12 Traffic & Transport

12.1 Introduction

The purpose of this chapter of the EIAR is to address the transport related issues that may arise in relation to the proposed Renewable Biogas Facility (herein referred to as the Proposed Development) during construction and operation and how the proposal will integrate with the existing traffic flows in the vicinity of the site.

Recommendations contained in this report are based on site observations, recorded traffic survey data, interpretation of collected data and information and consultation with relevant Authorities and interested parties.

The objectives of this report are to assess the impact the Proposed Development will have on the surrounding road network, with the assessment focusing primarily on the priority crossroads junction off the Regional Road R518 and the Local Roads L8658 and L8595, in the vicinity of the proposed site, shown in **Figure 12.1.**

The report is produced to demonstrate how the Proposed Development will integrate with the existing traffic flows in the vicinity of the site and how the proposed traffic flows accessing the site will affect the existing road network.

ORS liaised with Limerick and City County Council to scope the requirements for the Transportation Section of the EIAR. It was agreed that this section would assess the traffic volumes produced by the development and review the effects the proposal will generate along the road network in the vicinity of the site.

Therefore, in summary, the objectives of this report are to assess:

- The prevailing traffic conditions on the public road network in the vicinity of the Proposed Development that may influence conditions;
- The potential effect on the surrounding road network due to the anticipated traffic generated by the Proposed Development;
- The proposed access arrangements for the Proposed Development;
- Review of committed developments adjacent to the Proposed Development site;
- The pedestrian, cyclist and public transport connectivity in the vicinity of the site; and
- The parking requirements for the site.

Figure 12.1: Location of Assessed Junction (Source: Google Earth)

12.2 Consultation

ORS have been commissioned to assess the potential impacts of the Proposed Development in terms of Traffic and Transportation during the construction and operational phases.

The principal members of the ORS EIA team involved in this assessment include the following persons:

- **Project Scientist & Co-Author:**

  Angeliki Kalatha – M.Sc. (Civil Engineering – Transport and Project Management), M.Sc. (Engineering Project Management). Current Role: Senior Transportation Engineer. Experience ca. 8 years

- **Project Scientist & Reviewer:**

  Luke Martin – B.A. (MOD) (Natural Sciences), M.Sc. (Sustainable Energy and Green Technology), CEnv, MIEnvSc. Current Role: Senior Environmental Consultant. Experience ca. 13 years.

- **Project Coordinator & Reviewer:**

  Oisín Doherty – B.Sc. (Geography with Environmental Science), MSc. (Environmental Management), CEnv, MIEnvSc. Current Role: Senior Environmental Consultant. Experience ca. 15 years.

Consultation between ORS and other members of the planning/design team was made in order

to obtain information required to assess the potential construction and operational phase impacts on traffic and transport.

12.3 Assessment Methodology & Significance Criteria

This report will follow the principles set out in the Transport Infrastructure Ireland (TII) Publication PE-PDV-02045 'Traffic and Transport Assessment Guidelines' and will assess the impact the Proposed Development, and the associated traffic flows, will have on the public road network in the vicinity of the site.

Reference was made to the following documents when preparing this report:

- Limerick City and County Development Plan 2022 – 2028;
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, published in May 2022;
- TII Publication PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, published in October 2021;
- TII Publication PE-PAG-02039 Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts;
- Traffic Management Guidelines, published in 2003; and
- Design Manual for Urban Roads and Streets, published in 2013.

12.3.1 Traffic and Transport Assessment Guidelines – PE-PDV-02045

The Transport Infrastructure Ireland (TII) Publication PE-PDV-02045, published in May 2014 sets the methodology to be followed in any given Traffic and Transport Assessment. The methodology that will be used in this assessment follows the guidelines set in this document and can be outlined as follows:

- Automatic Junction Turning Counts (JTC) were carried out on Tuesday 10th December 2024 at the priority crossroad junction formed by the R518 Regional Road, the L8658 and L8595 by IDASO. The traffic counts were carried out during a 12-hour period from 07:00 AM to 07:00 PM and encompass all movements at the junction.
- Details on the expected traffic generated by the Proposed Development during construction and operation, as well as the haulage routes, were obtained from Cycle0 (IE) Limited.
- The impact of the change in traffic conditions following the opening of the development has then been determined and the operational performance of the existing junction on the adjacent network analysed. This has therefore enabled the parameters of the existing junction to be tested and to ensure that it can accommodate the resultant flows and movements.
- The effect the Proposed Development will have on the road network was assessed against the TII threshold and it was found that the junction will marginally exceed the threshold of 10% increase in traffic, therefore, a complete Traffic and Transport Assessment (TTA) was required. A capacity assessment was undertaken in the junction in order to reinforce the point that the traffic from the Proposed Development will not adversely affect the functionality of the neighbouring junction.

- The junction was subjected to analysis as the majority of the traffic generated by the site will be composed of HGVs. The modelling showed that the junction will function well below its theoretical capacity for all future design years with no queues or delays.
- Parking requirements were assessed against parking standards set in Section 11.8.3 – *Car and Bicycle Parking Standards*, Table DM 9(b) - *Car and Bicycle Parking Standards – Newcastle West and other settlements,* of the Limerick Development Plan 2022 – 2028.

12.4 Description of Receiving Environment

12.4.1 Site Location

The Proposed Development site is located in the townland of Cappanihane, Bruree, Co. Limerick, approximately 13km west of Kilmallock, Co. Limerick, 20km east of Newcastle West, Co. Limerick and 25km southwest of Limerick City, Co. Limerick. The site area, shown in red, is *ca.* 5.29 ha, as shown in **Figure 12.2**.

The site is currently used as agricultural pastureland and is surrounded by agricultural lands to the north and east, with the R518 regional route to the south, and the L8658 local road to the west.

The site entrance is ca. 130m north of the R518 and the R518/ L8658/ L8595 junction. The Proposed Development will be accessed via the L8658 Local Road and a new internal access road leading east.

Figure 12.2: Site Location

12.4.2 Existing Premises and Land Use

The Limerick Development Plan 2022 – 2028 was consulted to determine the zoning within and around the Proposed Development. The site is situated on an unzoned land, approximately 25km southwest of Limerick City, in a rural area with limited transport infrastructure in place.

12.4.3 Proposed Development

The Proposed Development is described in Section 2.1.1 in Chapter 2, with **Figure 12.3** overleaf indicating the Traffic Signs and Road Markings site layout (ORS Drawing Ref. **231240-ORS-ZZ-00-DR-TII-1200**).

The Proposed Development will be capable of processing up to 90,000 tonnes of predominantly locally sourced agricultural manures, slurries, food processing residues and crop-based feedstock for the production of high quality biomethane (CH_4) which will compressed onsite and injected into the Gas Networks Ireland (GNI) distribution system via a Grid Injection Unit (GIU) that will be constructed onsite. This renewable natural gas (RNG) will directly replace conventional natural gas, contributing to the Government's target of generating 5.7 TWh of domestic biomethane annually. The feedstock will be transported to the facility via the public road network and access the site through the Regional Road R518 and L8658 Road.

Up to 90,000 tonnes of organic feedstock will be required to generate biogas at the proposed Renewable Biogas Facility, and a biobased fertiliser will be created. It is anticipated that the volume of this biobased fertiliser will be approximately 78,000 tonnes per annum, approximately 87% of the total volume of feedstock accepted at the facility. The biobased fertiliser can be in liquid form or fibre form and will be used on agricultural lands as a direct replacement for chemical/mineral fertilisers.

The biogas collected from the digesters will be passed through a biogas upgrading unit. This includes scrubbing and drying of the biogas for the production of a high-quality biomethane (CH_4) to supply the national gas network and renewable carbon dioxide (CO_2).

A detailed description of the Proposed Development is provided in **Chapter 2 – Project Description** of the Environmental Impact Assessment Report (EIAR).

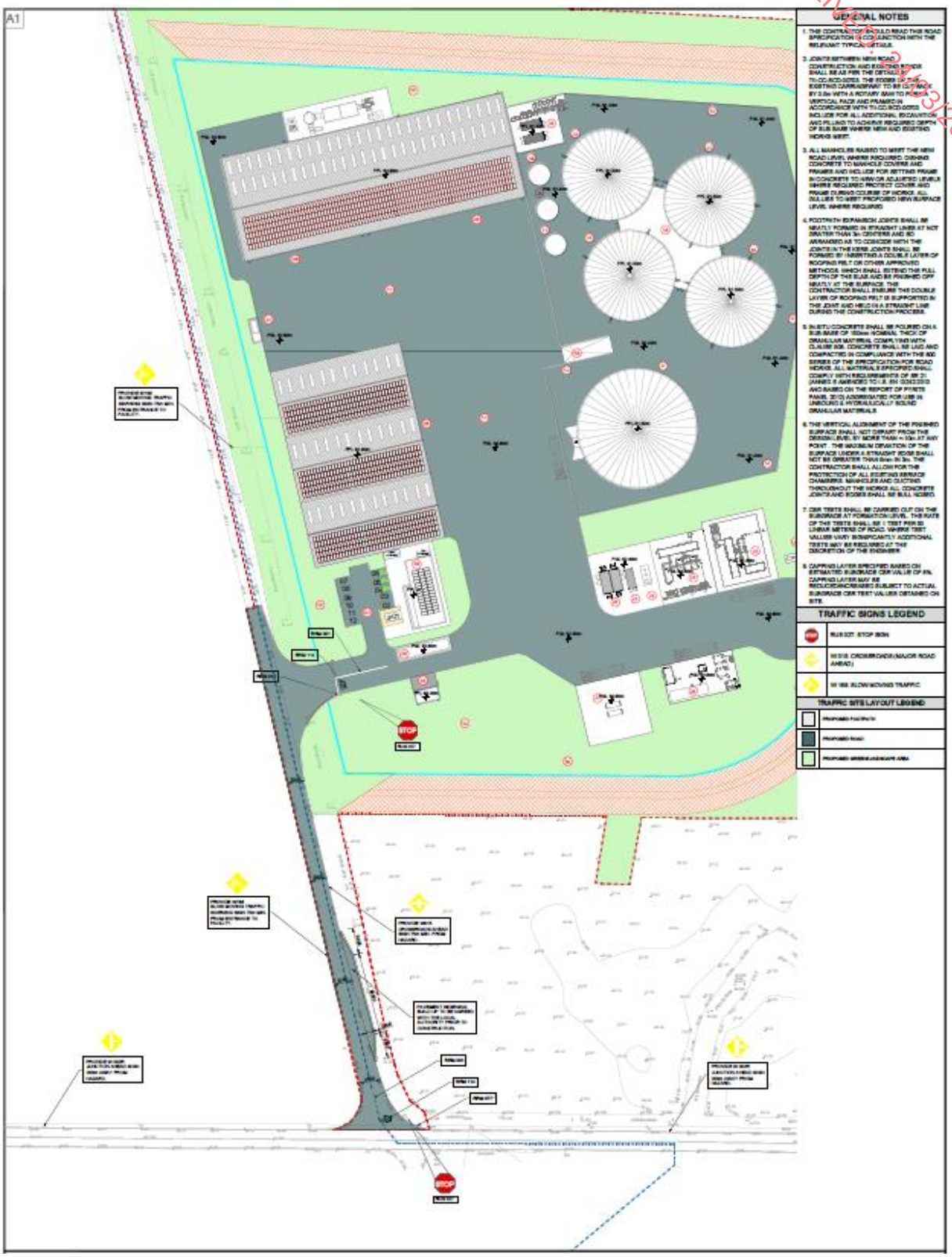


Figure 12.3: Proposed Site Layout Including Road Markings and Traffic Signs (ORS Ref: 231240-ORS-ZZ-00-DR-TII-1200)

12.4.4 Site Access

Vehicular access to the site is through a new proposed priority T-junction off the L8658 Local Road to the west of the site. 12No. car parking bays are provided to the west of the office area, while the central circulation area (concrete apron) to the south of the digestate treatment building will be used for articulated lorry turning and reversing.

Figure 12.4 shows the proposed access junction layout off the L8658.

The proposed access was designed to accommodate the expected HGV traffic and was designed in accordance with the Transport Infrastructure Ireland (TII) publication DN-GEO-03060.

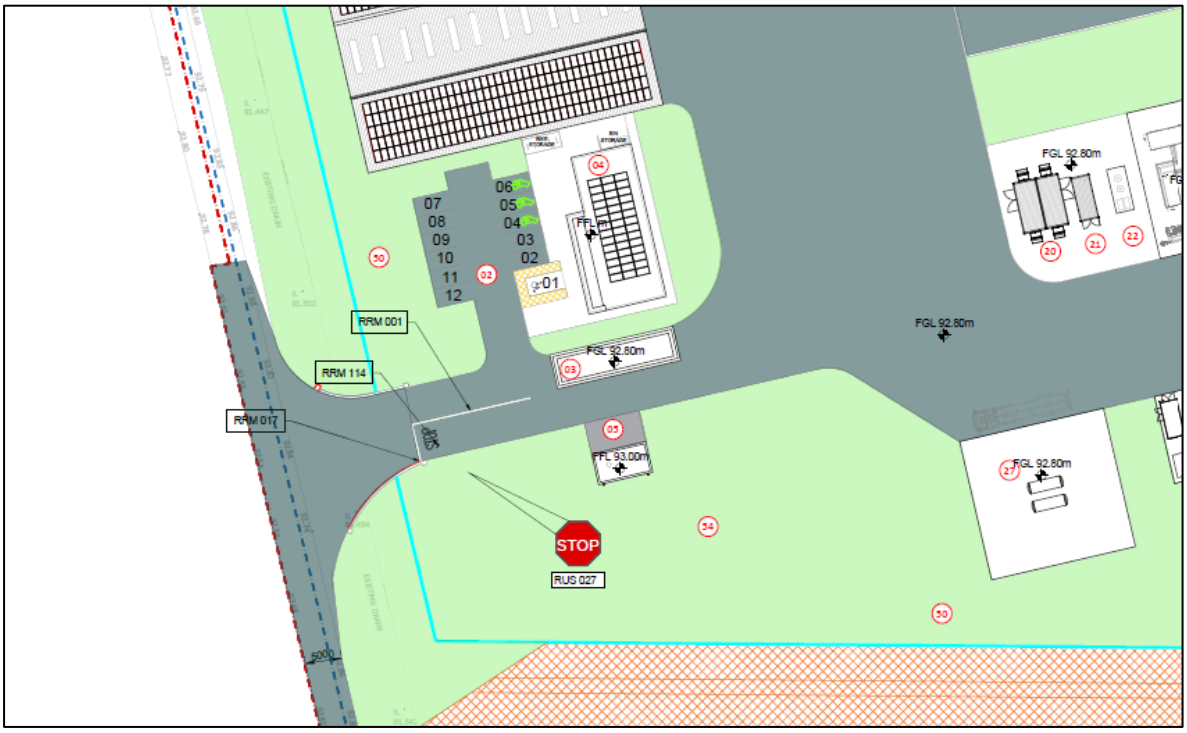


Figure 12.4: Proposed Access Junction. Cropped (Source: ORS, 231240-ORS-ZZ-00-DR-TII-1200)

12.4.5 Car Parking

There is no parking guidance set out in the Limerick City and County Development Plan for this specific type of development. The client has put forward peak staffing figures and parking provision has been assigned based on the specific needs of the development.

The site will have ca. 3-5No. staff members on site at the same time. The number of parking spaces provided for staff and visitors of the development is 12No. spaces, located adjacent to the office building, with 1No. being an accessible parking space and 3No. being dedicated EV charging points. The parking spaces provided can be considered sufficient for the expected

levels of traffic associated with the site.

The general guidance regarding accessible parking is that spaces shall be provided at a ratio of 5% of the parking numbers in new developments. The number of disabled parking spaces represents 8% of the spaces within this development, therefore, the requirements are met within the proposal.

Limerick Development Plan encourages the provision of EV charging spaces in all developments for future-proofing. According to the document a minimum of 20% of the proposed car parking spaces shall be provided with electrical connection points, to allow for functional electric vehicle charging. The remaining car parking spaces shall be fitted with ducting for electrical connection points to allow for the future fit out of charging points.

The Proposed Development aims to install 3No. EV charging points, in order to promote sustainable transportation.

12.4.6 Cycle Storage

Due to the nature of the development and the reduced number of staff accessing the site, trips by bicycle are not anticipated. There are currently no bicycle lanes on the R518 and no dedicated means of accessing the site by bicycle.

Despite this, the Proposed Development includes provision for 10No. bicycle parking spaces, aligning with the guidelines established in the Limerick City and County Development Plan.

12.4.7 Existing Road Network

The Proposed Development plans include providing vehicular access from the L8658 to the west of the site. Arrivals and departures will be via the Regional Road R518, located south of the site, and all traffic will utilise the L8658/L8595/R518 priority crossroads junction to/from the proposed site.

The R518 is a two-way flow single carriageway approximately 6 metres wide with no hard shoulders available on either side of the carriageway. The R518 has a posted speed limit of 80 km/h. The R518 connects to the N20 and O'Rourke's Cross to the east, approximately 4.2 km from the assessed junction, and to the R520 and Lees Cross to the northwest, *ca.* 4.7 km from the junction.

The L8658 is a single-lane carriageway, approximately 5-6 metres wide, that accommodates two-way traffic and provides access to the regional road R518 to the south, with an increasing width towards the priority junction formed by the L8658 and the R518. At this junction, the road lacks road markings, which are essential for guiding vehicle drivers effectively, while a 'STOP' sign is in place.

On the southern side of the R518, a series of reflective bollards separate the main carriageway from a paved parking/driveway area serving adjacent residential properties. This delineation aims to prevent direct vehicle encroachment onto the main road. Additionally, the road is bordered by hedgerows on the northern side, restricting visibility at certain points. Street lighting infrastructure is not available in the immediate vicinity.

There are no footpaths or cycle lanes provided along the R518 and the L8658, in the vicinity of the site access. With a width of 6 metres, the R518 road does not provide sufficient space for pedestrian or cyclist access to the site without the provision of substantial development of active travel infrastructure in the surrounding area.

For visual details, please refer from **Figures 12.5** to **12.8** overleaf.

Figure 12.5: Overview of the Road Network in the Vicinity of the Development (Source: Google Earth)

Figure 12.6: View of the L8658 in the Vicinity of the Proposed Site Access (Source: ORS)

Figure 12.7: View of the L8658 at the junction with the R518 (Source: ORS)

Figure 12.8: View of the L8595 Local Road (Source: ORS)

12.4.8 Proposed Road Network Improvements

At present, Limerick City and County Council have no improvement schemes on the R518 or the L8658 that would affect the Proposed Development.

12.4.9 Existing Traffic Flows

Automatic Junction Turning Counts (JTC) have been undertaken at the junction on Tuesday 10th December 2024 by a third-party company called IDASO. The traffic counts were carried out during a 12-hour period from 07:00 AM to 07:00 PM. The traffic counts have been used to obtain accurate data on the prevailing traffic conditions along the road network in the vicinity of the site and to predict future traffic conditions. The traffic counts encompassed all movements of traffic: pedal cycles, cars, buses, LGVs and HGVs.

The final number of traffic is presented in **Passenger Car Unit (PCU)**. PCU is the impact that a mode of transport has on traffic compared to a single car, e.g., a private car represents 1 PCU whereas an HGV represents 2.3 PCUs.

During the morning peak period, a total of 288 PCUs were recorded, with 156 heading eastbound, towards the N20, and 118 towards the west, while only 11 headed northbound onto the L8658. In the PM peak, the majority of traffic moved westbound along the R518, totalling 148 PCUs, with 16 vehicles travelling northbound towards the L8658. Overall, the observed traffic along the assessed junction in the vicinity of the site, during the PM peak, was 292 PCUs.

Table 12.1 summarises the AM and PM peak traffic flows.

Regarding HGV movement along the R518, a total of 6% of the total passing traffic along the R518 was observed to be HGVs in the morning period. In the evening period, HGVs made up 9% of eastbound traffic and 8% of westbound traffic.

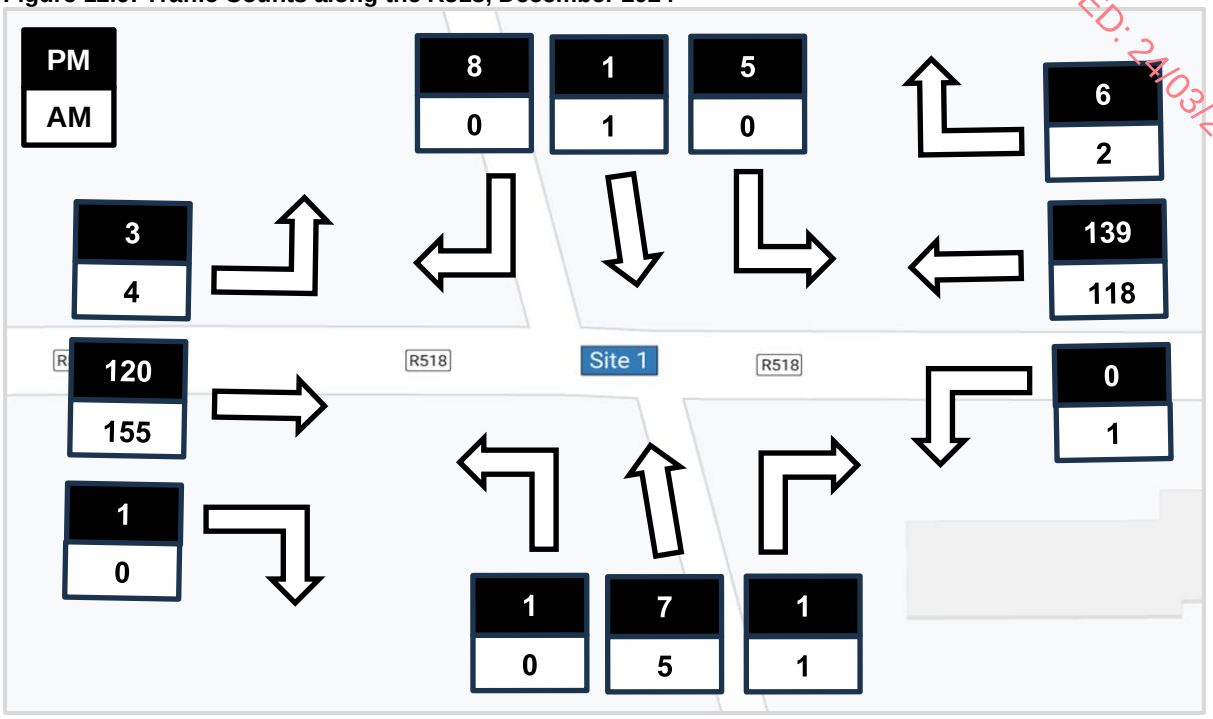
Table 12.1: December 2024 Traffic Counts

Junction	AM Peak (PCU)	PM Peak (PCU)
1 – Crossroad Junction L8658/L8595/R5118	288	292

Figure 12.9 overleaf shows the recorded traffic flows during the morning and evening period along the R518 Regional Road.

Based on the TII Publication Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts, the Annual Average Daily Traffic (AADT) could be calculated using the traffic counts obtained at the existing junction. The AADT is accounted to be 2,447 vehicles/day along the R518 in the vicinity of the site. The morning and evening peak periods correspond to ca. 24% of the traffic along the road.

Figure 12.9: Traffic Counts along the R518, December 2024



12.4.10 Committed developments Traffic Generation

As part of this Traffic Assessment, to assess the existing and expected traffic along the road network in the vicinity of the Proposed Development, the Limerick City and County Council planning website was consulted to include all committed developments in the area. As per the records available on the website, there are no applications identified that can potentially utilise the road network, in the vicinity of the Proposed Development.

12.4.11 Future Year Traffic Growth

Transport Infrastructure Ireland (TII) issues a range of forecasts: low growth, central growth and high growth. The implementation of policies relating to the National Sustainable Mobility Policy will act as a deterrent to high growth in car-based travel. Low growth factors are however likely to be equally unrealistic at present, therefore, this assessment has used central growth factors, which was extracted from the TII Publication PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, published in October 2021, outlined in **Tables 12.2** to **12.4** below. The data used is for County Limerick from 2016 to 2050 and is for Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs).

Table 12.2: Development Location Information

Development Location Information	
Location of Development	Limerick
Sensitivity Area	Central
Year of Traffic Counts	2024
Year of Assessment	2025
Year of Development Construction	2027

Table 12.3: TII Annual Growth Rates (Central Growth) For Co. Limerick

	LGV	HGV
2016 – 2030	1.0215	1.0323
2030 – 2040	1.0092	1.0130
2040 – 2050	1.0088	1.0177

Table 12.4: Growth Factors for Future Design Years

	Counts	Opening	Opening +5	Opening +15
Year	**2024**	**2027**	**2032**	**2042**
LGV	1.000	1.066	1.157	1.267
HGV	1.000	1.100	1.242	1.426

The traffic growth factors presented above have been used to predict the increase in the background traffic that will occur in future design years. The Proposed Development is expected to be fully constructed and operational in 2027. **Table 12.5** shows the predicted traffic flows along the site access for the year of the development conclusion, 5-year and 15-year after the development conclusion.

Table 12.5: Traffic Flows in Future Design Years (PCUs)

Design Year		R518 Towards O'Rourke's Cross	L8595	R518 Towards Lees Cross	L8658	Total Movements
2027	AM	171	3	133	28	335
	PM	143	3	165	30	341
2032	AM	186	3	144	29	362
	PM	154	3	178	31	366
2042	AM	201	3	156	30	390
	PM	167	3	193	33	396

12.5 Likely Significant Effects

12.5.1 Construction Phase

During the construction phase, deliveries and construction personnel will access the site on a daily basis. The arrivals and departures are expected to be spread out throughout the day; however, it is expected that they will be arranged in a manner to avoid traffic peak hours in the surrounding road network. The construction will operate within Limerick City and County Council's recommended hours, which typically are from 08:00 to 18:00 from Monday to Friday and between 08:00 to 14:00 on Saturdays. No works shall be carried out on Sundays and public holidays or outside the aforementioned hours.

Construction traffic associated with the Proposed Development will include:

- Construction personnel accessing the site by private vehicles and vans
- Delivery of materials (here include what type of materials) by vans and HGVs
- Earthworks machinery (excavators, rollers and dumper trucks) transported by HGVs
- HGVs for the export surplus excavated material.

It is expected a maximum of 20No. to 30No. construction personnel to be at the site at the same time (typically 1.2 workers per car) that will arrive and depart outside the peak network

times. Deliveries are expected to arrive at a steady rate throughout the day. It is anticipated that the generation of HGV traffic during the construction period will be evenly distributed throughout the day, ensuring minimal impact during peak traffic periods.

Haul routes for construction traffic are to be agreed upon with Limerick City and County Council during the preparation of the Construction Traffic Management Plan (CTMP).

Table 12.6 below shows the expected generated traffic during construction phase.

Table 12.6: Expected Traffic During Construction Phase

Time Range	Arrivals	Departures	Total
08:00-09:00	25	0	**25**
17:00-18:00	0	25	**25**

12.5.2 Operational Phase

The operation of an Renewable Biogas Facility involves producing renewable biogas through the decomposition of organic feedstock. The site will be functional 24 hours a day for 7 days a week with staff onsite during normal working hours from 07:00 and 19:00 Monday to Friday, and 07:00 to 16:00 on Saturday. Outside of these hours, the process is monitored remotely. There are no shifts, and it is expected that ca. 3-5 staff members will be present at the premises during normal working hours. The Development will receive an intake of approximately 90,000 tonnes of feedstock per annum for anaerobic digestion. The process will produce a methane-rich biogas, which is converted into renewable energy or upgraded to biomethane which is injected to the natural gas grid, and a nutrient-rich fertiliser known as 'biobased fertiliser'.

Feedstock will be transported to the Proposed Development using heavy goods vehicles (HGVs), enclosed trailers, and sealed vacuum tankers. The average tonnes per load are assumed to be 28-30 tonnes. It is expected that traffic will be spread out throughout the day in order to minimise traffic issues in the road network. However, in the event of deliveries arriving at the same time, the site will be able to cater for the traffic flows, as the access road and internal road layout of the site can accommodate the expected traffic without generating congestion on the main road.

Table 12.7 shows the expected feedstock accepted in the facility.

Table 12.7: Feedstock Intake Data

Feedstock in	Tonnes/year	Average Load (T)	Max. Loads Per Annum	Mean Deliveries/Day	Total In/Out Movements
Cattle Manure	5,000	28	179	1	
Cattle Slurry	10,000	28	357	2	
Dairy Production Residues	5,500	30	183	1	
Drinks Production Residues	11,000	30	367	2	
Food Production Residues	5,500	30	183	1	
Grass Silage	20,000	28	714	3	
Pig Slurry	18,000	30	600	2	
Poultry Litter	10,000	28	357	2	
Whole Crop Silage	5,000	28	179	1	
Subtotal	**90,000**		**3,119**	**15**	**30**

The feedstock will go through a digestion process and will produce a product named 'biobased fertiliser', which will be in form of fibre and liquid. Biobased fertiliser will be supplied for use on agricultural lands as a direct replacement for chemical/mineral fertilisers. It is proposed to provide biobased fertiliser to agricultural operators in the locality, particularly those who are providing crop-based feedstocks, thereby promoting a local circular bioeconomy.

Biobased fertiliser can be land spread during the spring, summer, and early autumn, but cannot be spread during the land spreading close period. During this winter period, will be stored on site. The number of transport movements will, therefore, generally remain the same throughout the year and reduce slightly during October-January.

Table 12.8 shows the expected tonnes of biobased fertiliser produced by the facility.

Table 12.8: Biobased Fertiliser Transport Data

Product	Tonnes per annum	Average Load (T)	Loads per annum	HGV/Trailer/day	Total in/out Movements
Digestate Liquid	53,500	30	1,783	6	12
Digestate Fibre	24,500	28	875	3	6
Subtotal	**78,000**			**9**	**18**

One trip per day will be necessary for the export of CH_4, with the gas export route passing through the R518 and terminating at the GNI Mitchelstown Facility. One additional trip per day will be necessary for the export of CO_2. This will result in two outbound and two inbound trips per day, as detailed in **Table 12.9**.

Table 12.9: CO_2 and CO_4 Export

Product	Loads per annum	Loads/day (vehicles/day)	Total in/out Movements
CO_2	120	0.4 (1 trip)	**2**
CH_4	360	1 (1 trip)	**2**

As already mentioned, the Proposed Development will employ approximately 3-5No. full time staff to operate the facility. The traffic generated by the staff will consist of 5No. daily incoming trips and 5No. daily outgoing journeys.

Table 12.10 contains the trip generation associated with staff.

Table 12.10: Staff Traffic Generation

	AM	PM
Arrivals	5	0
Departure	0	5
Total staff movements	**5**	**5**

Table 12.11 overleaf summarises the expected traffic volumes and volumes of material generated by the feedstock input to the Proposed Development and the export of biobased fertiliser. The anticipated total traffic flows in and out of the site amount to an average of 31No. vehicles per day (62No. trips in and out in total), including approximately 26No. HGVs/Trailers/Tankers per day (or 52 trips in and out) associated with the input of material and the export of biobased fertiliser.

These estimates are based on the maximum amount of organic feedstock the development can process, the maximum amount of biobased fertiliser removal from the Proposed Development, and the predicted staffing levels required to operate the facility.

Table 12.11: Total Movements In and Out of the Site on National Roads

	HGV/Walking Floor/Tankers/day for intake	HGV/Walking Floor/Tankers/day for export	Staff (in/out)	Total in/out Movements
Total Movements	15 (30)	11 (22)	5 (10)	62

The site will be operational 24 hours a day, 7 days a week, however, delivery of feedstock and export of fertiliser will be limited to occur only between 07:00 and 19:00 Monday to Friday and 07:00 to 16:00 on Saturday. As can be noted from the traffic generation profile shown above, there is no particular peak of traffic generated by the development, save for the times when staff arrive and depart from work.

However, it has been assumed that in a worst-case scenario the projected delivery and export of material will take place during morning and evening peak hours, with an even spread of traffic for both periods.

Table 12.12 illustrates the expected AM and PM traffic flows associated with the Proposed Development.

Table 12.12: Expected AM and PM Traffic Flows

	Arrivals	Departures	Total
AM	18	13	31
PM	13	18	31
Average movements			**62**

In summary, the trip rate profile for the Proposed Development has been interpreted from first principles and has been sufficiently loaded to reflect a 'worst-case scenario'. The trip rates are relevant given the type of development and the type of use. The trips found indicate that the level of traffic activity associated with this type of development is small and will correspond to approximately 3% of the AADT observed along the R518 in the vicinity of the site. The figures derived from the first principles analysis are very robust, as a 'worst case scenario', the total daily trips expected from the development are 62.

Regarding the HGV numbers generated from the site, of the 62No. trips associated with the site, 52No. will be composed of heavy vehicles. Traffic counts reveal that during the morning peak, 6% of the traffic on the R518 consisted of HGVs, with only one heavy vehicle turning onto the L8658. In contrast, during the PM peak, 20% of the traffic turning from the R518 onto L8658 composed HGVs, while no HGVs exited the L8658 onto the R518.

Traffic Distribution

The agricultural manures, slurries and crop-based feedstocks will be sourced from ca. 62 agricultural operators in the area in the vicinity of the site. The geographical spread of feedstock suppliers is shown in **Figure 12.10** overleaf, with 88% (55) of these sources located within a 5km radius of the site and 100% (62) within a 25-kilometer radius of the site.

As can be seen from the map, the deliveries to and from the site will travel through the extensive road network in the vicinity of the site, composed of the National Road N20, the Regional Roads R511, R516, R518, R519 and R520, and the local roads L8595, L8604 and L8658 (section from the R518/L8658 junction up to site access). The roads are suitable to cater for the expected traffic volumes associated with the site.

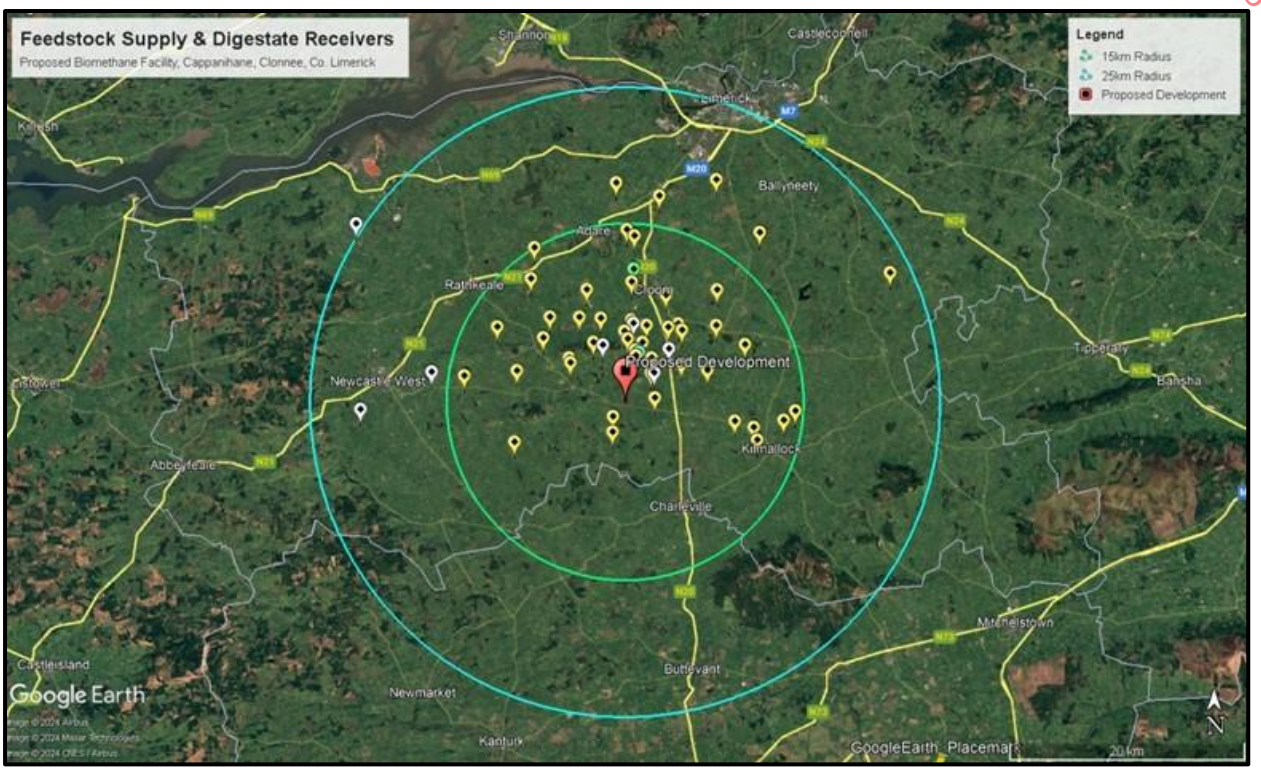


Figure 12.9: Location of Feedstock Suppliers and Digestate Receivers

Traffic Impact Assessment

The Limerick Development Plan 2022 – 2028, in Section 11.8.1 - *Access to Roads, Traffic and Transport Assessments (TTAs) and Road Safety Audits (RSAs)*, requires a Traffic and Transport Assessment to be provided as part of a development proposal in the case of developments with significant effect on the travel demand and capacity of the existing road network in the area.

The document states thresholds to be used as guidance when preparing a TTA, which are in accordance with the TII publication PE-PDV-02045 'Traffic and Transport Assessment Guidelines, published in May 2014.

During the operational phase, the site is projected to generate a total of 62No. vehicle trips per day. In a worst-case scenario, these trips are expected to distribute evenly between the AM and PM peak periods, with 31No. vehicles during each peak. This results in a 10% increase in overall traffic flow during the AM peak and a 9.9% increase during the PM peak, meaning that the development will marginally exceed the 10% threshold typically necessitating a Traffic and Transport Assessment (TTA). However, the anticipated increase in traffic is justified due to the

very low existing traffic volumes in the area, as these rural roads experience very low vehicular activity.

The results of the TTA assessment are summarised in **Table 12.13**.

Table 12.13: Traffic Management Guidelines Thresholds for Transport Assessments (TII)

Applicable	Threshold for transport Assessment
YES	Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road.
N/A	Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists, or the location is sensitive
N/A	Residential development in excess of 200 dwellings
N/A	Office, education and hospital development in excess of 2,500m^2
N/A	Retail and leisure development in excess of 1,000m^2
N/A	Industrial development in excess of 5,000m^2
N/A	Distribution and warehousing in excess of 10,000m^2

Based on the traffic levels anticipated at the junction, the impact of the operational phase of the proposed facility will have on the road network could be calculated, as shown in **Table 12.14**. As can be seen, the Proposed Development will generate a maximum of 31No. vehicles in both the morning and evening period that will utilise the junction assessed, which is accounted to represent an increase of a maximum of 10% in the expected traffic flows in the road network in 2027, the assumed year of the development conclusion.

Table 12.14: Traffic Impact on the Neighbouring Junction

Junction	2027 Projected Traffic		Traffic from Development to junction		Increase in Traffic		Threshold of 10% Increase	
	AM	PM	AM	PM	AM	PM	AM	PM
R518/ L8658/ L8595 Junction	307	311	31	31	10%	9.9%	Above	Below

Consequently, the traffic generated by the Proposed Development meets the criteria for producing a full Traffic and Transport Assessment, with a 10% increase in traffic, driven primarily by the area's very low existing traffic volumes. Given that the majority of site-related traffic will consist of HGVs, junction modelling has been conducted to assess the impact of the Proposed Development on the existing junction, in order to reinforce the point that the traffic from the Proposed Development will not adversely affect the functionality of the neighbouring junction.

Table 12.15 shows the anticipated average increase in HGV movements resulting from the operations of the Proposed Development.

Table 12.15: Impact the Proposed Development will have at the R518/ L8658/ L8595 Junction

Assessment Year	Do-nothing		Do-something	
	HGV % *	AADT (vehicles)	HGV % *	AADT (vehicles)
2027, year of development conclusion	12.1%	2,374	13.9%	2,432
2032, 5 years after conclusion	12.5%	2,590	14.2%	2,648

2042, 15 years after conclusion	12.9%	2,825	14.5%	2,883

Assessment of the R518/ L8658/ L8595 Junction

Traffic simulation was undertaken at the proposed junction in order to obtain the Ratio of Flow to Capacity (RFC) and the queue levels to determine if the existing junction will cater for the predicted level of traffic by the Proposed Development when it becomes operational.

All traffic will utilise this junction when travelling to/from the site.

The **Ratio of Flow to Capacity (RFC)** describes the capacity of each approach to the junction and determines if the junction will cater for the predicted level of traffic. An RFC below 0.85 (85%) implies that an approach road is operating satisfactorily well within capacity; between 0.85 to 1.0 RFC means the approach operates well within capacity but at less optimal efficiency; and an RFC above 1.0 means that demand and capacity are equal and no further traffic can progress through the junction. The queue levels are presented in **Passenger Car Unit (PCU)** and quantify the total number of vehicles queueing on each arm.

Central Sensitivity traffic growth rates for Co. Limerick, specified in the TII's Publication PE-PAG-02017 of October 2021, were applied to the existing background traffic and were not applied to the Proposed Development, as the development is limited by size.

The capacity assessments were modelled for three different scenarios:

- Base-year: 2025 traffic flows modelled according to traffic counts obtained in December 2024
- Do-nothing: modelled without the intervention of the Proposed Development. For this analysis, the traffic counts were factored up using TII's Central Growth Factor for the design years 2027, 2032 and 2042, the year of development conclusion, 5 and 15 years after conclusion, respectively
- Do-something: the impact of the traffic generated by the Proposed Development was added to the design years 2027, 2032 and 2042. This analysis will enable the comparison with the 'Do-nothing' scenario.

The junction was modelled using the TII approved TRL Software *PICADY* for priority junctions for the base year, the proposed year of development conclusion, 5 and 15 years after the development is fully concluded.

The results are shown in **Table 12.16** overleaf.

As can be seen from **Table 12.16**, the Proposed Development will have a negligible effect on the assessed junction, with a maximum Ratio of Flow to Capacity (RFC) of 0.08 (8%) in stream D (L8658) to ABC (R518 and L8595) in the evening peak, which is well below the theoretical capacity of 0.85 RFC.

Therefore, it can be considered that **the junction will function comfortably below capacity for all design years** with the inclusion of the Proposed Development.

Table 12.16: *PICADY* Results for the R518/L8658/L8595 Crossroad Junction

Analysis	Stream	AM		PM	
		Queue (PCU)	Ratio of Flow to Capacity (RFC)	Queue (PCU)	Ratio of Flow to Capacity (RFC)
1 – 2025, base year	B-ACD	0	0.02	0	0.02
	A-BCD	0	0.00	0	0.01
	D-ABC	0	0.00	0	0.03
	C-ABD	0	0.00	0	0.00
2 – 2027, do-nothing	B-ACD	0	0.02	0	0.02
	A-BCD	0	0.00	0	0.01
	D-ABC	0	0.00	0	0.03
	C-ABD	0	0.00	0	0.00
3 – 2027, do-something	B-ACD	0	0.02	0	0.03
	A-BCD	0	0.02	0	0.03
	D-ABC	0.1	0.03	0.1	0.07
	C-ABD	0	0.00	0	0.00
4 – 2032, do-nothing	B-ACD	0	0.02	0	0.03
	A-BCD	0	0.00	0	0.01
	D-ABC	0	0.00	0	0.04
	C-ABD	0	0.00	0	0.00
5 – 2032, do-something	B-ACD	0	0.02	0	0.03
	A-BCD	0	0.02	0	0.03
	D-ABC	0.1	0.03	0.1	0.07
	C-ABD	0	0.00	0	0.00
6 – 2042, do-nothing	B-ACD	0	0.02	0	0.03
	A-BCD	0	0.00	0	0.01
	D-ABC	0	0.00	0	0.04
	C-ABD	0	0.00	0	0.00
7 – 2042, do-something	B-ACD	0	0.02	0	0.03
	A-BCD	0	0.02	0.1	0.03
	D-ABC	0.1	0.03	0.1	0.08
	C-ABD	0	0.00	0	0.00

12.6 Mitigation Measures

This section will outline the proposed mitigation measures to reduce, minimise or eliminate the impact generated by the Proposed Development.

12.6.1 Construction

A detailed Traffic Management Plan (TMP), produced in accordance with Chapter 8 of the Traffic Signs Manual, will be finalised and agreed upon with the Local Authority prior to construction works commencement. The following mitigation measures are proposed during the construction phase of the development:

- Appointment of a Construction Project Manager to be responsible for the day-to-day implementation of measures outlined in the TMP;
- Identify routes to be used in the delivery and export of materials to the site and routes that shall be avoided by HGVs;
- Monitor the condition of the roads throughout the construction period and a truck-mounted vacuum mechanical sweeper will be assigned to roads along the haul route as required; and
- Access to the site to be monitored at all times by a banksman who will direct traffic safely into the construction site and facilitate the safe navigation of larger construction vehicles.

12.6.2 Operation

The operational phase of the development will generate a maximum of 62No. vehicle movements day, where 52No. are HGVs and 10No. are private vehicles and vans. The additional vehicles will represent a maximum of 10% increase in traffic but will not generate increased queues and delays along the road network in the vicinity of the site, therefore, no mitigation measure is proposed for the operational phase of the development.

12.7 Cumulative Effects

Within the European Commission - Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions, dated May 1999, cumulative effects are described as "*impacts that result from incremental changes caused by other development, plans or projects together with the Proposed Development or developments*".

As discussed, the development will result in a relatively low increase in overall traffic flow in and around the proposed facility with an average increase in HGV volumes in the road network of 2%, as indicated in Table **12.15** above. HGV's have a heavy bearing on road networks and inflict the highest damage/ wear to road infrastructure. An increase in HGV's transporting feedstock and digestate through-out the local and regional road network will increase wear and tear on networks not designed to facilitate consistent heavy capacities.

12.8 Residual Impacts

As mentioned in previous sections, the proposed construction and operational phase of the development will generate a minimal impact on the road network in the vicinity of the site. The proposed mitigation measures proposed in **Section 12.6** will also help reduce or eliminate any potential impact associated with the proposal. The proposal, located off the R518 Regional

Road, is located in an 80km/h speed limit zone* and the narrow road width will not give rise to potential hazards, on the other hand, will reduce traffic speeds and increase road safety benefits.

(*As of February 7, 2025, the default speed limit for rural local roads in Ireland has been reduced from 80 km/h to 60 km/h. However, this change does not currently apply to regional roads like the R518; their speed limits remain unchanged unless otherwise specified.)

Queuing of vehicles is not anticipated on the L8658 due to the low number of vehicles predicted to enter the site on a daily basis. The proposal will have no negative impact on the overall road network associated with the proposed construction and operational phase of the site.

Overall, it is assessed that the development will have a **neutral**, **slight** and **long-term effect**.

12.9 Monitoring

The Construction Environmental Management Plan (CEMP) and Environmental Operating Plan (EOP) will include provision for the monitoring of construction and operational related traffic flows.

12.10 Summary of Significant Effects

This Traffic and Transport Assessment report was conducted to accompany the planning application for the proposed Renewable Biogas Facility in the townland of Cappanihane, Bruree, Co. Limerick.

The internal road network has been designed to provide a safe and efficient circulatory system that reduces the potential for conflicting movements within the site. The internal layout will ensure that employee traffic and delivery traffic must be segregated as much as possible. All signage and safety measures possible will be implemented to ensure maximum safety on the site.

The methodology applied in this assessment has been agreed upon with Limerick City and County Council. The existing R18/ L8658/ L8595 crossroads junction that will be utilised for accessing or leaving the site was then subjected to capacity analysis to examine the potential effect the Proposed Development will have on the existing road network. Automatic Junction Turning Counts (JTC) were carried out on Tuesday 10th December 2024 at the aforementioned junction to obtain current traffic levels on the road network. It was observed that a total Annual Average Daily Traffic (AADT) is 2,447 vehicles/day in the vicinity of the site.

The Proposed Development is expected to generate a maximum of 62No. vehicles a day during the operational phase, associated with the delivery of feedstock, the export of digestate and from private cars, therefore, it will increase to a maximum of 10% of the existing traffic along the low trafficked R518 during AM and PM peak periods, which is above the threshold set in Limerick Development Plan to produce a detailed Traffic and Transport Assessment (TTA). It should be noted that this represents a very conservative scenario. Since the majority of the traffic associated with the site will be composed of Heavy Goods Vehicles (HGV), the junction was modelled in detail, using the TII approved software *PICADY* (Priority Intersection

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Capacity and Delay) for the AM and PM peak periods.

It is summarised that the development will have a ***neutral, slight*** and ***long-term effect***.

12.11 Statement of Significance

From a transportation planning perspective, the Proposed Development will not adversely impact the functionality of the R518 Regional Road and the L8658 Local Road in the vicinity of the proposed site and the junction will function well below capacity for all future design years. There will be no queues or delays formed along both roads due to the Proposed Development, therefore, it can be concluded that the Proposed Development will not result in a detrimental effect on the existing road network in the vicinity of the site.

Where potential effects have been identified, mitigation measures have been provided which if implemented reduce the effect of significance***.*** The mitigation steps are presented in **Section 12.6**.

Overall, it is assessed that the development will have a ***neutral, slight*** and ***long-term effect***.