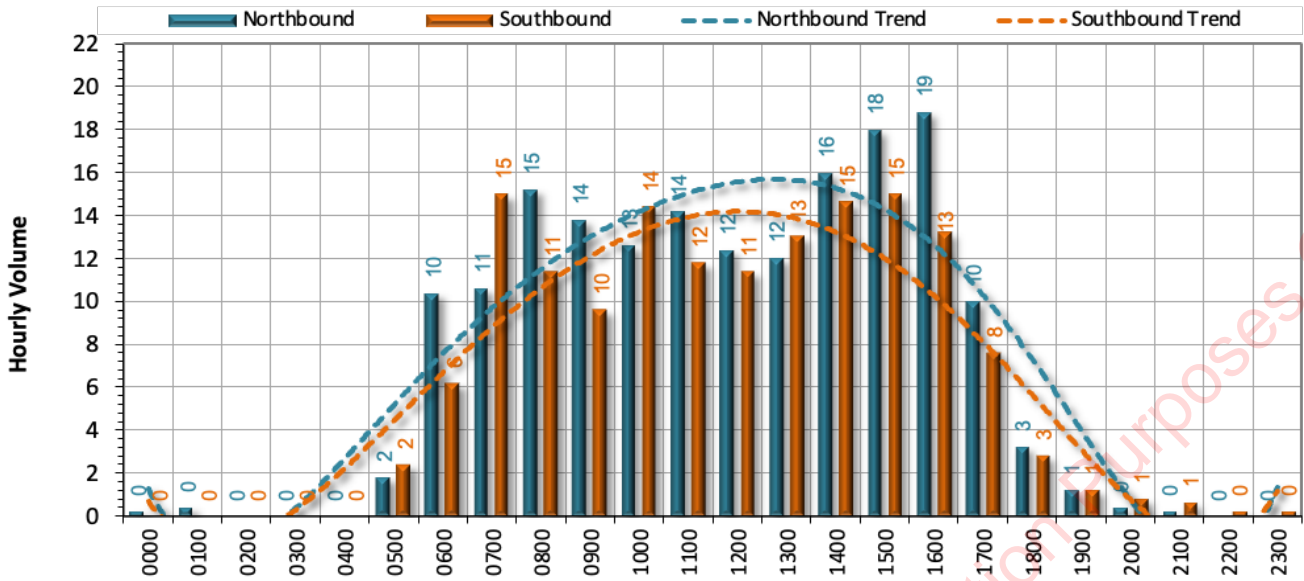
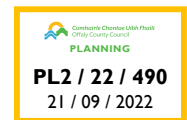


Figure 13-8: R400 (North) Surveyed Average Hourly HGV Flows (14-20 Sept 2021)

Figure 13-7 shows the average weekday daily HGV traffic flow is 171 HGV per day northbound and 151 HGV per day southbound. The lowest daily traffic flow is unsurprisingly Sunday with 15 HGV northbound and 9 HGV southbound. The highest daily flow occurred on Tuesday with 189 HGV northbound and 165 southbound. Figure 13-8 shows the profile for the average weekday daily HGV flow which is consistent with the typical pattern of commercial traffic flows expected on regional and local roads which tend to show a distribution curve resembling the mathematical ‘standard normal distribution’ (Gaussian). The average weekday HGV traffic flow between the hours of 07:00 and 19:00hrs is 12 HGV in either direction every hour. The morning peak hour in HGV traffic occurs between 07:00 to 08:00hrs which precedes the identified commuter peak hour period of 08:00 to 09:00hrs. During the weekday HGV morning commuter peak hour 08:00 to 09:00hrs the road carries a two-way flow of 26 HGV. The evening peak hour period is less well defined as there is a relatively consistent two-way HGV traffic flow of vehicles in either direction from 14:00hrs through to 16:00hrs.



13.5.5.3 Surveyed Network and Junction Turning Data

Daily traffic flows recorded on the receiving road network during traffic surveys on Wednesday 03-Nov-2021 and Tuesday 14-Sept-2021 are shown in Appendix 13-2 Figure 1 in network flow diagram format. The total car and light vehicle flow figures are shown ‘blue’ and the HGV flows are shown bracketed. Appendix 13-2 Figure 1 shows all traffic turning movements at the local junctions included in the study area and includes all traffic generated by existing developments including Kilmurray Sand & Gravel on the date of the survey. The survey depicted in Appendix 13-2 Figure 1 covers a 12hr period 07:00-19:00hrs. Appendix 13-2 Figures 2 and 3 respectively show the morning and evening peak hour surveyed traffic flows. Table 13-2 provides a summary of the factored surveyed traffic flows on the receiving road network during the turning count surveys. The flows shown are those recorded in the traffic surveys factored as per the method set out in 13.5.5 above. Table 13-2 shows the total traffic flow, HGV flow, percentage HGV content enumerated over the survey period together with an estimate of the Annual Average Daily Traffic (AADT). AADT is the standard measurement for vehicle traffic load on a section of road. The factored network turning traffic flows over the period 07:00-19:00hrs are provided in network flow diagram format in Appendix 13-2 Figure 4 whilst the morning and evening factored peak hour flows are shown in Appendix 13-2 Figures 5 and 6. Based upon NRA: Project Appraisal Guidelines Unit 16.1 ‘Expansion Factors for Short Period Traffic Counts’ the 12-hour surveys are estimated to account for 77.5% of the traffic flow over a 24-hour period.



Weekly Average Daily Traffic (WADT) is estimated to be approximately 0.95 (Weekly Flow Index for Mid-East Region) whilst the Annual Average Daily Traffic Flow (AADT) is 0.99 times (Monthly Flow Index) the WADT.

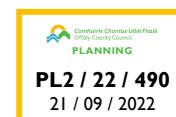
Table 13-2: Surveyed Traffic Flows 2021 (Factored)

Road Link	Section	Surveyed Daily Flow 12hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	2173	102	4.7	2638
R400	South of Rhode	1967	119	6.0	2388
	North of Rhode	3174	200	6.3	3854
	South of L10091	2238	444	19.8	2717
	North of L10091	2184	401	18.4	2651
	North of M6	2452	170	6.9	2976
	North of Rochfortbridge	3569	147	4.1	4332
R446	West of Rochfortbridge	4500	211	4.7	5463
	Rochfortbridge	3515	126	3.6	4268
	East of Rochfortbridge	2263	117	5.2	2747
M6 Junction 3	Eastbound On-slip	389	100	25.7	472
	Westbound Off-slip	415	94	22.6	504
	Westbound On-slip	654	67	10.3	793
	Eastbound Off-slip	602	66	11.0	730

By applying the relevant indices the AADT is estimated to be 1.214 times the recorded traffic flow recorded in November. For the purposes of this assessment the AADT values are 21.4% higher than the factored surveyed 12-hour traffic flows recorded for the receiving road network. Table 13-2 shows the existing surveyed traffic scenario derived from the November 2021 traffic data. Table 13-3 is based upon no development whatsoever occurring at the proposed development site. The forecast flows for the year of opening 2024 and the future assessment years have been forecast in accordance with the NRA: Project Appraisal Guidelines Unit 5.3 'Travel Demand Projections' (October 2021). The growth indices used to derive Opening Year (2024) and Opening Year +5ys (2029) and Opening Year +15yrs (2039) flows from the surveyed (Late 2021) flows are as follows and are applied to all roads included in the traffic study:

- 2021-2024 (Opening Year)-----1.024 (LV)-----1.066 (HGV);
- 2021-2029 (Opening Year +5yrs)-----1.086 (LV)-----1.249 (HGV);
- 2021-2039 (Opening Year +15yrs)-----1.149 (LV)-----1.487 (HGV).

The future year network traffic flow data is provided in the following Table 13-3 'Network Forecast 2024 Traffic Flows (Year of Opening)', Table 13-4 'Network Forecast 2029 Traffic Flows (Year of Opening +5yrs)' and Table 13-5 'Network Forecast 2039 Traffic Flows (Year of Opening +15yrs)'.



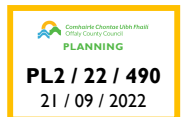


In future year assessment TII growth factors have been applied directly to peak hour traffic data. Growth factors are not always directly applicable to peak hour periods (the peak hour generally spreads out as opposed to intensifying). Ignoring this factor and adding growth directly to the peak hour generally results in robust calculations favoured by traffic experts in the assessment of road networks.

Table 13-3: Network Forecast 2024 Traffic Flows (Year of Opening)

Road Link	Section	Surveyed Daily Flow 24hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	2229	109	4.9	2706
R400	South of Rhode	2019	127	6.3	2451
	North of Rhode	3259	213	6.5	3956
	South of L10091	2310	473	20.5	2805
	North of L10091	2253	427	19.0	2735
	North of M6	2518	181	7.2	3057
	North of Rochfortbridge	3660	157	4.3	4444
R446	West of Rochfortbridge	4617	225	4.9	5605
	Rochfortbridge	3605	134	3.7	4376
	East of Rochfortbridge	2322	125	5.4	2819
M6 Junction 3	Eastbound On-slip	403	107	26.5	489
	Westbound Off-slip	429	100	23.3	521
	Westbound On-slip	672	71	10.6	816
	Eastbound Off-slip	619	70	11.4	751

Table 13-4: Network Forecast 2029 Traffic Flows (Year of Opening +5yrs)



Road Link	Section	Surveyed Daily Flow 24hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	2376	127	5.4	2885
R400	South of Rhode	2156	149	6.9	2617
	North of Rhode	3480	250	7.2	4225
	South of L10091	2503	555	22.2	3038
	North of L10091	2437	501	20.6	2958
	North of M6	2690	212	7.9	3266
	North of Rochfortbridge	3899	184	4.7	4734
R446	West of Rochfortbridge	4921	264	5.4	5975
	Rochfortbridge	3838	157	4.1	4660
	East of Rochfortbridge	2476	146	5.9	3006



Road Link	Section	Surveyed Daily Flow 24hr			AADT
		Total	HGV	%HGV	
M6 Junction 3	Eastbound On-slip	439	125	28.5	533
	Westbound Off-slip	466	117	25.2	566
	Westbound On-slip	721	84	11.6	875
	Eastbound Off-slip	664	82	12.4	806

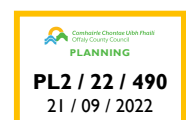
Table 13-5: Network Forecast 2039 Traffic Flows (Design Year)

Road Link	Section	Surveyed Daily Flow 24hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	2531	152	6.0	3072
R400	South of Rhode	2300	177	7.7	2793
	North of Rhode	3715	297	8.0	4510
	South of L10091	2722	660	24.3	3304
	North of L10091	2644	596	22.5	3210
	North of M6	2875	253	8.8	3490
	North of Rochfortbridge	4150	219	5.3	5038
R446	West of Rochfortbridge	5242	314	6.0	6364
	Rochfortbridge	4082	187	4.6	4955
	East of Rochfortbridge	2639	174	6.6	3204
M6 Junction 3	Eastbound On-slip	481	149	30.9	584
	Westbound Off-slip	509	140	27.5	618
	Westbound On-slip	774	100	12.9	939
	Eastbound Off-slip	714	98	13.8	866

Tables 13-4 and 13-5 show the corresponding baseline traffic flows for the year of opening 2024 + 5yrs and the design year 2039 and these are based upon the traffic flows set out in Table 13-3 as derived from the 2021 traffic surveys. The baseline traffic flows for 2029 and 2039 are calculated from the figures set out in Table 13-2 by factoring using the standard central growth rates set out in TII Project Appraisal Guidelines Unit 5.3 'Travel Demand Projections' (October 2021).

13.5.6 Road Collision Data Analysis

The collision statistics on the Road Safety Authority (RSA) website includes records of road traffic collisions for the period 2005 to 2016 inclusive and provides basic information on all reported collisions. This is the extent of the data provided by the online database and reports for 2017, 2018 and 2019 are not yet available.





The RSA records include only those collisions officially recorded and where a Garda was present to formally record details of the incident.

Figure 13-9 shows a plot of the recorded collisions over the 11-year period for which data is available. The plotted information is derived directly from the RSA mapping (highlighted by white rectangles) and is overlain on the location mapping used in Figure 13-4. The RSA database contains information on all reported collisions by severity of injury and year of collision. No collisions are recorded at the private access road junction of R400/L10091. All collisions are marked and collisions on the primary haul routes are marked and numbered. Figure 13-9 shows a total of 21 No. collisions on the network serving the general location of the proposed development site and these are numbered. There are three categories of collision which include 'minor' (highlighted grey), 'serious' (highlighted yellow) and 'fatal' (highlighted red). 2 No. 'serious' collisions and 1 No. 'fatal' collision are shown on Figure 13-9.

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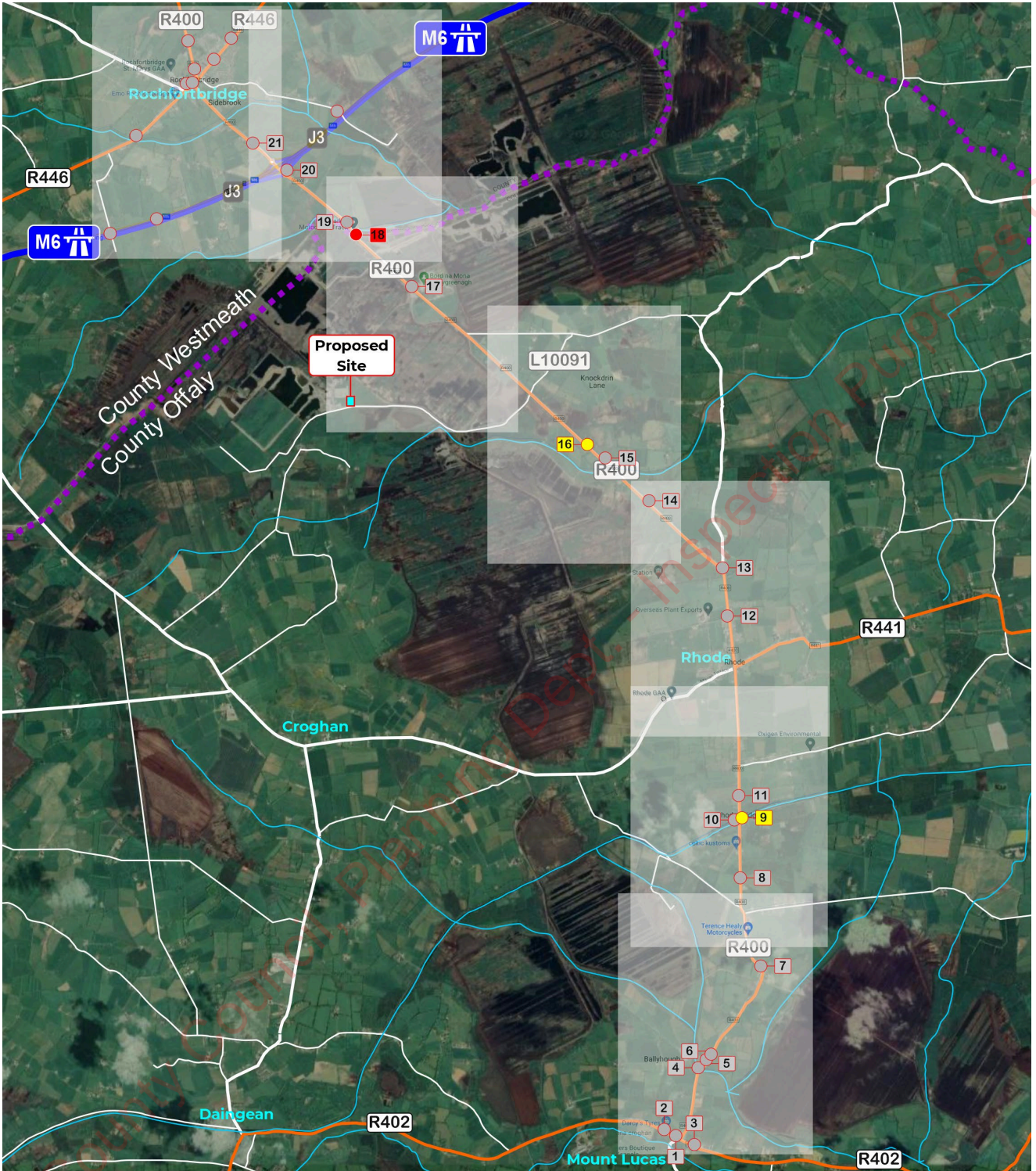


Figure 13-9: R400 (North) Surveyed Average Hourly Weekday Flows (14-20 Sept 2021)
 (Source: Google Maps 2022 and RSA CollStats annotated by Trafficwise Ltd)



Table 13-6 provides the basic data relevant to each of the numbered collisions. Table 13-6 is sorted into date order and shows an average of 2 no. collision per year. There have been 2 No. serious collisions in the past 10 years, and both occurred both on straight sections of R400, one involving a car to the north of Rhode and one involving a motorcycle to the south. Both serious collisions involved a single vehicle only.

Table 13-6: Road Safety Authority Traffic Collision Data 2005 - 2016

Ref	Year	Vehicle	Circumstances	Day	Time	Severity	Casualty F/S/M
5	2005	NA	Angle, Both Straight	Sat	19:00-23:00	Minor	7 M
12	2005	Car	Angle, Both Straight	Tue	10:00-16:00	Minor	1 M
13	2005	Bus	Single Vehicle Only	Sun	03:00-07:00	Minor	3 M
20	2005	HGV	Single Vehicle Only	Sun	23:00-03:00	Minor	1 M
4	2006	Car	Angle, Both Straight	Sat	19:00-23:00	Minor	7 M
14	2007	NA	NA	Mon	10:00-16:00	Minor	1 M
17	2007	Car	Single Vehicle Only	Sun	19:00-23:00	Minor	1 M
21	2007	Car	Pedestrian	Sun	16:00-19:00	Minor	2 M
3	2008	Car	Other	Wed	16:00-19:00	Minor	2 M
6	2008	MC	Angle, Right Turn	Wed	19:00-23:00	Minor	1 M
19	2008	HGV	Other	Fri	19:00-23:00	Minor	1 M
1	2009	Car	Single Vehicle Only	Thurs	07:00-10:00	Minor	1 M
7	2009	Car	Single Vehicle Only	Fri	07:00-10:00	Minor	1 M
8	2009	Car	Single Vehicle Only	Sun	16:00-19:00	Minor	2 M
15	2010	Car	Single Vehicle Only	Tue	16:00-19:00	Minor	2 M
18	2010	Car	Single Vehicle Only	Sun	10:00-16:00	Fatal	1 F
10	2012	Car	Head-on Conflict	Sun	23:00-03:00	Minor	3 M
11	2012	Car	Rear End, Right Turn	Wed	19:00-23:00	Minor	3 M
16	2013	Car	Single Vehicle Only	Fri	16:00-19:00	Serious	1 S
2	2014	Car	Head-on Conflict	Mon	16:00-19:00	Minor	1 M
9	2015	MC	Single Vehicle Only	Thurs	16:00-19:00	Serious	1 S

Two collisions (No.19 and No.20) were recorded as having involved a HGV. These collisions occurred in 2005 and 2006. One is a single vehicle collision whilst the other is not defined. Both involved a severity of casualty classified as minor. One collision occurred on Sunday and the other in the late evening.

The RSA collision records suggest that on the receiving road network serving the proposed development there is no significant clustering of collisions and no significant trends in the type of traffic collisions. The data suggests that the immediate receiving local road network proposed to be traversed by development traffic has a relatively good safety record. Based on the available data, there are no location specific adverse road safety performance issues of direct relevance to the proposed development.





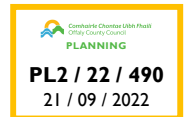
13.6 Potential Effects

The Proposed Development will involve the operation of a Waste Transfer Station which will accept a maximum of 50,000 tonnes of waste per annum during Phase 1 and the operation of Materials Recovery Facility which will accept a maximum of 90,000 tonnes of waste per annum of waste for processing. The traffic analyses provided in this chapter considers the site operating at 90,000 tonnes per annum in all scenarios.

Given the spatial extent and spread of waste collection areas in the region, waste acceptance times at the facility will be spread across a long day and will take place very early in the morning. The hours of waste acceptance are therefore 05:00 to 00:00 Monday to Saturday. The site will be accessible on a 24/7 basis and these operating, acceptance and access hours are in line with operational timeframes for similar facilities in the region.

In total it is proposed that when operating at full potential the facility will receive 90,000t of materials per annum. For the purposes of the assessment of traffic generation and traffic impact the materials received can be broken into 3 no. broad streams as follows:

- Domestic and Commercial Municipal Solid Waste (MSW);
- Construction and Demolition (C&D) and Commercial and Industrial (C&I) skip waste;
- Dry Mix Recyclables (DMR).



The facility is forecast to receive 40,000t per annum of 'Domestic and Commercial Municipal Solid Waste' (MSW). Figure 13-1 shows the primary haul routes forecast to be used for the import MSW. The source of this waste is from domestic and commercial refuse collections. This waste is transported to the facility in Refuse Collection Vehicles (RCVs) with a typical carrying capacity of 10-12t per vehicle. Allowing a conservative estimate of 276 no. working days per year (5.5 days per week, no working on bank holiday) MSW is estimated as likely to give rise to a daily average traffic generation in the order of 12-14 no. vehicle trips. Once processed this waste is exported from the site by articulated vehicles with a typical payload of 20t per vehicle giving rise to 7 no. vehicle trips per day.

The facility is forecast to receive 30,000t per annum of 'Construction and Demolition and Commercial and Industrial skip waste. Figure 13-2 shows the forecast distribution for the importation of C&D. The source of this waste is generally from skip collections from construction sites and from both household and commercial properties. Skip sizes can range from 6 yd skips to 40 yd skips depending on customer needs. The tonnage of material varies considerably depending upon skip size and the material type. Based upon the prospective operators' current operations the typical average skip payload over the long-term is approximately 3.2-4.8t. Based upon 276 working days C&D is estimated as likely to give rise to a daily average traffic generation in the order of 23-34 no. vehicle trips. Once processed these materials are exported from the site by articulated vehicles with a typical payload of 25t per vehicle giving rise to 4 no. vehicle trips per day.

The facility is forecast to receive 20,000t per annum of Dry Mixed Recyclables (DMR). Figure 13-3 shows the forecast distribution for the importation of DMR. This type of material is generally transported by compactor/skip with collection from civic amenity sites and both commercial and industrial sites where the average payload varies between 5-10t. Approximately 8,000t of waste is forecast to arrive from these sources giving rise to approximately 3-6 no. vehicle trips per day. It is estimated that approximately 12,000t of DMR arising from domestic and commercial sources will be transported by a mix of curtain sided vehicle and RCV with the average payload being in the order of 5-8t depending upon the waste type. This is forecast to generate approximately 5-9 no. vehicle trips per day. Once processed this waste is exported from the site by articulated vehicles with a typical payload of 15t per vehicle giving rise to 3 no. vehicle trips per day.



Table 13-7: Forecast Daily Traffic Generation (90,000t/a)

Stream	Import/Export	Typical Average Vehicle Payload		Daily Trips	
		Import	Export	Import	Export
MSW	40,000t	10-12t	20t	12-14	7
C&D	30,000t	3.2-4.8t	25t	23-34	4
DMR	8,000t	5-10t	15t	3-6	3
	12,000t	5-8t	15t	5-9	
		TOTAL		43-63	14

Table 13-8: Forecast Development Traffic Flows (90,000t/a)

Road Link	Section	Surveyed Daily Flow 24hr			AADT ¹
		Total	HGV	%HGV	
R441	East of Rhode	12	2	16.1	12
R400	South of Rhode	43	33	76.9	43
	North of Rhode	61	35	57.5	61
	South of L10091	59	35	69.5	59
	North of L10091	143	119	83.2	143
	North of M6	14	0	0	14
	North of Rochfortbridge	2	0	0	2
R446	West of Rochfortbridge	8	0	0	8
	Rochfortbridge	6	0	0	6
	East of Rochfortbridge	4	0	0	4
M6 Junction 3	Eastbound On-slip	16	15	93.9	16
	Westbound Off-slip	16	15	93.9	16
	Westbound On-slip	48	44	91.6	48
	Eastbound Off-slip	48	44	91.6	48

The average traffic generation arising from the acceptance of waste is estimated to be approximately 53 vehicles per day comprising 15 no refuse collection vehicles, 24 no. skip lorries and 5 no. curtain sided vehicles. The volume of traffic and imported payloads will vary daily depending upon the refuse collection route and depending upon the composition of waste collected. The export of waste is more predictable and full loads generally leave the site.

¹ AADT in the case of the Daily Forecast Traffic Generation is equal to the forecast (no factoring applies)



For the purposes of the traffic assessment the higher value from the range of forecast daily inbound HGV trips has been selected accordingly the analyses assume a trip generation of 63 no. HGV trips associated with the acceptance of waste and 14 no. HGV trips for export. In total the maximum number of employees on site is predicted to be 24 persons. Based upon the above the assessment HGV trip generation values and the HGV distribution forecasts set out in Figures 13-1, 13-2 and 13-3 the resulting assessment traffic generation is shown in Appendix 13-2 Figure 16. Light vehicles associated with staff movements are assumed to distribute to the network in the same proportions manifest in the November 2021 traffic surveys. In the interest of facilitating direct comparison Table 13-8 shows the forecast site traffic generation on the link roads corresponding to the earlier tabulated network traffic flows.

13.6.1 Review of Existing and Permitted Development

The proposed development is accessed from a private road connecting directly to R400. The existing private road serves other existing operational developments and also developments that benefit from a grant of planning permission but have not commenced. The latter is often referred to as ‘committed’ development but would be better characterised as ‘potential’ development since there is no obligation or commitment inherent in a grant of planning permission. The principal user of the private access road is Kilmurray Precast Concrete Ltd. To understand the traffic generation characteristics of the Kilmurray operations we reference Offaly Planning Reg. Ref. PL2/21/247 recently granted planning permission by decision dated 18-Feb-2022. In response to a request for further information dated 21-Jun-2021 Kilmurray Precast Concrete Ltd. submitted a Traffic and Transportation Assessment that sets out, by reference to planning reg. ref. numbers the traffic generation characteristics of the existing operations using the private road together with their proposed development and other permitted developments proposing to use the private road or otherwise affecting the adjoining R400 road and connected network.

13.6.1.1 *Existing Development*

Kilmurray Precast Concrete Ltd. has 3 no. existing permitted developments operating which include:

- Planning Reg. Ref. Nos. 178;
- Planning Reg. Ref. Nos. 1849;
- Planning Reg. Ref. Nos. 18324.

This development is detailed in Appendix 1.1 - Projects considered during Cumulative Impact Assessment of Volume 3 of this EIAR.

13.6.1.1.1 Planning Reg. Ref. 178

Permission was granted in 2017 for sand and gravel extraction. This is a 5-year permission which expires in early 2022. The Kilmurray TTA report states that all traffic associated with these operations are accounted for in the traffic surveys that underpin that report. This Chapter uses the same traffic survey data.



13.6.1.1.2 Planning Reg. Ref. 1849

Permission was granted in 2018 for sand and gravel extraction. A 25-year permission which expires in 2043. Traffic associated with these operations is accounted for in the traffic surveys and is thus included in the baseline traffic flows.

13.6.1.1.3 Planning Reg. Ref. 18324

Permission was granted for infilling in 2019. A 5-year permission it expires in 2024. Traffic associated with these operations is accounted for in the traffic counts surveys. The Kilmurray TTA notes that the EIAR submitted with the relevant application indicates that HGV associated with the above extractive operations backhaul the inert waste material. The traffic generated by this permitted development is also included in the baseline surveys. This activity will likely have expired before the proposed development commences.

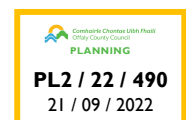
13.6.1.2 *Permitted Development*

Permitted developments that have not commenced or have not been acted upon have the potential if implemented to generated traffic. There are three such developments considered relevant in the context of the assessment of the receiving road network of the development which is the subject of this EIAR. These include:

- Planning Reg. Ref. 1476: Skeagh Farms (EX190010);
- An Bord Pleanála Case No. 19.PA0032: Yellow River Wind Farm;
- Planning Reg. Ref PL2/21/247 Kilmurray Precast Concrete Ltd.

This committed development is detailed in Appendix 1.1 - Projects considered during Cumulative Impact Assessment of Volume 3 of this EIAR.

13.6.1.2.1 Planning Reference 1476



The Skeagh Farm is located adjacent to the Kilmurray Precast Ltd sand and gravel pit on the private access road connecting to R400 (Survey Junction 2). The particulars of that application indicate a forecast increase that applies only to the number of HGV movements generated at the site. The EIAR accompanying that application states that the traffic to and from the farm is scheduled to arrive outside the traditional commuter peak hours. In brief, the existing farming operations generate 19 HGV trips per week and the proposed development is forecast to increase this value to 48 HGV trips per week. For the purposes of this assessment it is assumed that the Skeagh Farm permission has the potential to generate an addition 29 HGV trips per week or approximately 6 HGV trips per day. Where peak hours are considered 1 HGV trip is assumed. This traffic is forecast to distribute to the receiving road network in the proportions manifest in the November 2021 traffic surveys.

13.6.1.2.2 An Bord Pleanála Case No. 19.PA0032

Yellow River Windfarm was granted a 10-year planning permission in 2014. It is understood that construction might commence sometime in 2022. The An Bord Pleanála Inspector's Report sets out that the private access road to the Kilmurray Precast Concrete Ltd. site will be used as the only access road to the wind farm.



It will be the conventional construction traffic route and access for the abnormal loads. The Inspector's Report considers that the aggregate and ready-mix concrete required for the construction stage will be sourced locally and delivered along the R400 from the M6. Kilmurray Precast Concrete Ltd, have advised in their most recent application (Reg. Ref. PL2/21/247) that the construction materials (i.e. aggregate, blocks, ready mix etc), will be sourced from the Kilmurray operated sand and gravel pit and from the separately operated BD Flood concrete batching plant also accessed along the same private road from R400. The Kilmurray Precast Concrete Ltd. TTA states that when developing wind farm projects, the largest daily volume of traffic is typically associated with the construction phase and particularly with the pouring of the turbine foundations. The foundations for the turbines at Yellow River have a volume of 420m³ of concrete for each base. For the purposes of this assessment, we have adopted as reasonable the same traffic generation assumptions as used in the Kilmurray TTA which are summarised as follows.

- We are advised by Offaly County Council that the construction period for the wind farm will start in 2022 and will accordingly likely be completed before the proposed development is operational. There is some potential that the construction activities of both developments could coincide for a short period.
- The Kilmurray TTA assumed that each concrete pour would be a continuous pour and would be completed in the measure of a single day. It further assumed that working day is of 12-hours duration.
- Concrete truck capacity is assumed to be 7.5m³
- Assumed that 20 No. construction staff present on site, and all arrive by personal transport.
- The Kilmurray TTA assumed that all construction staff would arrive in the morning peak hour and depart in the evening peak hour which is robust given the typical construction start and finish times.
- Wind Farm operational traffic will be very low and is accounted for in the application of network traffic growth factors in the forecast of future year baseline traffic.
- Assuming each concrete pour is 420m³, it is envisaged that 5 HGV trips per hour will be generated during the concrete pours.

The light vehicle traffic associated with the wind farm development is forecast to distribute to the receiving road network in the proportions manifest in the November 2021 traffic surveys. The HGV traffic is assumed to travel to and from the M6 via R400 as set out in the An Bord Pleanála Inspector's Report.

13.6.1.2.3 Planning Reg. Ref PL2/21/247

The traffic generation for the recently permitted development is derived directly from the TTA report submitted by the applicant in response to a request for further information dated 21-Jun-2021. The daily volume of HGV is estimated base upon weighbridge data to be 83 HGV movements per day (42 trips).

The Kilmurray TTA forecasts 7 HGV movements per hour (3-4 HGV trips per hour). Staff generated traffic is already accounted for in the traffic surveys. The forecast traffic generation arising from the permitted sand and gravel pit activities was assumed in the TTA to commence in 2021 for 25 years.

Light vehicles distribute approximately 50/50 north/south whilst HGV traffic is forecast to have a bias toward the M6 with 90% of all movements using the R400 to the north of the site access road. An allowance was made in the Kilmurray TTA for some HGV trips to route through M6 Junction 5.



Forestry activities at the permitted site are envisaged to be undertaken in 2024/2024 and it was assumed that a total of 10 staff would be required for these forestry activities which were estimated to generate approximately 125 HGV movements per year. The TTA assumed 50 working weeks in the year and forecast 1 HGV trip per day.

The forecast traffic generation arising from the above development are set out in network flow diagrams in Appendix 13-2 where Figure 17 shows the combined daily traffic generated by the Skeagh Farm and Kilmurray Sand & Gravel permitted developments as detailed in the plans and particulars accompanying Planning Reg. Ref PL2/21/247.

Table 13-9 provides a summary of the forecast total traffic generation over the entire day together with an estimate of the AADT, which in the case of development traffic is the same as the total value.

Future year baseline traffic flow data is provided in the following Table 13-10 'Baseline Forecast 2024 Traffic Flows (Year of Opening)', Table 13-11 'Baseline Forecast 2029 Traffic Flows (Year of Opening +5yrs)' and Table 13-12 'Baseline Forecast 2039 Traffic Flows (Year of Opening +15yrs)'. The baseline figures are derived from the factored survey flows together with the traffic flows arising from permitted development as set out in Table 13-9:

Table 13-9: Forecast Traffic Arising from Permitted Development

Road Link	Section	Surveyed Daily Flow 12hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	0	0	0	0
R400	South of Rhode	16	12	75.0	16
	North of Rhode	16	12	75.0	16
	South of L10091	16	12	75.0	16
	North of L10091	92	84	91.3	92
	North of M6	23	19	82.6	23
	North of Rochfortbridge	16	14	88.9	16
R446	West of Rochfortbridge	5	3	60.0	5
	Rochfortbridge	18	16	88.9	18
	East of Rochfortbridge	2	2	100	2
14M936 Junction 3	Eastbound On-slip	14	13	92.9	14
	Westbound Off-slip	20	19	95.0	20
	Westbound On-slip	20	19	95.0	20
	Eastbound Off-slip	15	14	93.3	15



Table 13-10: Baseline Do Nothing Scenario Forecast 2024 Traffic Flows (Year of Opening)

Road Link	Section	Surveyed Daily Flow 24hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	2229	109	4.9	2706
R400	South of Rhode	2035	139	6.8	2471
	North of Rhode	3275	225	6.9	3976
	South of L10091	2308	469	20.3	2802
	North of L10091	2332	498	21.4	2831
	North of M6	2541	200	7.9	3084
	North of Rochfortbridge	2338	139	5.9	2838
R446	West of Rochfortbridge	3665	160	4.4	4450
	Rochfortbridge	4635	241	5.2	5627
	East of Rochfortbridge	3607	136	3.8	4379
M6 Junction 3	Eastbound On-slip	417	120	28.7	506
	Westbound Off-slip	449	119	26.5	545
	Westbound On-slip	692	90	13.1	840
	Eastbound Off-slip	634	84	13.3	769

Table 13-11: Baseline Do Nothing Scenario Forecast 2029 Traffic Flows (Year of Opening +5yrs)


PLANNING
PL2 / 22 / 490
 21 / 09 / 2022

Road Link	Section	Surveyed Daily Flow 24hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	2376	127	5.4	2885
R400	South of Rhode	2172	161	7.4	2636
	North of Rhode	3496	262	7.5	4244
	South of L10091	2454	507	20.6	2979
	North of L10091	2477	536	21.6	3008
	North of M6	2713	231	8.5	3294
	North of Rochfortbridge	2492	160	6.4	3025
R446	West of Rochfortbridge	3904	187	4.8	4740
	Rochfortbridge	4939	280	5.7	5996
	East of Rochfortbridge	3840	159	4.2	4662
M6 Junction 3	Eastbound On-slip	453	138	30.4	550
	Westbound Off-slip	486	136	28.0	590
	Westbound On-slip	741	103	13.9	899
	Eastbound Off-slip	679	96	14.2	824



Table 13-12: Baseline Do Nothing Scenario Forecast 2039 Traffic Flows (Design Year)

Road Link	Section	Surveyed Daily Flow 24hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	2531	152	6.0	3072
R400	South of Rhode	2316	189	8.2	2812
	North of Rhode	3731	309	8.3	4529
	South of L10091	2613	555	21.2	3172
	North of L10091	2636	584	22.1	3200
	North of M6	2892	272	9.4	3518
	North of Rochfortbridge	2655	188	7.1	3223
R446	West of Rochfortbridge	4155	222	5.3	5044
	Rochfortbridge	5260	330	6.3	6385
	East of Rochfortbridge	4084	189	4.6	4958
M6 Junction 3	Eastbound On-slip	495	162	32.7	601
	Westbound Off-slip	529	159	30.0	642
	Westbound On-slip	794	119	14.9	963
	Eastbound Off-slip	729	112	15.4	884

The future year baseline, or 'do-nothing' traffic flow scenarios are also set out in network flow diagram format in Appendix 13-2 in the following:

- Figure 19 Daily Baseline 'do-nothing' Forecast 2024 Year of Opening – Do Nothing Scenario;
- Figure 21 Daily Baseline 'do-nothing' Forecast 2029 Year of Opening +5yrs – Do Nothing Scenario;
- Figure 23 Daily Baseline 'do-nothing' Forecast 2039 Year of Opening +15yrs – Do Nothing Scenario.

13.6.2 Development Traffic Impact

This section sets out the likely traffic characteristics of the proposed development and includes details of likely impacts envisaged for both the construction and operational stages of the development. In Ireland, a Traffic and Transport Statement (TTS) should generally accompany all planning applications for developments that could potentially act as traffic generators. A TTS is an outline of the transport requirements for the development and is used as a first step to identify the likely impact of any development. A TTS can also be used to determine if further, more detailed traffic analysis is required to evaluate potential impact upon the capacity of links and junctions on the receiving road network.

An in-depth analysis of the impact of a development in terms of traffic is carried out through the preparation of a Traffic and Transport Assessment (TTA). Table 2.1 of the NRA Traffic and Transport Assessment Guidelines (May 2014) sets out threshold limits above which a Transport Assessment is automatically required.



The relevant thresholds are reproduced below:

- 100 trips (in/out combined) in the peak hour;
- Development traffic exceeds 10% of two-way traffic flow on adjoining road;
- Development traffic exceeds 5% of two-way traffic flow on adjoining road if congestive or sensitive;
- 100 on-site parking spaces.

The threshold approach is used to establish the area of influence of the development. In general, the study area should include all road links and associated junctions where traffic to and from the development may be expected to exceed 10% of the existing traffic movements, or 5% in congested or other sensitive locations. The threshold approach should include all junctions with national roads affected by development generated traffic.

13.6.2.1 Operational Stage Traffic Impact

Three assessment years including the year of opening, year of opening + 5 years, and year of opening + 15 years have been considered for the operational phase traffic assessment. The future year 'do-something' traffic flow scenarios are provided in network flow diagram format in the following Appendix 13-2 figures:

- Figure 20 Daily Forecast 'do-something' 2024 Year of Opening – Do Something Scenario;
- Figure 22 Daily Forecast 'do-something' 2029 Year of Opening +5yrs – Do Something Scenario;
- Figure 24 Daily Forecast 'do-something' 2039 Year of Opening +15yrs – Do Something Scenario.

The following Tables 13-13, 13-14 and 13-15 correspond to the 'do-something' scenario traffic flow forecasts. Table 13-16 provides a summary of the incremental increases in traffic resulting on the road links of the receiving road network as a result of the traffic arising from the proposed development.

The data in Table 13-16 includes figures relating to the forecast increase in total traffic flows and given the commercial nature of the development separate figures are provided that estimate the increase in HGV traffic over baseline.

Table 13-16 shows that the forecast increase in total traffic flow on the link roads within the study scope remain below 10% and thus sub-threshold in all cases.

The forecast increase in total traffic flows on the immediate receiving environment of Regional Road R400 is generally 2% save for the link road section between the private access road serving the site and M6 Junction 3 which is shown as likely to experience a daily increase in traffic flow in the order of 6%.

The highest forecast impact is on the recorded wester slip roads of M6 Junction 3 where there is a forecast increase of 7-8% in total daily traffic flow and 50% increase in the volume of HGV.



Table 13-13: Do Something Scenario Forecast 2024 Traffic Flows (Year of Opening)

Road Link	Section	Surveyed Daily Flow 24hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	2241	111	4.9	2721
R400	South of Rhode	2079	172	8.3	2523
	North of Rhode	3336	260	7.8	4050
	South of L10091	2367	505	21.3	2874
	North of L10091	2475	617	24.9	3004
	North of M6	2555	200	7.8	3101
	North of Rochfortbridge	2340	139	5.9	2840
R446	West of Rochfortbridge	3673	160	4.3	4460
	Rochfortbridge	4641	241	5.2	5634
	East of Rochfortbridge	3611	136	3.8	4384
M6 Junction 3	Eastbound On-slip	433	135	31.2	526
	Westbound Off-slip	466	135	28.9	565
	Westbound On-slip	740	134	18.2	898
	Eastbound Off-slip	682	128	18.8	828

Table 13-14: Do Something Scenario Forecast 2029 Traffic Flows (Year of Opening +5yrs)

Road Link	Section	Surveyed Daily Flow 24hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	2388	129	5.4	2899
R400	South of Rhode	2215	194	8.8	2689
	North of Rhode	3557	297	8.3	4318
	South of L10091	2513	542	21.6	3051
	North of L10091	2620	654	25.0	3181
	North of M6	2727	231	8.5	3311
	North of Rochfortbridge	2494	160	6.4	3028
R446	West of Rochfortbridge	3912	187	4.8	4750
	Rochfortbridge	4945	280	5.7	6004
	East of Rochfortbridge	3844	159	4.1	4667
M6 Junction 3	Eastbound On-slip	469	153	32.7	570
	Westbound Off-slip	503	152	30.2	611
	Westbound On-slip	789	147	18.6	957
	Eastbound Off-slip	727	140	19.3	883



Table 13-15: Do Something Scenario Forecast 2039 Traffic Flows (Design Year)

Road Link	Section	Surveyed Daily Flow 24hr			AADT
		Total	HGV	%HGV	
R441	East of Rhode	2543	154	6.0	3087
R400	South of Rhode	2360	222	9.4	2865
	North of Rhode	3792	345	9.1	4604
	South of L10091	2672	590	22.1	3244
	North of L10091	2779	703	25.3	3373
	North of M6	2912	272	9.3	3535
	North of Rochfortbridge	2657	188	7.1	3226
R446	West of Rochfortbridge	4163	222	5.3	5054
	Rochfortbridge	5266	330	6.3	6393
	East of Rochfortbridge	4088	189	4.6	4963
M6 Junction 3	Eastbound On-slip	511	177	34.6	621
	Westbound Off-slip	546	174	31.9	662
	Westbound On-slip	841	163	19.3	1022
	Eastbound Off-slip	776	156	20.1	943

Table 13-16: Forecast Incremental Increases in Traffic

Road Link	Section	Incremental Increase					
		2024		2029		2039	
		Total	HGV	Total	HGV	Total	HGV
R441	East of Rhode	1%	2%	1%	2%	0%	1%
R400	South of Rhode	2%	24%	2%	20%	2%	17%
	North of Rhode	2%	16%	2%	13%	2%	12%
	South of L10091	3%	8%	2%	7%	2%	6%
	North of L10091	6%	24%	6%	22%	5%	20%
	North of M6	1%	0%	1%	0%	1%	0%
	North of Rochfortbridge	0%	0%	0%	0%	0%	0%
R446	West of Rochfortbridge	0%	0%	0%	0%	0%	0%
	East of Rochfortbridge	0%	0%	0%	0%	0%	0%
M6 Junction 3	Eastbound On-slip	4%	13%	4%	11%	3%	9%
	Westbound Off-slip	4%	13%	3%	12%	3%	9%
	Westbound On-slip	7%	49%	6%	43%	6%	37%
	Eastbound Off-slip	8%	52%	7%	46%	6%	39%



The NRA Traffic and Transport Assessment Guidelines (May 2014) advise that there may be some cases where the impact of traffic volumes may not be significant and where the thresholds requiring a TTA may not be exceeded, but where the type and volume of traffic may be of a nature to raise concerns about potential effects.

In view of the current grants of permission locally it is reasonable to conclude that the Planning Authority has, through suitably rigorous and objective assessment of the traffic arising from the permitted quarry development, ancillary manufacturing site, farm and wind farm already considered the traffic effects arising from the current permitted development and has determined that the existing receiving roads are suitable to accommodate the current volume of traffic arising.

In the case of sub-threshold scenarios, the NRA guidelines advise that the Planning Authority should consult evaluation criteria set out in Table 2.3 of the guidelines and recommends that if the proposed development meets two or more of the following criteria, then a Transport Assessment should be requested.

- The character and total number of trips in / out combined per day are such that as to cause concern;
- The site is not consistent with national guidance or local plan, policy or accessibility criteria contained in the Development Plan;
- The development is part of incremental development that will have significant transport implications;
- The development may generate traffic at peak times in a heavily trafficked / congested area or near a junction with a main traffic route;
- The development may generate traffic, particularly heavy vehicles in a residential area;
- There are concerns over the development's potential effects on road safety;
- The development is in a tourist area with potential to cause congestion;
- The planning authority considers that the proposal will result in a material change in trips patterns or raises other significant transport implications.

Under the current development proposals and corresponding to the above bullet points:

- the total number of trips in and out of the site per day is <100;
- Appendix 13-2 Figure 16 shows the daily traffic generation arising from the proposed development. Based upon the operation of other waste related commercial sites the morning peak hour could see approximately 10-15% of daily traffic. On the robust basis of 15% the traffic generation of the site would be in the order of 11 No. HGV trips to the north of the private site access junction along R400 and 4 No. HGV trips to the south which is not considered significant by the standard metrics set out in the guidelines. Lower volumes of traffic are likely to be manifest in the evening peak hour. The receiving road network is neither heavily trafficked nor congested and the volume of traffic is unlikely to give rise to concern at the junctions with the main traffic route;
- the proposed development does not generate traffic in a residential area;
- existing permitted development did not / does not give rise to congestion on the receiving road network and it is therefore considered reasonable to conclude that the proposed development will similarly not give rise to traffic congestion;
- the proposed development will not result in a material change in established trip patterns.



The record of collision statistics for the period 2005 to 2016 set out in Figure 13-9 and Table 13-6 show that the receiving road network and the primary haul routes have a good safety record. No collisions involving HGVs have been recorded in the Road Safety Authority records during the working day when the proposed development would be operating. The proposed development traffic generation does not exceed the TII threshold criteria, nor is it considered to exceed the sub-threshold criteria warranting detailed junction capacity assessments.

Regional Road R400 interchange with M6 Junction 3 is not heavily trafficked and from observation alone can be seen to operate well within capacity. Given the recorded network traffic flows and the forecast peak hour generation the proposed development and the sub-threshold incremental increase in traffic flows the proposed development is considered unlikely to give rise to capacity problems at this junction. The peak hour volume of traffic throughput at other local junctions is not significant. In light of these considerations, the evaluation of capacity and traffic levels on the receiving road is not required under the TII guidelines to include detailed computer modelling of the capacity of these junctions. The forecast volume of traffic generation is not such as to be of concern with respect to capacity. This notwithstanding in the following we provide capacity assessments of the two junctions most heavily trafficked by development traffic, those being the junction of the private access road and R400 and the M6 Junction 6 interchange.

13.6.2.2 Operational Stage Junction Capacity Assessments

13.6.2.2.1 Scenarios Analysed

The main corridor upon which the continued traffic generated by the development will have an impact is Regional Road R400 accordingly the scope of future year assessments focusses on the operation of R400/L10091 junction at the private access road and M6 Junction 3. The assessments aim to show that the infrastructure provided by the receiving road network including the strategic Regional Road network is suitable to accommodate the forecast traffic arising from the proposed development.

The various 'do-nothing' and 'do-something' traffic flow scenarios have been assessed for the Opening Year 2024, Opening Year +5yrs and the Design Year of 2039.

The volume of development traffic tends to trail off in the evening peak hour and the period of greatest impact is typically the morning network peak hour where the combination of network and development traffic flow is highest. Notwithstanding this the assessments examine a scenario in which 15% of daily traffic generation is assumed to be manifest in both the morning and evening peak hours and so in the interest of a comprehensive assessment junction capacity is examined on this basis in both the morning and evening peak hours.

A baseline assessment using only the current 2021 surveyed flows (factored) is provided in the interest of providing a comparator from which an experienced practitioner might choose to evaluate the results of the analyses through observation and judgement.

The future year assessments include for scenarios both with and without the proposed development so that the incremental impact of development traffic on capacity can be evaluated.

The Transport Research Laboratory (TRL) suite of programs has been used to assess network junction performance in the identified peak hours. The 'do something' scenarios include for the forecast assessment morning and evening peak hour (15% daily generation) development traffic flows where the daily traffic generation is set out in Appendix 13-2 Figure 16.



The baseline network traffic flows which include for existing and permitted developments together with TII central growth rates are set out in network flow diagram format in Appendix 13-2 as follows:

- Figure 5 AM Peak Hour Surveyed (Factored) Flows 2021 (Scenario S1)
- Figure 6 PM Peak Hour Surveyed (Factored) Flows 2021 (Scenario S1)
- Figure 25 AM Peak Hour Baseline Flows - 2024 Year of Opening - Do Nothing (Scenario S2)
- Figure 26 PM Peak Hour Baseline Flows - 2024 Year of Opening - Do Nothing (Scenario S2)
- Figure 27 AM Peak Hour Forecast Flows - 2024 Year of Opening - Do Something (Scenario S3)
- Figure 28 PM Peak Hour Forecast Flows - 2024 Year of Opening - Do Something (Scenario S3)
- Figure 29 AM Peak Hour Baseline Flows - 2029 Year of Opening +5yr - Do Nothing (Scenario S4)
- Figure 30 PM Peak Hour Baseline Flows - 2029 Year of Opening +5yr - Do Nothing (Scenario S4)
- Figure 31 AM Peak Hour Forecast Flows - 2029 Year of Opening +5yr - Do Something (Scenario S5)
- Figure 32 PM Peak Hour Forecast Flows - 2029 Year of Opening +5yr - Do Something (Scenario S5)
- Figure 33 AM Peak Hour Baseline Flows - 2039 Year of Opening +15yr - Do Nothing (Scenario S6)
- Figure 34 PM Peak Hour Baseline Flows - 2039 Year of Opening +15yr - Do Nothing (Scenario S6)
- Figure 35 AM Peak Hour Forecast Flows - 2039 Year of Opening +15yr - Do Something (Scenario S7)
- Figure 36 PM Peak Hour Forecast Flows - 2039 Year of Opening +15yr - Do Something (Scenario S7)

13.6.2.2.2 Modelling Software

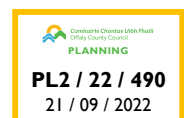
Transport Research Laboratory (TRL) computer modelling suite of junction modelling programs has been used to assess relative junction performance and the likely incremental impact arising from development generated traffic as forecast. The program PICADY (Priority Intersection Capacity And Delay) has been used to assess the future performance of the priority junction between R400/L10091. The program ARCADY (Assessment of Roundabout Capacity And Delay) has been used to assess roundabout performance at the M6 Junction 3 interchange. PICADY and ARCADY are primarily intended as a means of assessing junction performance and the outputs provide performance indicators for roads designers and planners with regards to capacity, queuing and delay.

An 85% level of saturation corresponding to a Ratio of Flow to Capacity (RFC) of 0.850 is generally accepted at priority junctions and roundabouts in urban areas, and 0.750 in rural areas, although these figures should not be considered in isolation and should be viewed together with queuing and delay information.

In the following we provide a summary of the salient output results for each assessment. The output results of the analyses should primarily be viewed as a performance indicator facilitating a comparative assessment between the various traffic flow scenarios from which to assess the impact of the development. The infrastructure upon which the proposed development relies is already in place so an assessment of existing infrastructure in 2021 using the surveyed existing traffic flows has been provided to afford a means by which to calibrate (through observation of the existing scenario) the models of future assessment value traffic scenarios.

13.6.2.2.3 Assessment Scenarios

The modelling analyses of the receiving road network include various traffic flow scenarios aimed at providing a comprehensive assessment of the capacity of the existing infrastructure under various assumptions and various development scenarios between the forecast year of opening 2024 and the Design Year of 2039 15 years after the opening of the proposed development.

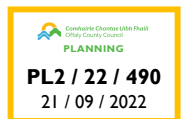




The criteria for each assessment and each of the scenarios is specifically set out and clearly detailed. The various assessment traffic flow scenarios are as follows.

- **Scenario 1 (S1):** 2021 Assessment of the existing infrastructure using only the traffic flows recoded in the traffic surveys (factored). This analysis is provided as a frame of reference and a standard comparator which may be verified or otherwise calibrated by observation.
- **Scenario 2 (S2):** 2024 Year of Opening baseline assessment which includes for the TII forecast growth in network traffic flows. Flows from specific permitted developments are included.
- **Scenario 3 (S3):** 2024 Year of Opening assessment that includes the network traffic flows of Scenario 2. Flows forecast to arise from the proposed development are considered.
- **Scenario 4 (S4):** 2029 Year of Opening +5 years baseline assessment which includes for the TII forecast growth in network traffic flows. Flows from specific permitted developments are included.
- **Scenario 5 (S5):** 2029 Year of Opening + 5 years assessment that includes the network traffic flows of Scenario 4. Flows forecast to arise from the proposed development are considered.
- **Scenario 6 (S6):** 2039 Year of Opening +15 years baseline assessment which includes for the TII forecast growth in network traffic flows. Flows from specific permitted developments are included.
- **Scenario 7 (S7):** 2039 Year of Opening + 15 years assessment that includes the network traffic flows of Scenario 6. Flows forecast to arise from the proposed development are considered.

It is assumed for the purposes of the traffic assessments that the entire development will be operational in 2024 and will receive 90,000t of waste materials per annum.



13.6.2.2.4 **Junction 2 – R400/L10091 Capacity Assessment Results**

A summary of the analysis results for the Junction 2, priority junction R400/L10091 for the AM and PM peak hours under the various traffic flow scenarios is provided Table 13-17. The results indicate that with the proposed development access road Junction 2 will operate significantly below the desirable maximum RFC of 0.75, up to and including the design year of 2036 with the inclusion of both permitted and proposed development generated traffic. The overall increases in junction delay between the ‘do-nothing’ and ‘do-something’ scenarios is not significant, and the junction is shown to operate at a Level of Service (LOS) A for practically all scenarios save for in the morning peak when LOS is rated B for the private access road. It is noted that the current LOS for the access road in the morning peak is B. The results of the analyses confirm that the impact of the proposed development on the capacity and operation of Junction 2 is not significant.

Table 13-17: Junction 2 – R400/L10091 Site Access Road Junction Capacity Assessment Results

SCENARIO	STREAM	Morning Peak Hour				Evening Peak Hour			
		Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Survey Year 2021 (S1) No Dev.	B – ACD	0.1	11.97	0.04	B	0.0	10.21	0.02	A
	A – BCD	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	D – ABC	0.0	0.00	0.00	A	0.0	0.00	0.00	A



SCENARIO	STREAM	Morning Peak Hour				Evening Peak Hour			
		Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	C -ABD	0.0	9.71	0.02	A	0.0	9.28	0.02	A
Opening Year 2024 (S2) Do Nothing	B – ACD	0.1	11.89	0.05	B	0.1	9.42	0.04	A
	A – BCD	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	D – ABC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	C -ABD	0.1	8.96	0.04	A	0.1	9.32	0.03	A
Opening +5yrs 2029 (S4) Do Nothing	B – ACD	0.1	11.96	0.05	B	0.1	9.46	0.04	A
	A – BCD	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	D – ABC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	C -ABD	0.1	8.89	0.04	A	0.1	9.23	0.03	A
Opening +15yrs 2039 (S6) Do Nothing	B – ACD	0.1	12.04	0.05	B	0.1	9.50	0.04	A
	A – BCD	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	D – ABC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	C -ABD	0.1	8.85	0.04	A	0.1	9.14	0.03	A
Opening +15yrs 2024 (S3) Do Something	B – ACD	0.2	11.55	0.07	B	0.1	9.80	0.07	A
	A – BCD	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	D – ABC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	C -ABD	0.1	9.13	0.06	A	0.1	9.19	0.05	A
Opening +15yrs 2029 (S5) Do Something	B – ACD	0.2	11.62	0.07	B	0.1	9.84	0.07	A
	A – BCD	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	D – ABC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	C -ABD	0.1	9.07	0.06	A	0.1	9.11	0.05	A
Opening +15yrs 2039 (S7) Do Something	B – ACD	0.2	11.69	0.07	B	0.1	9.89	0.07	A
	A – BCD	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	D – ABC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
	C -ABD	0.1	9.03	0.06	A	0.1	9.02	0.05	A

Arm A: R400 (South) ♦ **Arm B:** Access Road ♦ **Arm C:** R400 (North) ♦ **Arm D:** L10091



13.6.2.2.5 Junction 3 – M6 Junction 3 Capacity Assessment Results

A summary of the ARCADY analysis results for M6 Junction 3 for the morning peak and evening peak hours for the southern of the M6 dumbbell roundabouts is provided in Table 13-18. The output results are provided only for entry arms to the junction since the motorway on-slips are treated as exit only arms and so give rise to no delay or impact on capacity.

Table 13-18: Junction 3 – M6 Junction 3 Southern Roundabout Capacity Assessment Results

SCENARIO	STREAM	Morning Peak Hour				Evening Peak Hour			
		Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Survey Year 2021 (S1) No Dev.	Arm A	0.1	2.45	0.10	A	0.1	2.60	0.09	A
	Arm C	0.1	2.47	0.09	A	0.1	2.34	0.07	A
	Arm D	0.0	2.61	0.02	A	0.0	2.39	0.04	A
Opening Year 2024 (S2) Do Nothing	Arm A	0.1	2.66	0.10	A	0.1	2.71	0.10	A
	Arm C	0.1	2.55	0.10	A	0.1	2.41	0.08	A
	Arm D	0.0	2.74	0.03	A	0.0	2.47	0.04	A
Opening +5yrs 2029 (S4) Do Nothing	Arm A	0.1	2.69	0.11	A	0.1	2.76	0.10	A
	Arm C	0.1	2.58	0.11	A	0.1	2.44	0.08	A
	Arm D	0.0	2.77	0.03	A	0.1	2.49	0.04	A
Opening +15yrs 2039 (S6) Do Nothing	Arm A	0.2	2.74	0.12	A	0.2	2.82	0.11	A
	Arm C	0.1	2.63	0.12	A	0.1	2.47	0.09	A
	Arm D	0.0	2.84	0.03	A	0.1	2.52	0.05	A
Opening +15yrs 2024 (S3) Do Something	Arm A	0.1	2.77	0.11	A	0.1	2.83	0.10	A
	Arm C	0.1	2.62	0.11	A	0.1	2.53	0.0	A
	Arm D	0.0	2.81	0.03	A	0.1	2.53	0.04	A
Opening +15yrs 2029 (S5) Do Something	Arm A	0.2	2.80	0.12	A	0.2	2.88	0.11	A
	Arm C	0.1	2.65	0.11	A	0.1	2.55	0.09	A
	Arm D	0.0	2.84	0.03	A	0.1	2.56	0.05	A
Opening +15yrs 2039 (S7) Do Something	Arm A	0.2	2.84	0.13	A	0.2	2.92	0.12	A
	Arm C	0.2	2.70	0.12	A	0.1	2.57	0.09	A
	Arm D	0.0	2.90	0.03	A	0.1	2.59	0.05	A

Arm A: R400 (South) ♦ **Arm B:** W/bnd On-Slip ♦ **Arm C:** R400 (Overbridge) ♦ **Arm D:** W/bnd Off-Slip



A summary of the ARCADY analysis results for Junction 3, M6 Junction 3 for the AM peak and PM peak hours for the northern of the M6 dumbbell roundabouts is provided in Table 13-19:

Table 13-19: Junction 3 – M6 Junction 3 Northern Roundabout Capacity Assessment Results

SCENARIO	STREAM	Morning Peak Hour				Evening Peak Hour			
		Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
Survey Year 2021 (S1) No Dev.	Arm A	0.1	2.40	0.09	A	0.1	2.28	0.06	A
	Arm B	0.0	2.38	0.04	A	0.0	2.31	0.04	A
	Arm C	0.1	2.43	0.07	A	0.1	2.47	0.08	A
Opening Year 2024 (S2) Do Nothing	Arm A	0.1	2.49	0.09	A	0.1	2.29	0.06	A
	Arm B	0.1	2.46	0.04	A	0.1	2.38	0.05	A
	Arm C	0.1	2.46	0.08	A	0.1	2.51	0.09	A
Opening +5yrs 2029 (S4) Do Nothing	Arm A	0.1	2.46	0.09	A	0.1	2.32	0.06	A
	Arm B	0.1	2.49	0.05	A	0.1	2.40	0.05	A
	Arm C	0.1	2.50	0.08	A	0.1	2.55	0.09	A
Opening +15yrs 2039 (S6) Do Nothing	Arm A	0.1	2.50	0.10	A	0.1	2.35	0.07	A
	Arm B	0.1	2.52	0.05	A	0.1	2.42	0.05	A
	Arm C	0.1	2.55	0.09	A	0.1	2.61	0.10	A
Opening +15yrs 2024 (S3) Do Something	Arm A	0.1	2.43	0.09	A	0.1	2.29	0.06	A
	Arm B	0.1	2.63	0.05	A	0.1	2.55	0.05	A
	Arm C	0.1	2.49	0.08	A	0.1	2.53	0.09	A
Opening +15yrs 2029 (S5) Do Something	Arm A	0.1	2.46	0.09	A	0.1	2.32	0.06	A
	Arm B	0.1	2.65	0.05	A	0.1	2.56	0.05	A
	Arm C	0.1	2.53	0.08	A	0.1	2.58	0.10	A
Opening +15yrs 2039 (S7) Do Something	Arm A	0.1	2.50	0.10	A	0.1	2.35	0.07	A
	Arm B	0.1	2.68	0.06	A	0.1	2.58	0.06	A
	Arm C	0.1	2.57	0.09	A	0.1	2.63	0.10	A

Arm A: R400 (North) ♦ **Arm B:** E/bnd Off-Slip ♦ **Arm C:** R400 (Overbridge) ♦ **Arm D:** E/bnd On-Slip

The results of the analyses provided in Table 13-18 and 13-19 serve to confirm that the existing motorway interchange at M6 Junction 3 has sufficient capacity to accommodate the traffic arising from both permitted and proposed development. Considering forecast network traffic growth and the development of both permitted and proposed developments the existing junction is shown to operate with a level of service A and with considerable residual capacity in both the year of opening and future years.



The maximum RFC is 0.10 and is significantly less than the desirable maximum RFC of 0.75. Comparing the results for the various 'do-nothing' and 'do-something' scenarios highlights that the impact of the proposed development is not significant.

13.6.2.3 Construction Stage Traffic Impact

Construction traffic will be generated by the proposed development. In the interest of simplicity it is assumed that the processing facility will be developed in a single construction phase. For the purposes of this traffic assessment a singular construction period of twelve months is envisaged.

All concrete and stone input materials will be sourced from the adjoining Kilmurray quarry site. All inert demolition related waste material generated during construction will be removed from the site and transported to the adjacent Kilmurray Construction and Demolition (C&D) / Soil Recovery Facility.

The primary generators of traffic on the public road network during construction will be construction staff and the delivery of construction materials. Construction materials for are expected to be predominantly structural steel, cladding and concrete. Based on our 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. This figure is considered to represent an upper value construction HGV traffic generation. Average construction HGV traffic generation is expected to be in the region of 15No. HGV trips per day.

Construction plant for the proposed processing facilities proposed under the current application is expected to mainly consist of rigid body vehicles, 8-wheel tippers, ready mix HGV and articulated vehicles.

Following discussions with the Applicant it is our understanding that construction of facility will be programmed so that it does not occur concurrently with intensive construction activities arising from the proposed development of the Yellow River Wind Farm. As such the construction of the new facility does not take account of cumulative construction impacts arising. Traffic arising from construction of the wind farm is estimated to be 5 HGV trips per hour at the most intensive times involving concrete pours for turbine foundations.

In the interest of simplicity the traffic assessment does not include for a separate construction period scenario combined with site operation scenarios. It can easily be appreciated that the proposed on site processing facility cannot generate waste traffic until such time as they are constructed. In all cases the HGV traffic generated by the operation of the proposed facility exceeds that of the respective construction period accordingly it follows that the traffic scenario where the facilities are operational represents a worst-case scenario typically associated with the assessment values used in traffic impact studies.

It is the intention of the Applicant to comply with Local Authority policy on maintaining the roads serving the site clean of dirt and debris associated with the development of the site. If further detail regarding the control of the construction project and specifically the control of construction traffic is required by the Local Authority, it is suggested that a brief Construction Traffic Management Plan can be prepared as a condition of planning.

13.6.3 Decommissioning phase

Upon cessation of operations the site will be decommissioned in accordance with the current proposal. The potential effects of decommissioning the site on the capacity and operation of the receiving road network are not considered to be potentially significant effects.





13.6.4 Cumulative Effects

The road network assessments include for specific local developments other than the proposed development. The developments considered are those already in operation or granted planning permission but yet to be implemented and are set out in detail in Section 13.6.5. Other future development that may give rise to the generation of new traffic on the receiving roads network is included for by the application of TII published growth rates to all traffic on all routes within the study area. The additional traffic generation arising on the receiving road network assumed in this Chapter through the application of the TII growth rates is as follows:

- 2021-2024 (Opening Year).....+2.4% (LV).....+6.6% (HGV);
- 2021-2029 (Opening Year +5yrs).....+8.6% (LV).....+24.9% (HGV);
- 2021-2039 (Opening Year +15yrs).....+14.9% (LV).....+48.7% (HGV).

The cumulative traffic arising from future economic growth and development resulting in traffic growth on the receiving Regional Road network are included for in both the ‘do nothing’ and ‘do something’ road network assessment scenarios. It is reasonable to expect that traffic arising from the proposed development would by definition be included, or at least included in part in the TII growth rates. This factor is disregarded in the traffic assessments that all traffic to the proposed development is considered totally new to the road network for the proposed period of operation commencing in 2024.

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13.7 Mitigation Measures

13.7.1 Construction Phase

The development site is located along a private access road some distance from the public road. All concrete and stone input materials will be sourced from the adjoining Kilmurray quarry site. All inert demolition related waste material generated during construction will be removed from the site and transported to the adjacent Kilmurray Construction and Demolition (C&D) / Soil Recovery Facility. The transportation of construction materials and commuting of construction staff will not have a significant impact upon the operation or capacity of the receiving public road network. Given the distance of the development site from the public road there is unlikely to be any direct impacts arising from the deposition of debris, nevertheless it is the intention of the Applicant to comply with Local Authority policy on maintaining the roads serving the site clean of dirt and debris associated with the development of the site. If further detail regarding the control of the construction project and specifically the control of construction traffic is required by the Local Authority, it is suggested that a brief Construction Traffic Management Plan can be prepared as a condition of planning.

13.7.2 Operational Phase

13.7.2.1 Junction Improvement

As part of the application permitted under Planning Reg. Ref PL2/21/247 (Kilmurray Precast Concrete Ltd.) and specifically in response to Item 1 of the Request for Further Information dated 21-Jun-2021 the applicant proposed to undertake various improvement works to the existing junction of the private access road with R400 (Junction 2 R400/L10091). The schedule appended the grant of permission includes conditions associated with the agreement and completion of the junction improvement works as follows:

Condition No.4 (Planning Reg. Ref PL2/21/247)

“Upgrade works to junction with R400 to be carried out in advance of commencement of extraction works from the proposed development in accordance with TII document DN-GEO-03060, June 2017. Offaly County Council require junction upgrade works to include for the provision of 20m of resurfacing on the L10091 from R400 road junction so as to satisfy requirements of Stage 2 RSA, December 2021. The inclusion of same is an addition to the proposed pavement upgrades as indicated in Tobin Consulting Engineers Drawing 10884-2004, Revision A, November 2021. Full Road Pavement reconstruction to be in accordance with the ‘Guidelines for the Rehabilitation of Roads over Peat’ – “Green Book” including the use of an appropriate composite geogrid.”

The grant of a permission does not guarantee that a developer will act on that permission, and it follows therefore that the Planning Authority cannot rely upon the permission alone to ensure the implementation of the proposed junction improvement works. Under Planning Reg. Ref PL2/21/247 Offaly County Council determined that the proposed junction improvement works are required to accommodate that development. From pre-planning discussions with Offaly County Council it is understood that, for the same reasons the current proposed development warrants the same level of improvement. For the avoidance of doubt and in the interest of simplicity the current proposal includes the same proposed junction improvements.



A letter of consent has been received by the current applicant from Kilmurray Precast Concrete Ltd. authorising the resubmission of the same junction improvement drawings and Road Safety Audits submitted to the planning file under Planning Reg. Ref PL2/21/247. In summary the works proposed in the application include the following:

- A channelised traffic island to reduce the speed of turning vehicles and the width of the bellmouth (refer to drawings Tobin Consulting Engineers 10884-2000 attached in Appendix 13-3).
- The geometry of the junction is in accordance with the TII design standards (TII DN- GEO-03060).
- Swept path analysis of all anticipated vehicle types and manoeuvres have been undertaken on the design to ensuring adequate margins of safety for turning vehicles (refer to Tobin Consulting Engineers drawings 10884-2000, 10884-2006 and 10884-2007 attached in Appendix 13-3).
- Visibility requirements from the junction are in accordance with Offaly County Council Development Plan 2021-2027 and TII DN-GEO-03060. The visibility splay of 3m x 160m in the vertical and horizontal plan is shown on Tobin Consulting Engineers drawing 10884-2003 attached in Appendix 13-3.
- Pavement improvement works are shown on Tobin Consulting Engineers drawing 10884-2004 attached in Appendix 13-3 and are in accordance with Guidelines for the rehabilitation of roads over peat (Green Book) and TII publications.
- Road signs and road markings are proposed in accordance with the Traffic Signs Manual (DoT) to advise of the turning movements and forewarn of the junction ahead. Refer to Tobin Consulting Engineers drawing 10884-2005 attached in Appendix 13-3.

A Stage 1 Road Safety Audit (RSA) was undertaken for the proposed junction improvement works. The RSA was carried out by a team independent to the design team in accordance with the TII Road Safety Audit Guidelines (TII GE-STY-01027). The RSA is attached in Appendix 13-3.

Please see a Letter of Consent from Kilmurray Precast Concrete Ltd authorizing the use of Junction Improvement drawings and the Road Safety Audits submitted under the planning file ref PL2/21/247 in Appendix 13-3 of Volume 3 of this EIAR.

13.8 Residual Impacts

13.8.1 Construction Phase

There will be no residual impact arising.

13.8.2 Operational Phase

The residual effects on traffic conditions are not significant and can reasonably be categorised as imperceptible. Any residual impacts on traffic capacity on the receiving road network can be categorised similarly.



13.9 Monitoring

13.9.1 Construction Phase

None required.

13.9.2 Operational Phase

The implementation and performance of Traffic Management and haul route management measures and initiatives including any ongoing revisions or new initiatives will be monitored and evaluated throughout the Operational Phase.

13.10 Interactions

13.10.1 Noise and Vibration

Traffic related noise and vibration is considered in Chapter 12 of this EIAR.

13.10.2 Air Quality and Climate

Traffic related impacts on air quality and climate are considered in Chapter 11 of this EIAR.

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13.11 References

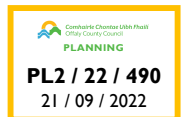
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