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 Anaerobic Digestion 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 Piquet's Crossroad junction off the Regional Road R677 and Scrouty Road, 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 Waterford 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:

- Waterford 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:

- Manual junction turning counts (JTC) were carried out on Thursday 30th May 2024 at Piquet's Crossroad junction formed by the R677 Regional Road, the L4031, Rath Road and Scrouty Road by ORS. The traffic counts were carried out during a 3-hour period from 08:00-9:30 AM and from 17:00-18:30 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 Nephin Renewable Gas - Reatagh 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 exceeded the threshold of 10% increase in traffic, therefore, a complete Traffic and Transport Assessment (TTA) is required.
- 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 7.2 - Parking Standards of the Waterford City and County Development Plan 2022 – 2028.

12.4 Description of Receiving Environment

12.4.1 Site Location

The Proposed Development site is located in the townlands of Curraghnagarraha, Reatagh, and Curraghballintlea, Co. Waterford, approximately 2.9km southeast of the town of Carrick-on-Suir, Co. Tipperary and approximately 19.5km northwest of Waterford City, Co. Waterford. The site area, shown in red, is *ca.* 7.7 ha, as shown in **Figure 12.2** overleaf.

The site is currently used as agricultural pastureland and it is bounded to the north, south, east, and west by further agricultural pastureland. An existing operational piggery is located ca. 200m to the southeast.

The site is ca. 500m north of the Scrouty Road and ca. 500m northeast of the Scrouty Road/Rath Road/R677 (Piquet's Crossroads) junction. An unmarked local road is located ca. 300m west of the site. The Proposed Development will be accessed via Scrouty Road and a new access road leading north.

Figure 12.2: Site Location

12.4.2 Existing Premises and Land Use

The Waterford City and County 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 19.5km northwest of Waterford 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 **Figures 12.3a and 12.3b** overleaf indicating the site layout.

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) to supply the existing gas network via the Grid Injection Unit (GIU), and renewable carbon dioxide (CO_2). In addition, the process will recycle locally sourced organic feedstocks to produce a nutrient rich biobased fertiliser which can be used as a direct replacement for chemical/mineral fertilisers. Digestate liquid and fibre will, on the whole, be returned to lands associated with feedstock supplies of crop and/or slurry, thereby promoting a local circular bioeconomy. The feedstock will be transported to the facility via the public road network and access the site through the Regional Road R677 and Scrouty Road.

Up to 90,000 tonnes of organic feedstock will be required to generate biogas at the proposed AD facility, and a biobased fertiliser will be created. It is anticipated that the volume of this biobased fertiliser will be approximately 25,000 tonnes per annum, approximately 28% 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 12.3a: Proposed Site Layout – Main Site (Source: ORS)

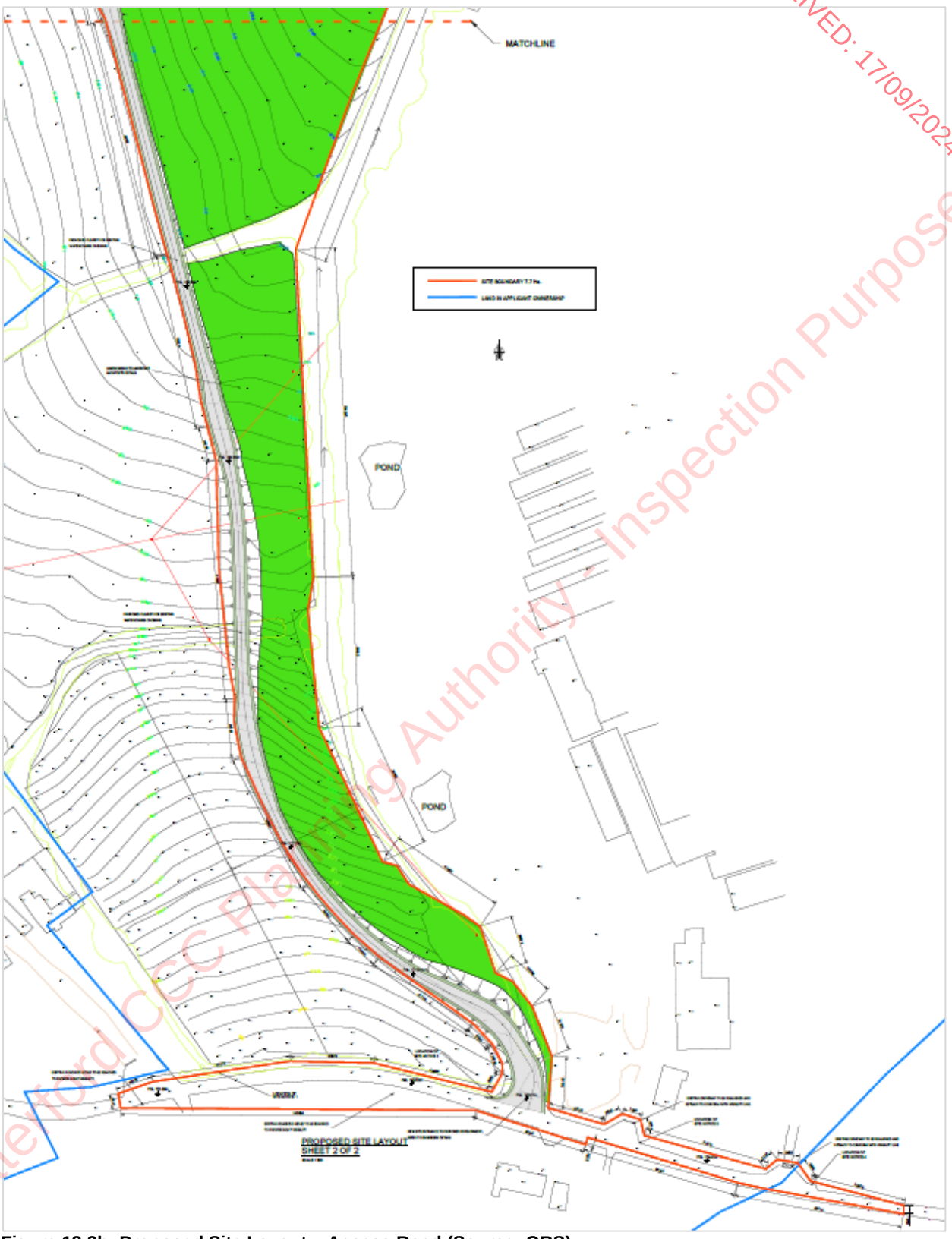


Figure 12.3b: Proposed Site Layout – Access Road (Source: ORS)

12.4.4 Site Access

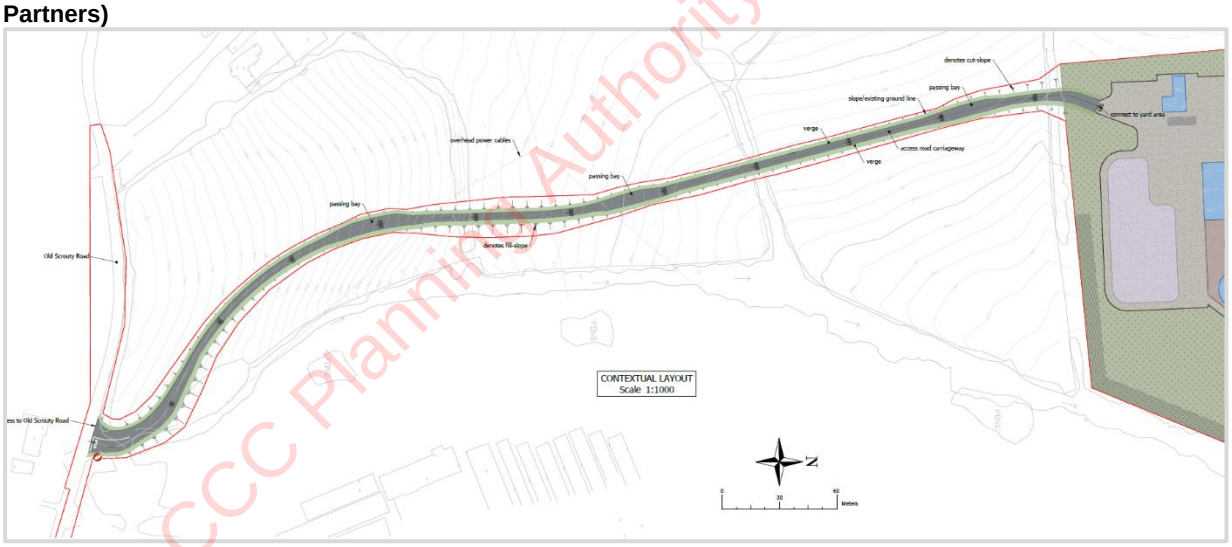
The site takes in an area of the existing public road to the south of the main site area, to provide for access to the development. Vehicular access to the site is through a new proposed priority T-junction off the Scrouty Road to the south of the site. 10No. car parking bays are provided to the south of the office area, while the central circulation area close to the CO_2 tanks will be used for articulated lorry turning and reversing. An internal asphalt road that will provide access to the Energy Hub to the southeast.

Figure 12.4 overleaf shows the proposed access junction layout off the Scrouty Road and the access road leading to the site entrance.

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.

The proposed site access road is a single lane carriageway of approximately 4m wide. Due to the limited width, passing bays will be created at three locations from the access junction off the Scrouty Road and northwards up to the site entrance. These bays will facilitate the simultaneous passage of two large vehicles.

Figure 12.4: Proposed Access Junction and Access Road to the Site. Rotated. Cropped (Source: Kilgallen & Partners)



12.4.5 Car Parking

There is no parking guidance set out in the Waterford 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 between 3No. to 5No. staff members on site at the same time. The number of parking spaces provided for staff and visitors of the development is 10No. 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 guidance stated in the development plan 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 10% of the spaces within this development, therefore, the requirements are met within the proposal.

Waterford 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 R677 and no dedicated means of accessing the site by bicycle other than by the proposed access point off the Scrouty Road.

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

12.4.7 Existing Road Network

The Proposed Development plans include providing vehicular access from Scrouty Road to the south of the site. This access will primarily be via the Regional Road R677, located southwest of the site, and will utilise the Scrouty Road/Rath Road/L4031/R677 junction, commonly known as Piquet's Crossroads. Piquet's Crossroads is a 4-arm priority junction combined with a T-junction where Scrouty Road meets the R677. Most of the traffic associated with the site is expected to use this junction for both arrivals and departures.

The R677 is a two-way flow single carriageway approximately 6 metres wide with no hard shoulders available on either side of the carriageway. The R677 has a posted speed limit of 80 km/h. The R677 connects to the R676 to the north, approximately 1.7 km from the assessed junction, and to the R678 to the south, *ca.* 5 km from the junction.

The Scrouty Road is a narrow single-lane carriageway, approximately 5.5 metres wide, that accommodates two-way traffic and provides access to the regional road R677 to the west. The junction with the R677 is currently equipped with readable road markings, which are crucial for effectively guiding drivers. At present, a 'STOP' sign is in place, along with a 'STOP' road marking that is partially worn out.

There are no footpaths or cycle lanes provided along the R677 and the Scrouty Road, in the

vicinity of the site access. With a width of 6 metres, the R677 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 to **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 Scrouty Road in the Vicinity of the Proposed Site Access (Source: ORS)

Figure 12.7: View of the Scrouty Road at the junction with the R677 (Source: ORS)

Figure 12.8: View of Piquet's Crossroad Junction (Source: ORS)

12.4.8 Proposed Road Network Improvements

At present, Waterford City and County Council have no improvement schemes on the R677 or the Scrouty Road that would affect the Proposed Development.

12.4.9 Existing Traffic Flows

Manual junction turning counts (JTC) have been undertaken at the junction on Thursday 30th May 2024 by ORS team members. The traffic counts were carried out during a 3-hour period from 08:00-9:30 AM and from 17:00-18:30 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 113 PCUs were recorded, with 63 heading towards Carrick-on-Suir town and 13 towards Scrouty Road. In the PM peak, the majority of traffic moved again northbound along the R677, totalling 66 PCUs, with 24 headed towards Scrouty Road. Overall, the observed traffic along Piquet's junction, in the vicinity of the site during the PM peak was 166 PCUs.

Table 12.1 summarises the AM and PM peak traffic flows.

Regarding HGV movement along the R677, a total of 5% of the total passing traffic was observed to be HGVs in the morning period and 22% in the evening period.

Table 12.1: May 2024 Traffic Counts

Junction	AM Peak (PCU)	PM Peak (PCU)
1 – Piquet's Crossroad Junction	113	166

Figure 12.9 overleaf shows the recorded traffic flows during the morning and evening period along the R677 Regional Road.

Figure 12.10 depicts the recorded traffic focused on the L4031, Rath and Scrouty Roads.

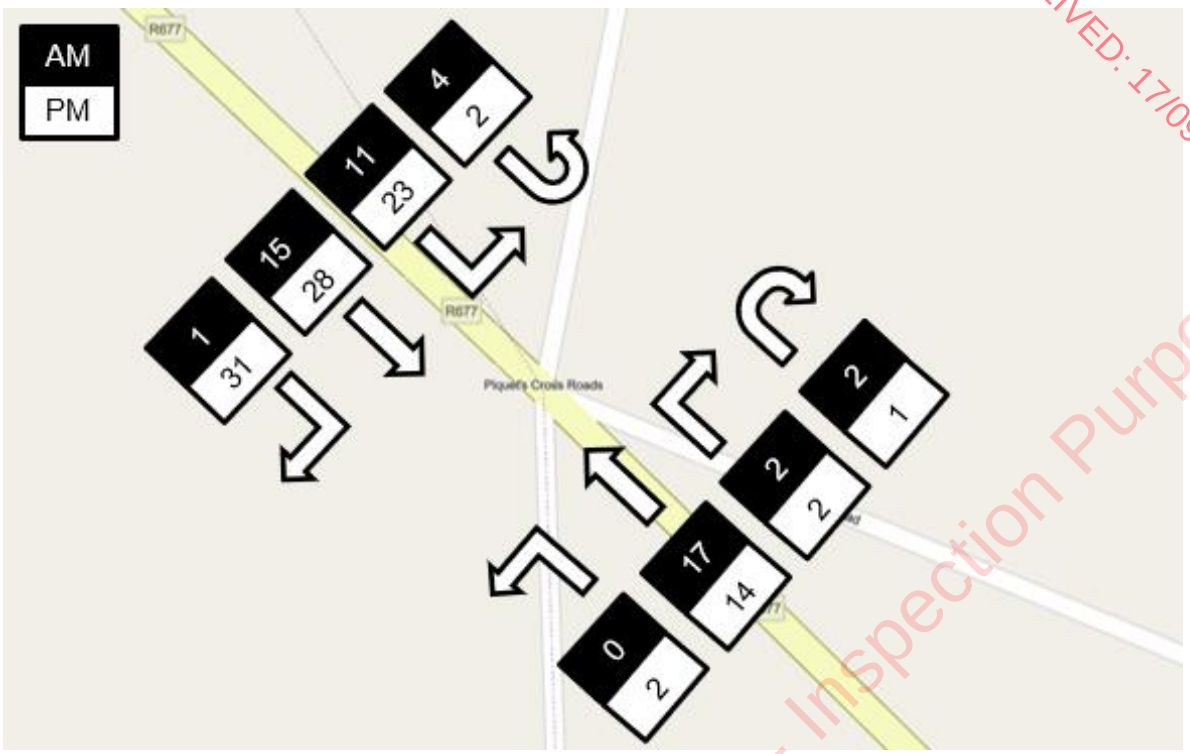


Figure 12.9: Traffic Counts along the R677, May 2024

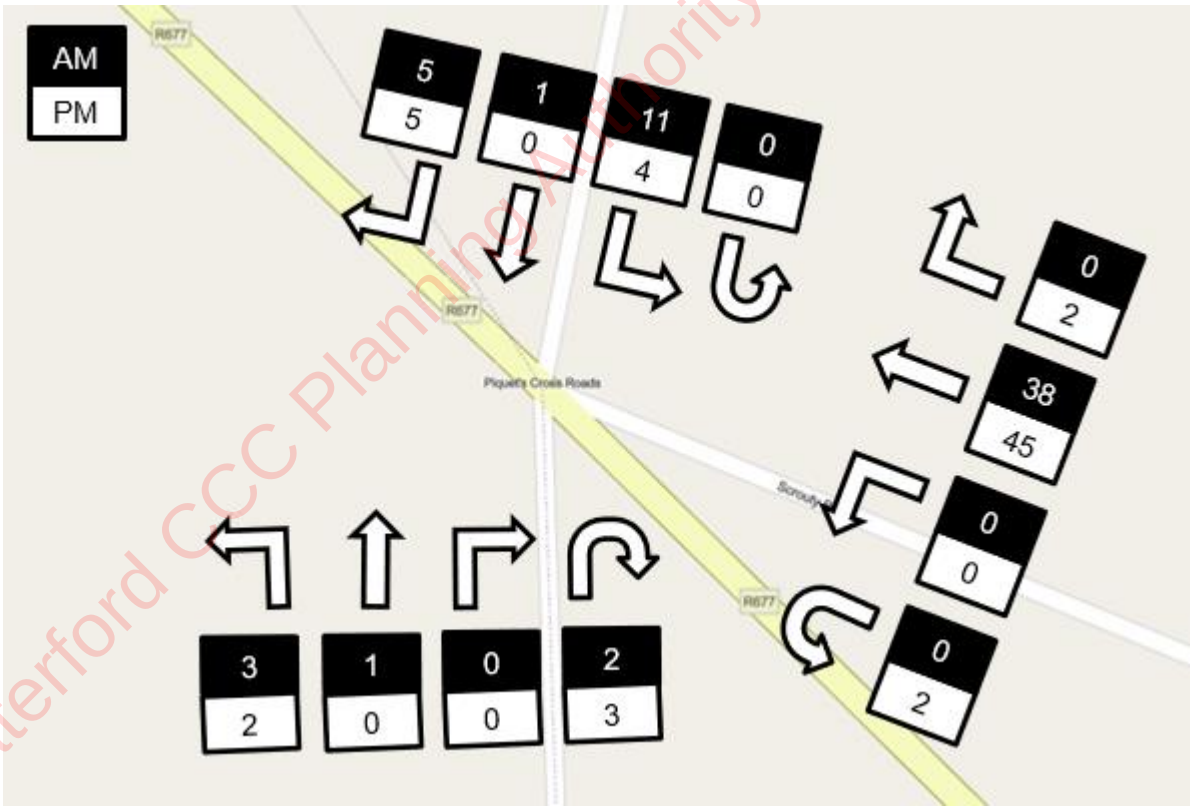


Figure 12.10: Traffic Counts along the L4031/Rath Road/Scrouty Road, May 2024

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 1,190 vehicles/day along the R677 in the vicinity of the site. The morning and evening peak periods correspond to 28% of the traffic along the road.

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 Waterford City and County Council planning website was consulted to include all committed developments in the area.

As per the records available on the Waterford City and County Council planning website, there is a single application (PA 21171) that was granted permission on the 1st of June 2021 and can potentially utilise the road network in the vicinity of the Proposed Development. It consists of a single storey residential unit. However, this cumulative effect has not been considered in the junction modelling analysis in Section 12.5.2, due to its anticipated negligible impact.

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 Waterford 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	Waterford
Sensitivity Area	Central
Year of Traffic Counts	2024
Year of Assessment	2024
Year of Development Construction	2026

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

	LGV	HGV
2016 – 2030	1.0171	1.0358
2030 – 2040	1.0079	1.0179
2040 – 2050	1.0073	1.0220

Table 12.4: Growth Factors for Future Design Years

	Counts	Opening	Opening +5	Opening +15
Year	2024	2026	2031	2041
LGV	1.000	1.034	1.116	1.206

HGV	1.000	1.073	1.257	1.507

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 2026.

Table 12.5 shows the predicted traffic flows along the site access for the year of the development conclusion, 5-year, 10-year and 15-year after the development conclusion.

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

Design Year		R677 Towards Carrick-on-Suir	L4031 towards Tinhalla	R677 Towards Ballyquin	Rath Road	Scrouty Road towards the Site	Total Movements
2024	AM	64	6	28	2	13	113
	PM	67	5	37	33	24	166
2026	AM	66	6	29	2	13	117
	PM	69	5	38	34	25	172
2031	AM	71	7	31	2	14	126
	PM	75	6	41	37	27	185
2041	AM	77	7	34	2	16	136
	PM	81	6	45	40	29	200

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 Waterford City and County Council's recommended hours, which 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 8No. to 10No. construction personnel to be at the site at the same time and the deliveries to be arranged during off-peak hours.

Haul routes for construction traffic are to be agreed upon with Waterford 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	10	0	**10**
17:00-18:00	0	10	**10**

12.5.2 Operational Phase

The operation of an Anaerobic Digestion Facility involves producing renewable biogas through the decomposition of organic feedstock. The site will be operational 24 hours a day for 7 days a week with staff onsite during normal working hours from 6 AM to 8 PM. Outside of these hours, the process is monitored remotely. There are no shifts, and it is expected that between 3 and 5 staff members will be present at the premises during normal working hours. The Proposed 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'.

The solid materials will arrive at the site by HGV/Walking Floor and the liquid form feedstock will arrive in bulk tankers. The average tonnes per load are assumed to be 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 (312 days)	Tonnes/day	Average Load (T)	HGV-Tanker/day	Route	Total in/out Movements
Cattle Slurry	7,700	25.0	30	1	From R677	2
Cattle Manure	1,400	5.0		1	From East	2
Pig Slurry *	26,200	85.0		3*	From R677	6*
Poultry Litter	12,200	40.0		2	From East	4
Food Production Residues	3,100	10.0		1	From R677	2
Drinks Production Residues	7,700	25.0		1	From R677	2
Dairy Production Residues	7,000	22.0		1	From R677	2
Grass Silage	9,000	29.0		1	From R677	2
Whole Crop Silage	14,700	48.0		2	From R677	4
Vegetable Residues	1,000	4.0		1	From R677	2
Subtotal	**90,000**	**293**		**14**		**28**

*It is important to note that the pig slurry is currently transported off the neighbouring piggery during the spreading season. These traffic movements will be eliminated from public roads once the slurry is supplied to the Proposed Development when it becomes operational.

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/year	Tonnes/day (312 days)	Average Load (T)	HGV/Trailer/day	Total in/out Movements
Digestate Liquid Concentrate	17,000	55	30	1.83	4
Digestate Fibre	8,000	26	30	0.87	2
Subtotal	**25,000**	**71**		**2.70**	**6 (5.40)**

It is important to note that part of the outgoing trips will not occur on public roads, meaning that output traffic will be partially kept away from the R677 regional road. Two additional trip per day will be necessary for the export of CO_2. Annually, 10,000 tonnes will be transported, equating to approximately 500 loads per year at an average weight of 20 tonnes per load. This will result in two outbound and two inbound HGV/tanker trip per day, as detailed in **Table 12.9**.

Table 12.9: CO_2 Export

Product	Tonnes/year	Tonnes/day (312 days)	Average Load (T)	HGV/Trailer/day	Total in/out Movements
CO_2	**10,000**	32	20	1.6	**4**

As already mentioned, the Proposed Development will employ approximately 5No. full time staff to operate the Anaerobic Digestion 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 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 24No. vehicles per day (48No. trips in and out in total), including approximately 20No. HGVs/Walking

Floor/Tankers per day 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

	Tonnes/year	HGV/Walking Floor/Tankers/ day	HGV/Walking Floor/Tankers/ day in/out	Staff (in/out)	Total in/out Movements
Total Movements	87,950	19	38	5 (10)	48

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	20	4	24
PM	16	8	24
Average movements			**48**

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 4% of the AADT observed along the R677 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 48.

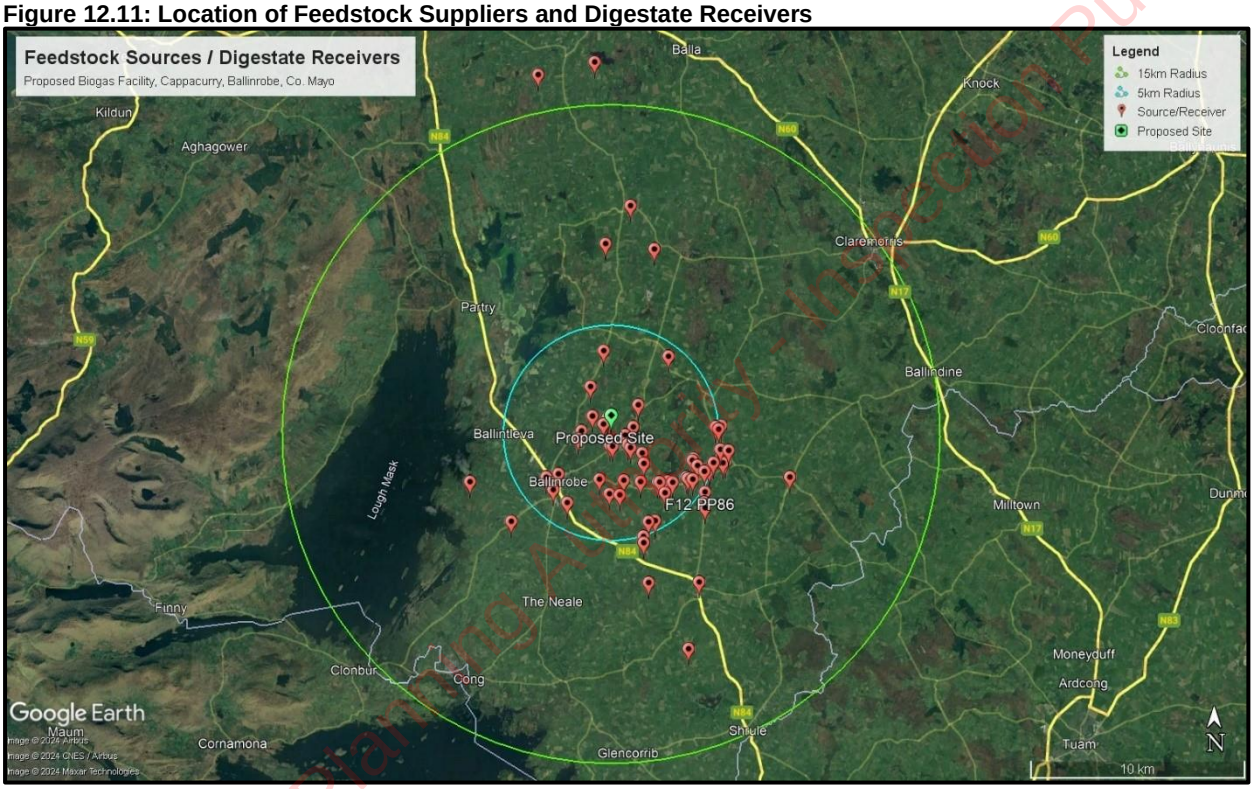
Regarding the HGV numbers generated from the site, of the 48No. trips associated with the site, 38No. will be composed of heavy vehicles. Traffic counts reveal that during the morning peak, 5% of the traffic on the R677 consisted of HGVs, with no heavy vehicles turning onto Scrouty Road. In contrast, during the PM peak, 15% of HGV traffic turned from the R677 onto Scrouty Road, while 3.5% of HGVs exited Scrouty Road onto the R677. Consequently, the additional HGV movements from the site are projected to increase HGV volumes on the R677 southbound direction to 23% during the AM peak and to 31% along the Scrouty Road during the PM peak.

Traffic Distribution

The agricultural manures, slurries and crop-based feedstocks will be sourced from ca. 70 agricultural operators in the area in the vicinity of the site. The geographical spread of feedstock suppliers is shown in **Figure 12.11** overleaf, with 59% (36) of these sources located within a 10km radius of the site and 100% (61) 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 Regional Roads R676, R677, R678 and R680, and the local roads L3057, L3059 and L7074. The roads are suitable to cater for the expected traffic volumes associated with the site.

Figure 12.11: Location of Feedstock Suppliers and Digestate Receivers



Traffic Impact Assessment

The Waterford City and County Council Development Plan 2022 – 2028 requires that Traffic and Transport Assessments (TTA) shall be carried out on all proposed major developments with significant potential to generate traffic or which could create a significant hazard or safety performance impact on a major road. The TTA shall be prepared in accordance with the 'Traffic Management Guidelines' and the 'Design Manual for Urban Roads and Streets' (DMURS).

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 48No. vehicle trips per

day. In a worst-case scenario, these trips are expected to distribute evenly between the AM and PM peak periods, with 24No. vehicles during each peak, and 21No. out of the 24No. travelling westbound towards the assessed junction. This results in a 18% increase in overall traffic flow during the AM peak and a 12% increase during the PM peak—both of which 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** overleaf.

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 Piquet's junction, the impact of the operational phase of the proposed anaerobic digestion biogas plant 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 21No. vehicles in the morning and evening period that will utilise the junction assessed, which is accounted to represent an increase of a maximum of 18% in the expected traffic flows in the road network in 2026, the assumed year of the development conclusion.

Table 12.14: Traffic Impact on the Neighbouring Junctions

Junction	2026 Projected Traffic		Traffic from Development to junction		Increase in Traffic		Threshold of 10% Increase	
	AM	PM	AM	PM	AM	PM	AM	PM
Piquet's Junction	117	172	21	21	18%	12%	Above	Above

Consequently, the traffic generated by the Proposed Development meets the criteria for producing a full Traffic and Transport Assessment, even though it will only add up to 24No. additional trips to the wider road network during the morning peak - a 18% increase, 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.

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 Piquet's Junction

Assessment Year	Do-nothing		Do-something	
	HGV % *	AADT	HGV % *	AADT
2026, year of development conclusion	9.3%	1235	11.9%	1283
2031, 5 years after conclusion	10%	1394	12.1%	1442
2041, 15 years after conclusion	11%	1719	12.8%	1767

Assessment of the R677/ L4031/Rath Road/ Scrouty Road Junction (Piquet's Crossroads)

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 AD development when it becomes operational.

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. Waterford, 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: 2024 traffic flows modelled according to traffic counts obtained in May 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 2026, 2031 and 2041, 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 2026, 2031 and 2041. 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 0.16 (16%) in stream B.2 (Scrouty Road) to A.1C.1 (R677 north and south) 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 Piquet's Crossroad Junction

Analysis	Stream	AM		PM	
		Queue (PCU)	Ratio of Flow to Capacity (RFC)	Queue (PCU)	Ratio of Flow to Capacity (RFC)
1 – 2024, base year	B.1→A.1, C.2, D.1	0	0.03	0	0.02
	A.1, B.1→C.2, D.1	0	0.00	0.1	0.06
	D.1→A.1, B.1, C.2	0	0.01	0	0.01
	C.2, D.1→A.1, B.1	0	0.01	0	0.01
	B.2→A.1, C.2	0.1	0.09	0.1	0.11
2 – 2026, do-nothing	B.1→A.1, C.2, D.1	0	0.04	0	0.02
	A.1, B.1→C.2, D.1	0	0.00	0.1	0.06
	D.1→A.1, B.1, C.2	0	0.01	0	0.01
	C.2, D.1→A.1, B.1	0	0.01	0	0.01
	B.2→A.1, C.2	0.1	0.09	0.1	0.12
3 – 2026, do-something	B.1→A.1, C.2, D.1	0	0.04	0	0.02
	A.1, B.1→C.2, D.1	0	0.00	0.1	0.06
	D.1→A.1, B.1, C.2	0	0.01	0	0.01
	C.2, D.1→A.1, B.1	0	0.01	0	0.01
	B.2→A.1, C.2	0.1	0.10	0.2	0.14
4 – 2031, do-nothing	B.1→A.1, C.2, D.1	0	0.04	0	0.02
	A.1, B.1→C.2, D.1	0	0.00	0.1	0.06
	D.1→A.1, B.1, C.2	0	0.01	0	0.01
	C.2, D.1→A.1, B.1	0	0.01	0	0.01
	B.2→A.1, C.2	0.1	0.10	0.2	0.13
5 – 2031, do-something	B.1→A.1, C.2, D.1	0	0.04	0	0.02
	A.1, B.1→C.2, D.1	0	0.00	0.1	0.06
	D.1→A.1, B.1, C.2	0	0.01	0	0.01
	C.2, D.1→A.1, B.1	0	0.01	0	0.01
	B.2→A.1, C.2	0.1	0.11	0.2	0.15
6 – 2041, do-nothing	B.1→A.1, C.2, D.1	0	0.04	0	0.02
	A.1, B.1→C.2, D.1	0	0.00	0.1	0.07
	D.1→A.1, B.1, C.2	0	0.02	0	0.01
	C.2, D.1→A.1, B.1	0	0.01	0	0.01
	B.2→A.1, C.2	0.1	0.11	0.2	0.14
7 – 2041, do-something	B.1→A.1, C.2, D.1	0	0.04	0	0.03
	A.1, B.1→C.2, D.1	0	0.00	0.1	0.07
	D.1→A.1, B.1, C.2	0	0.02	0	0.01
	C.2, D.1→A.1, B.1	0	0.01	0	0.01
	B.2→A.1, C.2	0.1	0.12	0.2	0.16

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 48No. vehicle movements day, where 38No. are HGVs and 10No. are private vehicles and vans. The additional vehicles will represent a maximum of 18% 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 Scrouty 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.

Queuing of vehicles is not anticipated on the Scrouty Road due to the low number of vehicles predicted to enter the site on a daily basis and the incorporation of 3No. passing bays, along the proposed site access road, that will facilitate the safe passage of two vehicles at the same time. 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 Anaerobic Digestion (AD) facility in the townlands of Curraghnagarraha, Reatagh, and Curraghballintlea, Carrick-on-Suir, Co. Waterford.

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 have been agreed upon with Waterford City and County Council. The existing Piquet's Crossroad junction that will be primarily 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. Manual junction turning counts (JTC) were carried out on Thursday 30th May 2024 at the aforementioned junction formed by the R677 Regional Road, Rath Road, L4031 and Scrouty Road, in the vicinity of the proposed site to obtain current traffic levels on the road network. It was observed that a total Annual Average Daily Traffic (AADT) is 1,190 vehicles/day in the vicinity of the site, at Piquet's Junction.

The Proposed Development is expected to generate a maximum of 48No. 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 18% of the existing traffic along the low trafficked R677 during AM and PM peak periods, which is above the threshold set in Waterford City and County 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 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***.

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12.11 Statement of Significance

From a transportation planning perspective, the Proposed Development will not adversely impact the functionality of the R677 Regional Road and the Scrouty 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***.