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## INTRODUCTION

### Brief

14.1 Jennings O'Donovan & Partners Limited has been appointed by P&S Civil Works Ltd. to carry out a Traffic & Transport Assessment (TTA) to review the traffic volumes and road network associated with the existing quarry extraction operations at Mullymagowan townland, Stradone, Co. Cavan. P&S Civil Works Ltd. are applying to Cavan County Council for planning permission as follows:

- Quarry extension development for rock extraction and associated processing over an area of c. 4 hectares within an overall planning application area of c. 4.9 hectares as previously permitted under P. Ref. 12/101 (P. Ref. 17/383) and never commenced;
- A time period of 15 years is being sought to allow the previously permitted extraction be completed plus 2 years to complete restoration works (total duration sought 17 years);
- The development proposed seeks to utilise existing ancillary buildings and facilities including weighbridge, wheelwash, portacabin office/canteen/toilet, waste water treatment system, processing plant, site entrance and all other associated site works, and ancillary activities as currently permitted by P. Ref. 07/827; and
- Final restoration of the worked out quarry to a permanent water body and naturally regenerated wildlife habitat area.

### Objectives

14.2 The objective of this TTA chapter is to examine the traffic volumes associated with the proposed P&S Civil Works Ltd. quarry extension in terms of how traffic generated by the development integrates with the existing traffic in the area. The TTA will determine and quantify the volume of traffic generated by the development and the impact of the development traffic on the public road network. The TTA will examine existing road and junction capacity and future projected traffic volumes and turning movements on the public road network at the N3 national primary road / R165 regional road junction in Lavey village, the R165 / L75001 / Quarry Haul Road junction in Tirlahode Lower and the L3500 road crossing at the quarry site entrance in Drummuck.

### Statement of Authority

14.3 This report has been prepared by Jennings O'Donovan & Partners Limited, Finisklin Sligo. Established in Sligo in 1950 Jennings O'Donovan & Partners Limited is a Clean Tech Company providing consulting engineering services in the areas of Road design, renewable energy, civil and structural engineering, water supply, wastewater collection and treatment, environmental resource management and impact assessment and in the area of industrial and commercial development.

### Design References / Standards

14.4 The review of the junction has been based on the following technical documents:

- Cavan County Development Plan 2022-2028;
- Transport Infrastructure Ireland, Specification for Road Works;
- TII, PE-PDV-02045 Traffic and Transport Assessment Guidelines;

- TII, Project Appraisal Guidelines for National Roads Unit 5.3. PE-PAG-02017 Travel Demand Projections;
- TII, Project Appraisal Guidelines for National Roads Unit 16.1. PE-PAG-02039, Expansion Factors for Short Period Traffic Counts;
- TII, Design Manual for Roads and Bridges;
- TII, Standard construction Details; and
- Junctions 9 Traffic Analysis Software

## Methodology

14.5 The methodology adopted for this Traffic and Transport Assessment involved:

- A site visit was undertaken on 18<sup>th</sup> October 2022 to record traffic volumes and turning movements of vehicles at public road junctions in the vicinity of the existing P&S Civil Works Ltd. quarry.
- Traffic Counts were carried out during the morning and evening peak hours to determine traffic flows and turning movements at the N3 / R165 junction in Lavey village.
- Traffic Counts were carried out during the morning and evening peak hours to determine traffic flows and turning movements at the R165 / L75001 / Quarry haul road junction in Tirlahode Lower.
- Traffic Counts were carried out during the morning and evening peak hours at the R165 / L3500 junction in Corriga to determine traffic flows on the L3500 local road which is crossed by the quarry haul road.
- A traffic analysis was carried out at the N3 / R165 junction and at the R165 / L75001 / Quarry Haul Road junction using the 2022 traffic volumes recorded during the classified traffic counts to determine if capacity problems exist at the junctions in the vicinity of the quarry.
- A traffic assessment was then carried out with the development operating at peak capacity to determine if capacity problems would arise at the junctions in the future with the development operational combined with projected traffic growth on the public road network. The analysis was carried out for 2023 (Planning Grant), and 2038 (End of extraction period).
- A traffic assessment was carried out with the development operating at peak capacity in 2038 with additional traffic from unrelated planned and consented developments to determine if capacity problems would arise at the junctions due to combined traffic volumes in the vicinity of the quarry.

## PROPOSED DEVELOPMENT

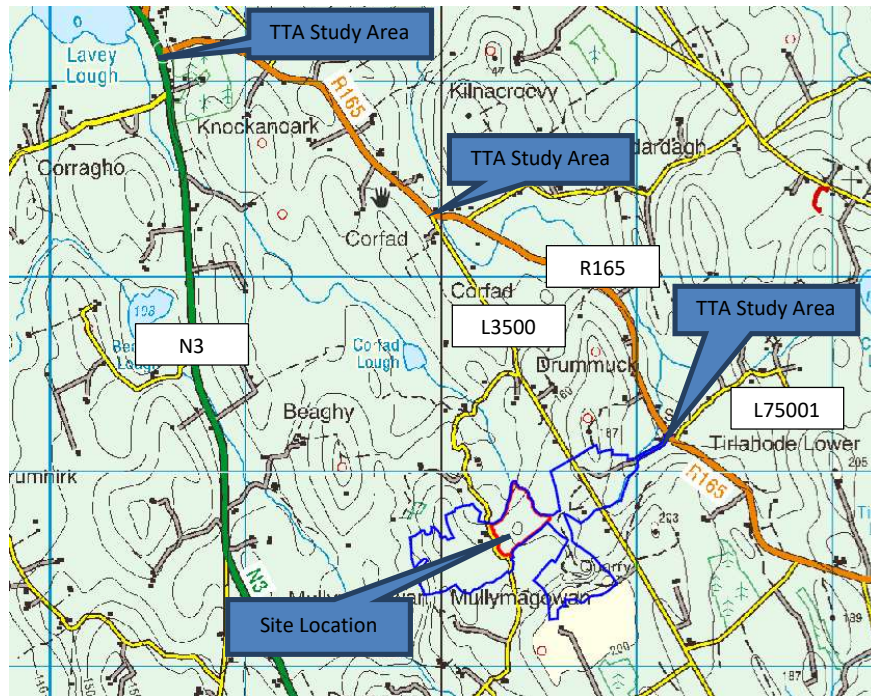
### Site Location

14.6 P&S Civil Works Ltd. Mullymagowan quarry is an existing quarry located in the townland of Mullymagowan, Co. Cavan. The site is located in a rural location approximately 4.5km south of Stradone village and 10km southeast of Cavan town. The Mullymagowan quarry has been in operation commercially since 1968 and produces stone chippings with a high polished stone value (PSV) for use in asphalt surfacing to provide skid resistance on carriageway surfaces in accordance with TII publication DN-PAV-03023 “Surfacing Materials for New and Maintenance Construction For

Use in Ireland”. HGV access to the Mullymagowan quarry is via a private access road which links the quarry workings in Mullymagowan to the R165 regional road in Tirlahode Lower. The quarry access road from the R165 crosses the L3500 local road and is shared with an oil distribution depot and mobile café located at the R165 junction. Quarry vehicles are prohibited from using the L3500 local road.

The location of the site is shown in **Figure 14-1** and the site layout is shown in **Figure 14-2**.

**Figure 14-1** Site Location



**Figure 14-2** Site Layout



### Proposed Development

- 14.7 The proposed development being applied for under this planning application comprises of:
- Quarry extension development for rock extraction and associated processing over an area of c. 4 hectares within an overall planning application area of c. 4.9 hectares as previously permitted under P. Ref. 12/101 (P. Ref. 17/383) and never commenced;
  - A time period of 15 years is being sought to allow the previously permitted extraction be completed plus 2 years to complete restoration works (total duration sought 17 years);
  - The development proposed seeks to utilise existing ancillary buildings and facilities including weighbridge, wheelwash, portacabin office/canteen/toilet, waste water treatment system, processing plant, site entrance and all other associated site works, and ancillary activities as currently permitted by P. Ref. 07/827; and
  - Final restoration of the worked out quarry to a permanent water body and naturally regenerated wildlife habitat area.

## EXISTING AND PROPOSED TRAFFIC CONDITIONS

### Existing Traffic Flows

- 14.8 In order to determine existing traffic flows in the vicinity of the quarry, Jennings O’Donovan carried out classified traffic counts to record traffic volumes and turning movements on Tuesday 28th October 2022. The counts were carried out between the hours of 6.30am and 9.30am to coincide with morning peak hour traffic and between the hours of 16.00 to 18.00 to coincide with the evening peak hour traffic. Classified traffic counts were carried out at the following locations:
- N3 / R165 junction in Lavey village.
  - R165 / L75001 / Quarry haul road junction in Tirlahode Lower.
  - R165 / L3500 junction in Corriga.
- 14.9 Peak hour traffic periods for the N3 national primary road obtained from the TII traffic counter at Poles, between Virginia and Cavan are shown in **Table 14-1**. The peak hour traffic periods are used to carry out capacity analysis at the junctions in the TTA study area.

**Table 14-1**  
Peak Hour Traffic Periods N3 National Primary Road

Period	Time
AM Peak Hour	8.00 – 9.00
PM Peak Hour	16.30 – 17.30



### Existing N3 / R165 Junction

14.10 The existing junction between the N3 national primary road and the R165 regional road in the village of Lavey (Reference **Plate 14-1**) is a ghost island junction with priority for N3 traffic. The junction is located in a 50km/h speed limit zone and is lit by public lighting. The junction is located between the Lavey village traffic calming gateways which reduce the width of the N3 to restrict vehicle speeds through the village. The location of the junction is clearly signposted with regulatory and directional signage and is clearly marked with road markings. The N3 has a carriageway width of 9.0m at the R165 junction, consisting of two 3.0m wide through lanes for N3 traffic and a 3.0m wide refuge lane for traffic turning right onto the R165. The R165 has a carriageway width of 7.0m at the junction. There are 2.0m wide raised pedestrian footpaths on both sides of the N3 in Lavey village with pedestrian islands in the central median of the N3. The Pedestrian footpaths extend along the R165 at the junction and have dropped kerbs and tactile paving at crossing points. Visibility splays in excess of 70m in accordance TII standards are available in both directions measured at a setback distance of 3.0m from the R165 carriageway edge. Carriageway surfaces and road markings are in good condition at the junction with occasional minor defects. No capacity issues were observed at the junction during the site visit carried out by Jennings O’Donovan.

**Plate 14-1**  
Existing N3 / R165 Junction at Lavey Village



14.11 Traffic analysis carried out at the N3/R165 junction using the classified traffic count data show that the junction is operating within capacity in 2022 and does not exceed the 0.85 Ratio to Flow Capacity (RFC) during the AM or PM peak hours. The ratio of flow to capacity (RFC) is calculated from Junctions 9 PICADY software. An RFC value of 1.0 indicates that the junction is operating at

full capacity with a value of 0.85 considered to be the maximum RFC value after which the junction will begin to experience some capacity issues. A summary of the traffic analysis for the junction with existing 2022 traffic flows is shown in **Table 14-2**. Full details of the Traffic analysis are included in **Appendix 14-A**.

**Table 14-2**  
N3 / R165 Junction Capacity Existing Traffic Flows

AM									PM							
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
<b>2022- Existing Traffic</b>																
Stream B-AC		0.9	18.18	0.46	C			28 %		0.6	16.74	0.38	C			34 %
Stream C-B	D2	0.0	6.22	0.02	A	2.59	A	[Stream B-AC]	D3	0.1	7.71	0.06	A	1.87	A	[Stream B-AC]

show original traffic demand (Veh/hr).

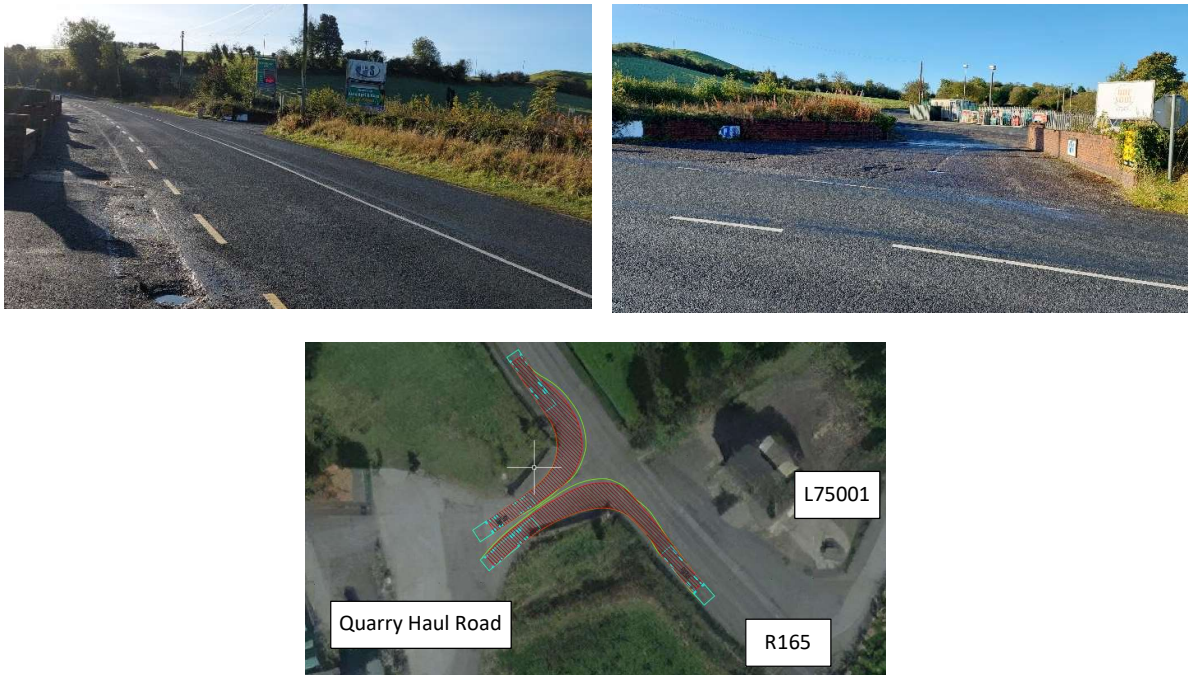
show original traffic demand (Veh/hr).

### Existing R165 / L75001/ Quarry Haul Road Junction

14.12 The public access to P&S Civil Works Ltd. Mullymagowan quarry (Reference **Plate 14-2**) is located on the R165 regional road approximately 3.6km from Lavey village. The existing gated entrance is located at the intersection of the quarry haul road with the R165 in Tirlahode Lower and forms a right / left staggered junction with the L75001 local road. The junction will be used by all proposed development traffic and is designed to accommodate HGV vehicles with a clear opening of 7.5m. The existing quarry entrance is located in an 80km/h speed limit zone and has visibility splays in excess of 160m to the east and 120m to the west measured from a 3.0m setback from the R165 carriageway edge. Carriageway surfaces on the public roads are in good condition with occasional defects such as potholes. Surfacing at the quarry entrance is in poor condition with large surface defects. The quarry entrance from the R165 is shared with an oil depot and mobile café which are open to the public. The quarry entrance is not lit by public lighting at the R165 intersection. The location of the quarry entrance on the R165 is highlighted by commercial signs. Priority at the quarry entrance is controlled by a stop sign located at the gate, the entrance does not have warning / directional signs or road markings. No capacity issues were observed at the junction during the site visit carried out by Jennings O'Donovan.



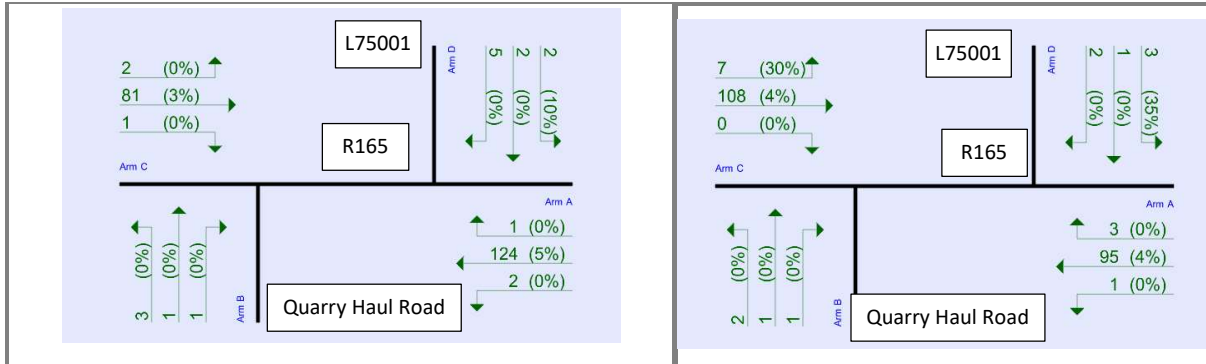
**Plate 14-2**  
R165 Development Entrance



14.13 Traffic analysis carried out at the R165 / L75001 / Quarry Haul Road junction using the classified traffic count data show that the junction is operating within capacity in 2022 and does not exceed the 0.85 Ratio to Flow Capacity (RFC) during the morning and evening peak traffic period. The ratio of flow to capacity (RFC) is calculated from Junctions 9 PICADY software. An RFC value of 1.0 indicates that the junction is operating at full capacity with a value of 0.85 considered to be the maximum RFC value after which the junction will begin to experience some capacity issues. A summary of the traffic analysis for the junction with existing 2022 traffic flows is shown in **Table 14-3**. Full details of the Traffic analysis are included in **Appendix 14-B**.

**Table 14-3**  
R165 / L75001/ Quarry Haul Road Entrance – Existing Traffic Flows

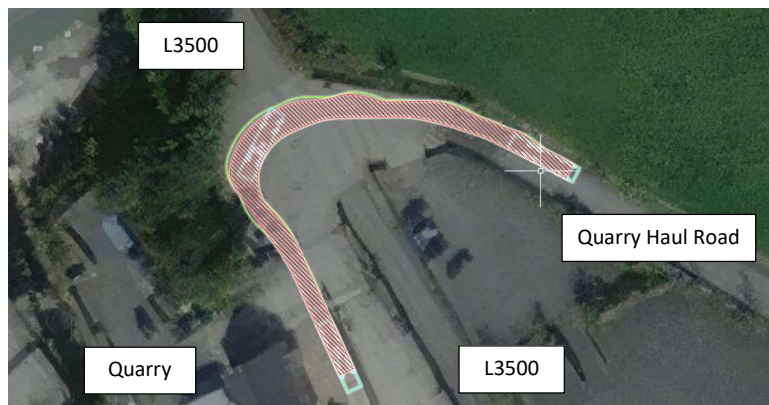
		AM							PM							
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
<b>R394 / L1618 Junction - 2022 Existing Traffic</b>																
<b>Stream B-ACD</b>	D1	0.1	10.21	0.08	B	1.23	A	200 % [Stream D-ABC]	D2	<b>0.1</b>	<b>8.85</b>	<b>0.06</b>	<b>A</b>	<b>0.77</b>	<b>A</b>	<b>268 %</b> [Stream B-ACD]
<b>Stream A-BCD</b>		0.0	5.72	0.01	A					<b>0.0</b>	<b>5.31</b>	<b>0.01</b>	<b>A</b>			
<b>Stream D-ABC</b>		0.1	9.39	0.07	A					<b>0.0</b>	<b>7.86</b>	<b>0.03</b>	<b>A</b>			
<b>Stream C-ABD</b>		0.0	5.38	0.03	A					<b>0.0</b>	<b>5.75</b>	<b>0.02</b>	<b>A</b>			



### Existing L3500 / Quarry Haul Road Junction

14.14 Access to the quarry from the public road network will be from the quarry haul road junction with the R165, the quarry haul road crosses the L3500 local road at the quarry site entrance. The L3500 / Quarry Haul Road junction (reference plate 14-3) is a crossroad junction with priority for L3500 traffic. The junction is gated at the site entrance to the quarry workings and on the haul road at the approach to the L3500 from the R165. The junction is designed to accommodate HGV traffic and the gates are set back on both sides of the L3500 to prevent HGV vehicles blocking the L3500 in the event that the gates are locked. The junction is located in an 80km/h speed limit zone and is lit by lighting from the quarry during operational hours. There is advance warning signage on the L3500 to highlight the presence of the junction and directional signage for HGV traffic exiting the quarry. Priority at the junction is controlled by stop signs located on the haul road. Visibility splays of 160m are available in both directions at the junction. There are no road markings at the junction which consists of a concrete apron at the L3500 crossing. Surfacing at the junction is in good condition with minor defects.

Plate 14-3  
Existing L35000 / Quarry Haul Road Junction



### Existing N3 National Primary Road

14.15 The existing N3 national primary road links Dublin to Ballyshannon in County Donegal. The N3 passes through Cavan Town and runs to the west of P&S Civil Works Ltd. Mullymagowan quarry through the village of Lavey (Reference **Plate 14-4**) approximately 3.0km from the quarry. The N3 is a dual carriageway between the M3 Motorway roundabout intersection at Kells in County Meath and the R147 roundabout intersection to the southeast of Virginia in County Cavan where it changes to a single two lane carriageway with hard shoulders between Virginia and the border with Northern Ireland. The N3 has speed limit of 100km/m with speed restrictions in towns and villages. The N3 carriageway is in good condition in the vicinity of Lavey village where it passes through a traffic calming zone with a 50km/h speed limit, raised pedestrian footpaths, public lighting, pedestrian islands and refuge lanes for right turning traffic.

**Plate 14-4**

Existing N3 National Primary Road



### Existing R165 Regional Road

14.16 The R165 is a single carriageway regional road linking Cootehill in County Cavan to Ardee in County Louth. The R165 passes through Stradone, Lavey, Bailieborough and Kingscourt and has a speed limit of 80Km/h with speed restrictions in towns and villages. The R165 is typically 6.5m wide with hard strips and grass verges between the N3 at Lavey village and Bailieborough (Reference **Plate 14-5**). The surface of the R165 is in good condition with occasional defects such as potholes.

**Plate 14-5**

R165 Regional Road



### Existing L3500 Local Road

- 14.17 The existing L3500 local road runs between the R165 and the N3 / R196 junction at Drummaduff. The L3500 runs along the northern boundary of the quarry and passes the quarry site entrance where it is crossed by the quarry haul road. The L3500 is approximately 3.0m wide in the vicinity of the quarry (Reference **Plate 14-6**).

**Plate 14-6**  
L3500 Local Road



### Existing Quarry Haul Road

- 14.18 Vehicular access to the quarry is via an existing private haul road (Reference **Plate 14-7**) which runs from a priority junction with the R165 to the quarry site entrance which is located on the L3500. The quarry haul road is gated at the R165 and L3500 junctions to prevent unauthorised access. The security gates are set back from the public road edge to prevent queuing on the public road if the gates are locked. The haul road is approximately 4.0m wide with localised widening to allow two vehicles to pass. The road has a posted speed limit of 30km/h and is in fair condition with frequent surface defects. The haul road is shared with an oil distribution depot and mobile café which are located near the R165 junction.

**Plate 14-7**  
L3500 Local Road



**Existing Road Network Capacity**

14.19 The capacity of the existing roads in the vicinity of the site to accommodate the existing traffic flows in the area are calculated from the classified traffic counts using the methodology contained in the TII Publications PE-PAG-02039 - Expansion factors for short term traffic counts and DN-GEO-03031 – Rural link design. The Annual Average Daily Traffic in 2022 for the N3, R165 and the L3500 is shown in **Table 14-4**.

**Table 14-4**  
Calculation of AADT for roads in the vicinity of the Site

Road	Vehicles/h (2 way) (Am Peak)	24h Conversion factor	24 hour Estimate	Weekly Average Day Factor (Thursday)	Weekly Average Day Traffic WADT	Monthly Factor	AADT
N3	870	0.078	11,155	1.01	11,265	1.01	11,380
R165	211	0.078	2,705	1.01	2,732	1.01	2,760
L3500	22	0.078	282	1.01	285	1.01	290

14.20 Table 6.1 in the TII publication DN-GEO-03031 – Rural link design provides a table of recommended rural road layouts and capacities for each road cross section. The N3 national primary road is similar in section to a Type 1 Single Carriageway 7.3m wide with 2.5m hard shoulders. A Type 1 carriageway has a guidance capacity of 11,800 AADT for level of service D which indicates that the N3 is currently running reaching capacity in the Lavey area.

- 14.21 The R165 Regional Road is similar in section to a Type 3 single carriageway 6.0m wide with 0.5m hard strips. A Type 3 carriageway has a guidance capacity of 5000 AADT for level of service D which indicates that the R165 is currently running at approximately at 55 % capacity and has capacity to accommodate additional traffic in the future.
- 14.22 The L3500 is a lightly trafficked road with an AADT of approximately 290 vehicles which equates to a two way traffic flow of 22 vehicles during the AM peak hour period.

### Accident Data

- 14.23 Accident data from the RSA website at the N3 /R165 junction and at the existing site entrances to the quarry were not available at the time of writing.

## TRAFFIC GENERATION AND TRIP DISTRIBUTION

### Trip Generation Associated with the Proposed Development

- 14.24 The Proposed development will consist of:
- Quarry extension development for rock extraction and associated processing over an area of c. 4 hectares within an overall planning application area of c. 4.9 hectares as previously permitted under P. Ref. 12/101 (P. Ref. 17/383) and never commenced;
  - A time period of 15 years is being sought to allow the previously permitted extraction be completed plus 2 years to complete restoration works (total duration sought 17 years);
  - The development proposed seeks to utilise existing ancillary buildings and facilities including weighbridge, wheelwash, portacabin office/canteen/toilet, waste water treatment system, processing plant, site entrance and all other associated site works, and ancillary activities as currently permitted by P. Ref. 07/827; and
  - Final restoration of the worked out quarry to a permanent water body and naturally regenerated wildlife habitat area.
- 14.25 The estimated trip rate for the quarry is based on the maximum production capacity for the products and materials processed at the quarry. The application site has recently expired planning permission for rock extraction and associated processing but this was never commenced. The previous permission allowed for a maximum annual extraction rate of 290,000 tonnes per annum for 10 no. years. It is now proposed to seek a 15 year extension period to extract the rock at a reduced rate of 250,000 tonnes per year and a further 2 year period to carry out any final restoration works giving an overall development life of 17 years.

### Working Hours

- 14.26 The proposed development will be operated during the hours of 07:00 to 18:00 hours from Monday to Friday (excluding Bank Holidays) and from 07:00 to 14:00 hrs on Saturday. with no extraction, processing or associated activities being permitted on Sundays or public holidays. The development will operate for 50 weeks per year.

### Imported Materials

- 14.27 There will be no requirement to import raw aggregates to the site for the duration of any grant of permission period as the raw aggregate materials will be sourced on site and no importation of materials will be required for restoration.

14.28 General HGV deliveries to site will include fuel supplies and skips for the removal of refuse from the site. The trip rate for imported materials are as follows:

- General Deliveries 5 Loads per day

**Exported Materials**

14.29 The quarry under P. Ref. 12/101 could extract, and process 290,000 tonnes of aggregates per annum. It is now proposed to seek a 15 year extension period to extract rock at a reduced rate of 250,000 tonnes per year.

- Aggregate 250,000 tonnes per year  
 5,000 Tonnes per Week (50 Weeks) 250 Loads per Week (20 tonnes)  
 910 Tonnes per Day (5.5 Days) 45 Loads per Day (20 tonnes)

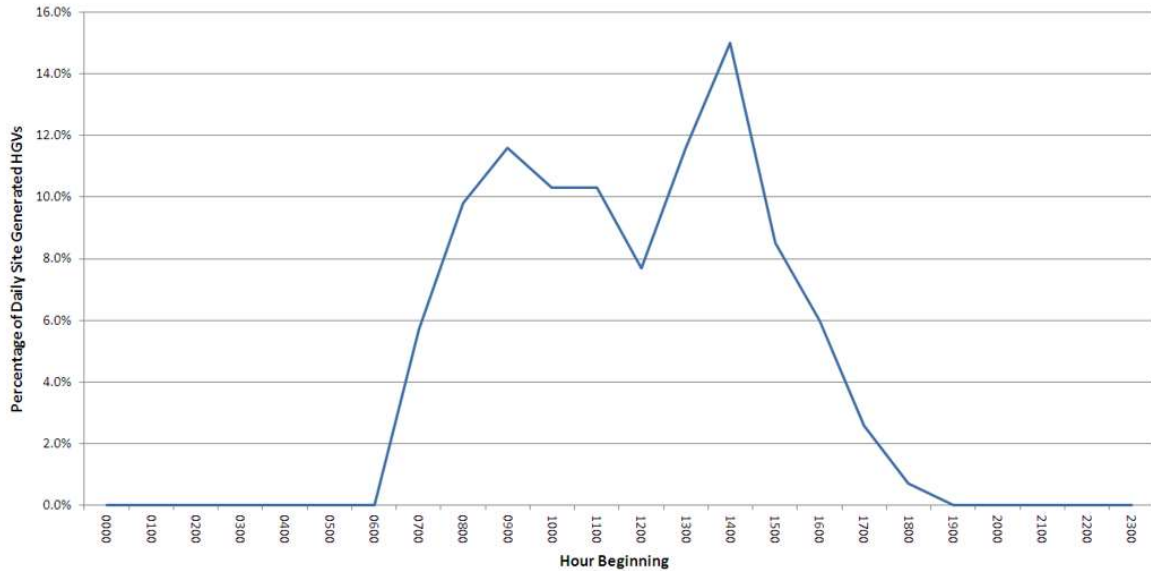
**Staff and Visitors**

- Staff 8 Staff at Peak Production 10 trips per day
- Visitors 5 Trips per day

14.30 The quarry was not operational during the classified traffic counts carried out on the public road network. All trips generated by the quarry will be assigned as new trips to the public road network.

14.31 A typical traffic profile for quarry operations showing arrivals and departures of HGV vehicles throughout the day is shown in **Figure 14-3**. The profile shows two periods of peak traffic associated with quarry operations, a morning peak between 0900-1000HRS and an afternoon peak at 1400-1500HRS which is the busiest period for HGV traffic at the quarry. The profile indicates that during the morning peak traffic period on the public road network (07300-0830HRS) approximately 10.0% of daily HGV movements are likely to occur. During the site operational peak (1400-1500HRS) approximately 15% of daily HGV movements are likely to occur. During the PM peak on the local road network (1630-1730HRS) 2.6% of daily HGV movements are likely to occur.

**Figure 14-3**  
Traffic Profile for Quarry Operations



- 14.32 Staff will arrive to work between the hours of 6.45am to 8.00am and depart between 5.00pm and 6.15pm.
- 14.33 Visitors and HGV deliveries will arrive and depart throughout the day and will not follow a fixed pattern.
- 14.34 For the purposes of analysis, the total daily traffic volumes with the development operating at full capacity is shown in **Table 14-5** and the associated AM / PM Peak Hour traffic volumes is shown in **Table 14-6**. The analysis assumes that peak HGV traffic associated with the quarry will coincide with peak hour traffic on the public road to give a worst-case analysis of junction capacity.

**Table 14-5**  
Total Daily Traffic Volumes

Daily Traffic Volumes	Arrivals	Departures
HGV Quarry Vehicles	45	45
General HGV Deliveries	5	5
Staff LGV Vehicles	10	10
Visitor LGV Vehicles	5	5

**Table 14-6**  
Peak Hour Traffic Volumes

AM Peak Hour	Arrivals	Departures
HGV Quarry Vehicles	6	6
General HGV Deliveries	2	2
Staff LGV Vehicles	10	1



AM Peak Hour	Arrivals	Departures
Visitor LGV Vehicles	2	2
PM Peak Hour	Arrivals	Departures
HGV Quarry Vehicles	7	7
General HGV Deliveries	1	1
Staff LGV Vehicles	1	10
Visitor LGV Vehicles	2	2

### Traffic Distribution

14.35 The distribution of quarry traffic to the public road network will vary throughout the life of the quarry depending on demand for quarry products. For the purpose of analysis, development traffic at the N3/R165 Junction and at the R165 / quarry haul road junction will be distributed in accordance with the traffic demand obtained from the classified traffic counts. The distribution of development traffic for the purpose of junction analysis is shown in **Figure 14-4** for the R165 / quarry haul road junction and in **Figure 14-5** for the N3 / R165 junction.

**Figure 14-4** Traffic Distribution R165 / Quarry Haul Road

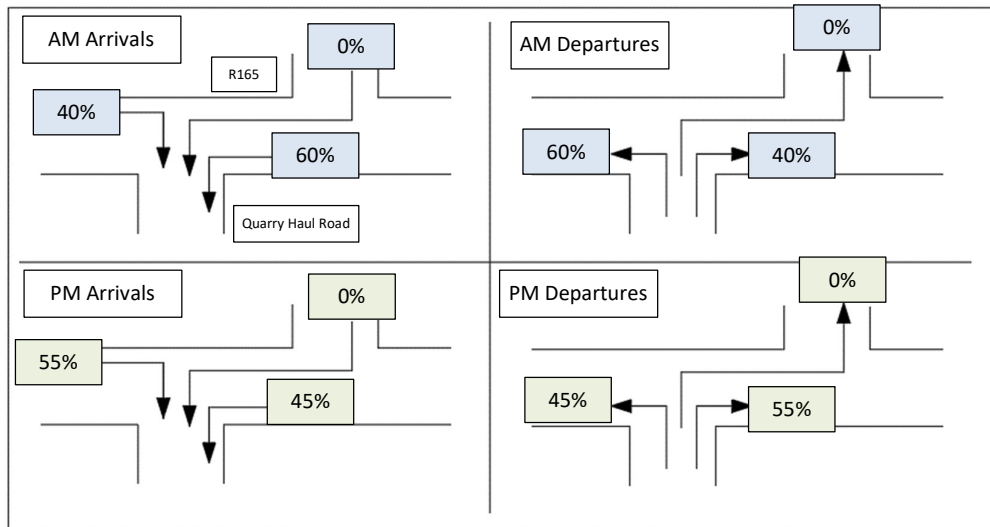
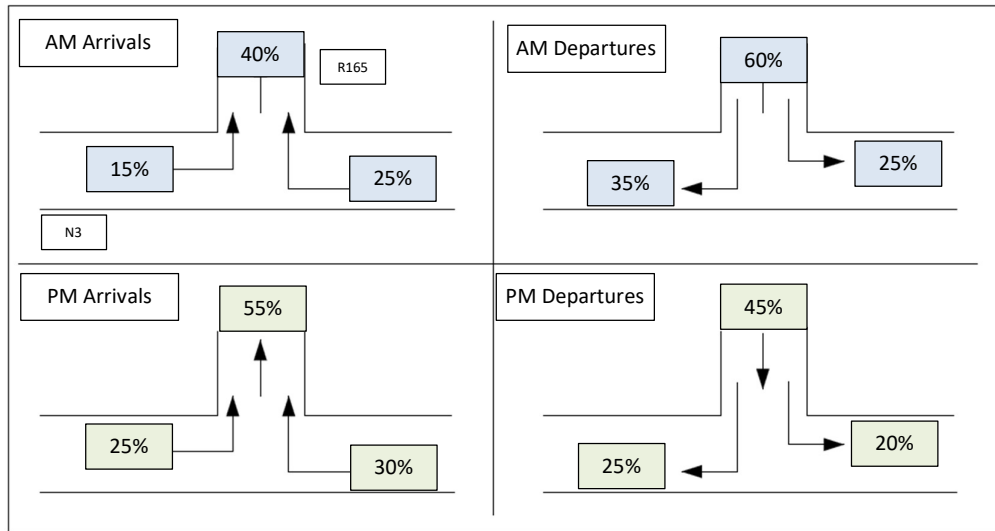


Figure 14-5 Traffic Distribution N3 / R165 Junction



## FUTURE TRAFFIC GENERATION

### Future Traffic Growth on the Public Road Network

14.36 Traffic Infrastructure Ireland (TII) forecasts for future traffic growth on the public road network are published in PE-PAG-02017 Travel Demand Projections. The growth factors are applied to the baseline 2022 traffic flows to approximate the traffic flows on the public road network in the future when the proposed development is fully operational in 2023 (Grant of Planning) and 15 years after grant of planning in 2038 which covers the period of planning sought under this application. The growth factors for County Cavan using the central growth scenario for the relevant assessment years are shown in **Table 14-7**.

**Table 14-7**  
Traffic Growth Factors for Public Roads

Year	Growth Factor N3 & R165
2022	1.00
2023	1.02
2038	1.13

### Traffic Analysis with Development Working at Full Capacity in 2023 & 2038

14.37 A traffic analysis of the existing N3/R165 junction and the R165 / L75001 / quarry haul road junction has been carried using existing traffic volumes out as described in Section 14.2 (Existing Traffic Flow) of this report. The analysis in Section 14.2 does not contain traffic associated with the quarry development which was not operational during the counts. In order to determine if the existing junctions have sufficient capacity to cater for the additional traffic generated by the development operating at full capacity (i.e. **proposed development output of 250,000 tonnes per annum**), a traffic analysis of the N3 / R165 junction and the R165 / L75001 / quarry haul road junction with

the development operating at full capacity has been carried out for 2023 and 2038 which covers the permission sought. The existing N3, R165 and L75001 traffic volumes recorded during the classified traffic counts have been scaled in accordance with TII traffic growth forecasts to replicate future traffic growth on the public road network. The results of the analysis at the N3 /R165 junction are summarized in **Table 14-8**, full details of the Traffic analysis are included in **Appendix 14-A**. The results of the analysis at the R165 / L75001 / Quarry Haul Road junction are summarized in **Table 14-9**. Full details of the Traffic analysis are included in **Appendix 14-B**.

**Table 14-8**  
N3 / R165 Junction Capacity, 2023 & 2038 with Development Operating at Full Capacity

		AM							PM								
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity		Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
<b>N3 / R165 Junction - 2022 - Existing Traffic</b>																	
Stream B-AC	D2	0.9	18.18	0.46	C	2.59	A	28 %	D3	0.6	16.74	0.38	C	1.87	A	34 %	
Stream C-B		0.0	6.22	0.02	A					0.1	7.71	0.06	A				
<b>N3 / R165 Junction - 2023 - Quarry Operating at Full Capacity</b>																	
Stream B-AC	D4	1.0	19.47	0.49	C	2.86	A	24 %	D5	0.8	18.03	0.42	C	2.13	A	28 %	
Stream C-B		0.0	6.30	0.03	A					0.1	7.84	0.07	A				
<b>N3 / R165 Junction - 2038 - Quarry Operating at Full Capacity</b>																	
Stream B-AC	D6	1.3	24.31	0.57	C	3.53	A	12 %	D7	1.0	22.16	0.50	C	2.58	A	16 %	
Stream C-B		0.0	6.47	0.04	A					0.1	8.16	0.08	A				

14.38 The analysis carried out for the N3 / R165 junction in 2023 and 2038 with the quarry operating at peak capacity shows that the junction will continue to operate within capacity and will not exceed the 0.85 Ratio to Flow Capacity (RFC) during the AM or PM peak hours on the public road network. The ratio of flow to capacity (RFC) is calculated from Junctions 9 PICADY software. An RFC value of

1.0 indicates that the junction is operating at full capacity with a value of 0.85 considered to be the maximum RFC value after which the junction will begin to experience some capacity issues.

**Table 14-9**  
**R165 / L75001 / Quarry Haul Road Junction, 2023 & 2038 with Development Operating at Full Capacity**

AM									PM						
Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
<b>R165 / L75001 / Development Junction - 2022 Existing Traffic</b>															
Stream B-ACD	0.0	6.65	0.01	A	0.51	A	704 % [Stream D-ABC]	D1	0.0	0.00	0.00	A	0.33	A	751 % [Stream D-ABC]
Stream A-BCD	0.0	5.25	0.00	A				0.0	5.42	0.01	A				
Stream D-ABC	0.0	7.96	0.02	A				0.0	8.30	0.02	A				
Stream C-ABD	0.0	5.48	0.00	A				0.0	0.00	0.00	A				
<b>R165 / L75001 / Development Junction - 2023 Quarry Operational &amp; Working at Full Capacity</b>															
Stream B-ACD	0.1	10.33	0.05	B	1.47	A	461 % [Stream B-ACD]	D3	0.1	10.92	0.07	B	1.93	A	393 % [Stream B-ACD]
Stream A-BCD	0.0	5.22	0.00	A				0.0	5.43	0.01	A				
Stream D-ABC	0.0	8.06	0.02	A				0.0	8.41	0.02	A				
Stream C-ABD	0.0	7.96	0.02	A				0.0	7.97	0.02	A				
<b>R165 / L75001 / Development Junction - 2023 Quarry Operational &amp; Working at Full Capacity</b>															
Stream B-ACD	0.1	10.43	0.05	B	1.39	A	424 % [Stream B-ACD]	D5	0.1	11.02	0.07	B	1.77	A	368 % [Stream B-ACD]
Stream A-BCD	0.0	5.19	0.00	A				0.0	5.41	0.01	A				
Stream D-ABC	0.0	8.19	0.02	A				0.0	8.48	0.02	A				
Stream C-ABD	0.0	7.90	0.02	A				0.0	7.46	0.02	A				

14.39 The traffic analysis carried out for the R165 / L75001 / Quarry Haul Road junction in 2023 and 2038 with the quarry operating at peak capacity shows that the junction will continue to operate within capacity and will not exceed the 0.85 Ratio to Flow Capacity (RFC) during the AM or PM peak hour traffic periods on the public road network. The ratio of flow to capacity (RFC) is calculated from Junctions 9 PICADY software. An RFC value of 1.0 indicates that the junction is operating at full capacity with a value of 0.85 considered to be the maximum RFC value after which the junction will begin to experience some capacity issues.

Consented and Future Development

14.40 P&S Civil Works Ltd. have obtained planning permission (P. Ref. 07/2179) to demolish the existing oil depot at the R165 site entrance and to construct a new oil depot and two industrial business units which will use the existing access onto the R165. The proposed development will have parking for 150 vehicles. There are no other planned or consented developments in the vicinity of the quarry which will generate significant volumes of traffic. A traffic analysis carried out at the R165 site entrance junction in 2038 with the quarry operational, forecast growth on the public road network and the adjacent development operational shows that the R165 site entrance junction will continue to operate within capacity and will have reserve capacity to accommodate future development and traffic growth in the area. The results of the analysis are summarised in **Table 14-10**.

**Table 14-10**  
**R165 / L75001 / Quarry Haul Road Junction, 2023 & 2038 with Quarry operational & Consented Developments**

	AM								PM							
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
<b>R165 / L75001 / Development Junction - 2038 Quarry Operational &amp; Consented Developments</b>																
Stream B-ACD	D5	0.1	10.73	0.06	B	2.14	A	346 %	D6	0.7	15.60	0.33	C	5.83	A	84 %
Stream A-BCD		0.0	5.17	0.00	A					0.0	5.45	0.01	A			
Stream D-ABC		0.0	8.24	0.02	A					0.0	8.81	0.02	A			
Stream C-ABD		0.2	8.28	0.08	A					0.2	7.82	0.08	A			

Junction Improvements & Upgrade Works

- 14.41 The traffic analysis shows that the N3 / R165 junction in Lavey village will continue to operate within capacity with the quarry operating at full capacity in 2038 when combined with forecast increases in traffic volumes on the public road network. No modifications are proposed at the junction.
- 14.42 The Traffic analysis shows that the R165 / L75001 / Quarry haul road junction will continue to operate within capacity with the quarry operating at full capacity in 2038. No geometric modifications are proposed at the haul road junction on the R165. Existing vegetation should be trimmed and maintained on the verges adjacent to the quarry entrance to maximise visibility for vehicles using the junction. Surfacing at the junction should be repaired to increase skid resistance at the junction. Line markings and signage should be upgraded at the junction.
- 14.43 It is not proposed to carry out any geometric modifications to the L3500 / quarry haul road junction. Surface defects at the approach to the junction should be repaired to improve skid resistance at the junction stop line. Existing vegetation should be trimmed and maintained on the L3500 verges adjacent to the junction to maximise visibility at the junction. Signs and road markings should be

upgraded at the junction. A convex traffic mirrors should be provided at the junction to assist long vehicles exiting from the site who may approach the junction at an angle.

## SUMMARY

14.44 This traffic analysis report was carried out by Jennings O'Donovan and Partners Limited. The purpose of the TTA is to determine the effects of the quarry traffic on the public road network with the quarry operating and contributing additional traffic to the public road network for a period of 15 years between 2023 and 2038.

- The site of the proposed development is currently utilized for quarry workings which involve crushing and screening of rock using processing plant.
- The N3 is currently reaching capacity in the Lavey area, however no significant delays were observed during the traffic counts which were carried out in Lavey village at the R165 Bailieborough junction in October 2022.
- The R165 is currently operating at approximately 55% capacity and has capacity to accommodate additional traffic.
- The L3500 local road is a lightly trafficked road with low traffic volumes.
- Trip rates for the development are based on the classified traffic counts taken at the N3 / R165 and R165 / L75001 / site entrance junctions on 18 October 2022 and information supplied by the quarry management.
- During the AM peak hour, the development operating at peak capacity will generate 31 additional trips on the public road network, 20(8 HGV) arrivals and 11 (8 HGV) departures.
- During the PM peak hour, the development operating at peak capacity will generate 31 additional trips on the public road network, 11 (8 HGV) arrivals and 20 (8 HGV) departures.
- The results of the traffic analysis show that the existing N3 / R165 junction is operating within capacity at current traffic levels in 2022.
- The results of the traffic analysis show that the existing R165 / L75001 / Quarry Haul Road junction is operating within capacity at current traffic levels in 2022.
- The results of the traffic analysis show that the existing N3 / R165 junction will continue to operate within capacity with the development operating in 2023 and 2038 with forecast increases in public road traffic volumes.
- The results of the traffic analysis show that the existing R165 / L75001 / Quarry Haul Road junction will continue to operate within capacity with the development operating in 2023 and 2038 with forecast increases in public road traffic volumes.
- The existing junctions will continue to operate within capacity with future traffic growth on the public road network beyond 2038.
- Sightlines are achievable in both directions at the development entrances on the R165 and L3500 and at the N3/R165 Junction in accordance with TII standards.
- No junction improvements are proposed at the N3 / R165 junction. Junction maintenance will be required at the site entrances on the R165 and L3500. Existing vegetation on verges, Line markings, signage and surfacing should be maintained to increase safety at the development junctions.

## **APPENDICES**

### **Appendix 14-A**

**Traffic Analysis N3/R165 Junction - 2022 Existing Traffic / 2023 & 2038  
Quarry Operating at Full Capacity**

### **Appendix 14-B**

**Traffic Analysis R165 / L75001 / Quarry Haul Road Junction - 2022 Existing  
Traffic / 2023 & 2038 Quarry Operating at Full Capacity**





## Appendix 14-A

### Traffic Analysis N3/R165 Junction - 2022 Existing Traffic / 2023 & 2038 Quarry Operating at Full Capacity



## **Appendix 14-B**

Traffic Analysis R165 / L75001 / Quarry Haul Road Junction - 2022  
Existing Traffic / 2023 & 2038 Quarry Operating at Full Capacity