Traffic and Transport Assessment

for **Proposed Strategic Housing Development at Dunlo, Ballinasloe, Co Galway**

on behalf of **Limekill Esker Ltd**

Prepared by:

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Civil
Structural
Traffic

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Revision History

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Chartered Engineer

1 Non-Technical Summary

Planning permission is being sought for a residential development in Dunlo, Ballinasloe, Co Galway.

A manual classified traffic count was carried out on the following junction:

- Junction 1: Grand Canal Roundabout

Capacity analysis was carried out on the following junctions:

- Junction 1: Grand Canal Roundabout
- Junction 2: Dunlo Shopping Centre Roundabout

Predicted development traffic was added to the existing flows at the junctions as well as traffic growth figures up to a design year of 2040.

Traffic generation has been included on the road network assuming full operation of the proposed development. Both junctions that were analysed are predicted to operate below the desirable maximum capacity (85%) for uncontrolled roundabouts with all development in place.

2 Introduction

2.1 Background

CST Group Chartered Consulting Engineers were commissioned by Limekill Esker Ltd to carry out a TTA for a Proposed Housing Development at Dunlo, Ballinasloe, Co Galway. The assessment has been carried out in accordance with TII's Traffic and Transport Assessment Guidelines PE-PDV-02045 (May 2014) and refers to the Design Manual for Urban Roads & Streets (DMURS), Smarter Travel – A Sustainable Transport Future (2009-2020). Sections from the Draft Galway County Development Plan 2022-2028, Ballinasloe Local Area Plan 2015-2021 and Ballinasloe Local Transport Plan 2022-2028 have been used to help describe the development location and its local context.

The purpose of the TTA report is to assess the potential impact of the proposed development on the existing local transport network and to ensure that the proposed site access and the existing junctions which fall within the scope of the study will have adequate capacity to carry the development traffic and the future growth in existing road traffic to the design year and beyond. An assessment of the accessibility of the site for cyclists, pedestrians and public transport users has also been made.

It is estimated that construction will be completed and the overall development ready for occupation in 2025.

2.2 Scoping

A pre-planning meeting was held with Galway County Council on 16th December 2021. This was also attended by a representative from the Roads Section. They requested that we carry out analysis at the following junctions:

- Junction 1: Grand Canal Roundabout
- Junction 2: Dunlo Shopping Centre Roundabout

3 Existing Conditions

3.1 Site Location

The development site is located in Dunlo, Ballinasloe, Co Galway. The site is located circa 0.7km to the south of Ballinasloe town core in the Dunlo area. This area is characterised by medium density primarily single use suburban housing schemes, greenfield sites and in the case of lands between the site and the town centre, purpose-built convenience retail developments with large dedicated surface customer car parking.

The site and general area is accessed via the southwestern arm of a recently constructed roundabout 500m to the north of the site at Dunlo Quay also linking Regional Road R446 and Local Road L- 4602.

The site is bounded by the Esker Fields and Hymany Park housing estates to the northwest and Dun Esker development to the southeast.

The site location in relation to the wider road network is detailed in **Figure 3.1**.

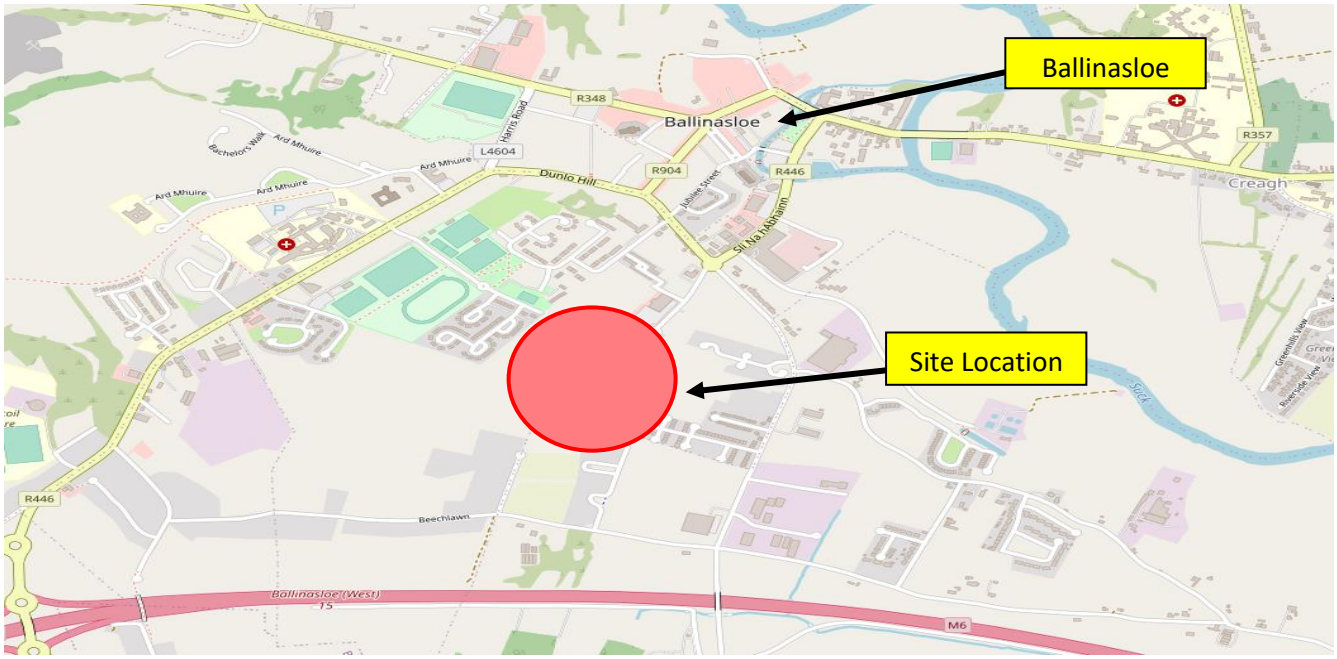

Figure 3.1: Location map of Ballinasloe and surrounding road network ©OpenStreetMap contributors

3.2 Existing Road Network

The layout of the local road network is presented in Figures 3.1 and 3.2. The main route in the vicinity of the site is the R446 to the north and west. The R446 links with the roundabout off which the development is currently accessed. The M6 is also in the vicinity of the site and bypasses Ballinasloe. There are a number of minor roads in the surrounding areas which carry low levels of traffic and are mostly housing estate roads. A brief description of the local road network and associated junctions is provided below:

3.2.1 R446

The R446 is a single carriageway road with one lane in each direction and forms the northern and western boundary of the development site. The R446 stretches from Athlone to the N65 just outside of Loughrea passing through Ballinasloe Town. A roundabout junction at the north of the development site links the R446 with the Dunlo Shopping Centre Road off which the development is accessed. There is a footpath on both sides of this road but no cycle facilities.

The layout of the local road network is presented in the figure below.

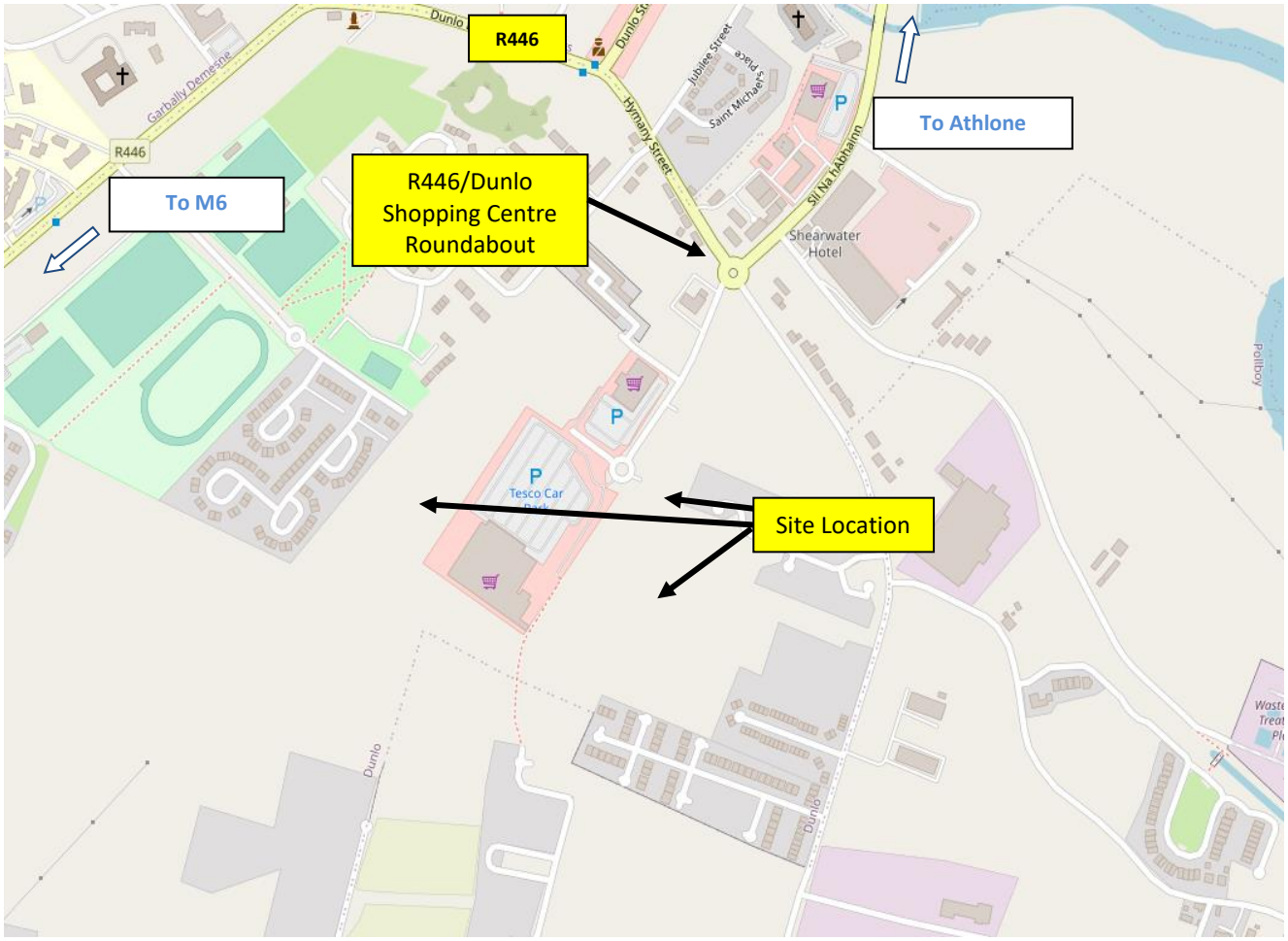

Figure 3.2: Site location and surrounding road network ***©OpenStreetMap contributors***

3.3 Existing Traffic Flows

As mentioned in Section 2.2 the scoping for the TTA resulted from a preplanning meeting with Galway County Council. The junctions to be analysed are:

- Junction 1: Grand Canal Roundabout
- Junction 2: Dunlo Shopping Centre Roundabout

To determine the existing traffic volumes on the road network in the vicinity of the proposed development a manual classified traffic turning count survey was carried out at the following junction:

- Junction 1: Grand Canal Roundabout

These counts were undertaken by Traffinomics on Thursday 30th June 2022 for a 12-hour period from 7.00AM to 7.00PM. The surveys found that the mean morning peak hour traffic flow occurred between 10:15am and 11:15am and the evening peak hour occurred between 4:45pm and 5:45pm.

The results of the surveys have been reproduced in full as **Appendix A** to this report. The calculated morning and evening peak hour turning count flows at the development are detailed in the traffic flow diagrams presented in **Appendix C**.

A count was not conducted at the second junction (Dunlo Shopping Centre Roundabout) to be analysed as this is an internal junction to the development. The flows through the second roundabout were derived from the above count and a ratio of flows from the respective areas of Tesco and ALDI.

3.4 Transport Proposals

The following is a transport proposal within the 2022 Ballinasloe Local Transport Plan.

3.4.1 Townpark Relief Road

Plans for this proposal have existed for some time, which in its most recent form would connect from the existing River View residential access route, via a new link to the north of the existing R348, connecting back to R348 Society Street. There is no direct requirement for this road to be completed in order to facilitate development in Ballinasloe. Further development of the proposals for the road, including its potential role in delivering new open space and opening up access to the lands north of the Town Centre, is therefore recommended so that the scheme which is ultimately taken forward is supportive of, and contributes to, the wider aims of the Ballinasloe LTP and the CDP.

This new road doesn't impact the proposed development as it is located north of the town and the development is located to the south of the town.

4 Proposed Development

4.1 Description

The proposed development consists of residential development consisting of 165 No. residential units and all associated and ancillary site development and infrastructural works, hard and soft landscaping and boundary treatment works.

The prospective SHD application also includes the proposed development of outdoor play areas, site landscaping, vehicular and pedestrian access, site services and associated site development works.

It is stated that 163 car parking spaces are proposed for the apartments and 118 in-curtilage car parking spaces for housing units.

The land surrounding the immediate site is mixed containing office, residential, educational, retail and hotels nearby.

The proposed layout for the development has been reproduced in sketch format in **Figure 4.1** and is detailed in the series of drawings as submitted with this application.

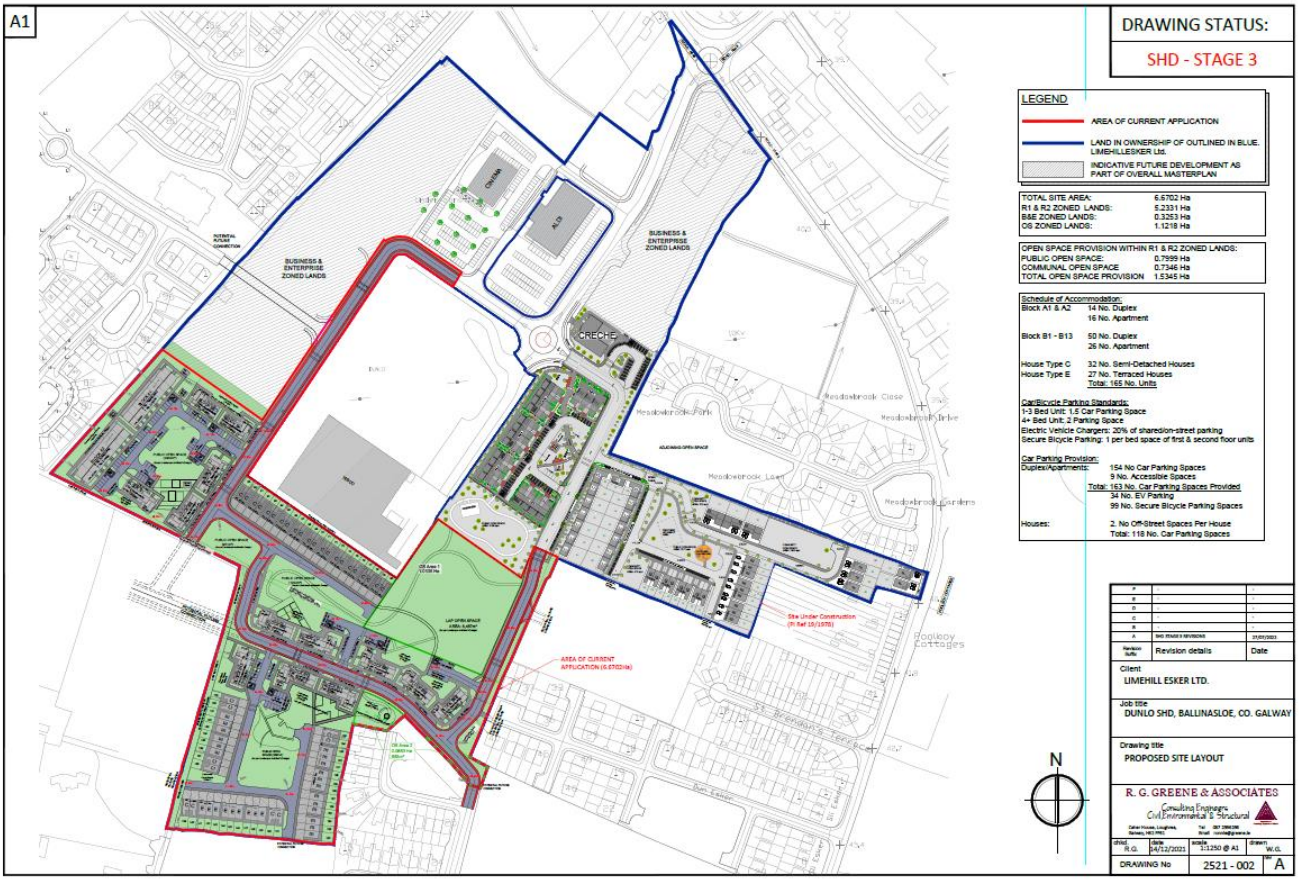

Figure 4.1: Proposed Site Layout

4.2 Service and Delivery Trips

Service and delivery trips to and from the development will generally be via the Dunlo Shopping Centre Road. This road currently serves for service and delivery for Tesco and ALDI. It is envisaged that the majority of delivery and service trips will occur during off-peak times.

5 Trip Generation

5.1 General

The purpose of this section is to determine the overall number of trips that will be generated by the proposed development. Following the quantification of the trip generation, these trips will be distributed onto the adjoining roads in order to provide the necessary traffic flows to allow an assessment of the traffic impact by the proposed development to be undertaken.

In order to estimate the likely volumes of traffic that will be generated by the proposed development, trip rates recommended by TRICS (Trip Rate Computer Information System) were extracted from the database and applied pro-rata to the relevant Gross Floor Area or number of houses/ apartments within the development. The estimated total number of vehicular trips generated by the proposed developments is shown in **Table 5.1.** Full details of the TRICS analysis are reproduced in **Appendix B.**

Landuse	Number of Trips			
	AM Arrivals	AM Departures	PM Arrivals	PM Departures
Mixed Development (Houses & Apartments)	17	25	27	24
Cinema	15	12	41	47
Mixed Development- (Currently Under Construction)	9	9	14	13
Creche (Currently Under Construction)	20	20	14	21
TOTAL	**61**	**69**	**96**	**105**

Table 5.1: Predicted Traffic Generated by Proposed Development using TRICS

Due to the location of the proposed developments, it is expected that a significant number of trips will be by public transport, bicycle and on foot. As well as this given the mixed-use nature of the developments some apartments within the development may be occupied by employees of the office/retail space provided within the developments or within the surrounding area where there are a number of employment opportunities. Therefore, the developments' location and the mixed-use nature of the development should encourage non-vehicular trips to/from the developments and alleviate the use of motorised vehicular trips to/from the development.

6 Traffic Forecasting

6.1 Future Baseline Traffic Growth

In the absence of any specific local traffic growth information, it was assumed that baseline traffic will continue to grow at the levels recommended by TII in the Project Appraisal Guidelines (PAG) – Unit 5.3 'Travel Demand Projections' publication (PE-PAG-02017). The Project Appraisal Guidelines describe three levels of transport model functionality. The simple model, which reflects traffic volumes on the basis of link flows, is best suited to the proposed development. Such models do not attempt any route assignment, and hence are applicable for networks where no change in traffic flows will result from a proposed scheme. Growth rates recommended in PAG – Unit 5.3 have been used to determine future traffic flows on the road network within the vicinity of the development. We have used figures from it for the West area which includes Ballinasloe.

The year of opening of the scheme was assumed to be 2025. The central growth factors from the Project Appraisal Guidelines – Unit 5.3 publication were used and are detailed below: -

- TII Link Based Growth Rates: Annual Growth Factor for 2013-2030 = 1.0082 (LVs) and 1.0237 (HVs);
- TII Link Based Growth Rates: Annual Growth Factor for 2030-2050 = 1.0007 (LVs) and 1.0176 (HVs).

The annual growth factors for Heavy Vehicles (HV) were applied to surveyed values of vehicles counted as a worst-case scenario for analysis.

With regards to the volume of traffic using the road, the passenger car is adopted as the standard unit and other vehicles are assessed in terms of PCU's. Cars and Light Goods Vehicles are grouped together as Light Vehicles (LV). All other Goods Vehicles, Buses and Coaches are defined as Heavy Vehicles (HV).

The classification of vehicles in PCU's is shown below:

Vehicle	PCU
Car	1
Light Goods Vehicle	1
Other Goods Vehicle (2 – 3 axle)	1.5
Other Goods Vehicle (4 – 5 axle)	2.3
Bus	2
Cycle	0.4

Table 6.1: Classification of Passenger Car Units

Estimated future baseline traffic flows on the road network in the vicinity of the proposed development were calculated by applying these factors to the 2022 surveyed flows. The resulting projected flows are detailed in the traffic flow diagrams in **Appendix C**.

7 Construction Stage Traffic

7.1 Introduction

As with any construction project, the contractor will be obliged to prepare a comprehensive traffic management plan for the construction phase. The purpose of such a plan is to outline the measures to manage the expected construction traffic activity during the construction period. In the interim, however, this section will provide an overview of the likely volume and routing of construction vehicles, based on a most likely scenario of construction.

7.2 Likely Construction Programme

The site as proposed would be expected to require approximately 3 years to complete from occupation of the site. Activities would include:

- Site Clearance;
- Excavation and Spoil Removal;
- Construction of Substructure;
- Construction of Superstructure; and
- Fitting and finishing.

The site will exhibit distinct characteristics during each stage of the construction programme, with varying demands for site deliveries, spoil removal, and car parking by site operatives.

7.3 Parking and Construction Staff

Parking for site operatives will be a requirement throughout the contract. Given the nature of the development is housing there will be ample room on the site for parking.

A Traffic Management Plan for the construction stage would include parking arrangements and be agreed with Galway County Council prior to commencement of the works on site.

7.4 Deliveries to Site

It is assumed that most construction traffic approaching the site will travel via the R446 and Shopping Centre Road. Again, the Traffic Management Plan for the construction stage would identify haulage routes and restrictions as appropriate in discussion with the Local Authority.

7.5 Spoil Removal

The removal of spoil from the site will occur during the early stages of the construction. Spoil removal would be undertaken by rigid HGV's, similar in size to the concrete delivery vehicles. It is expected that most spoil removal activity will have taken place before larger concrete pours commence, and hence there should be limited overlap of the two activities.

7.6 Mitigation Measures

Construction debris (particularly site clearance, spoil removal and dirty water runoff such as dewatering or 'wash' from concreting activities) can have a significant impact on footpaths and roads adjoining a construction site, if not adequately dealt with. There will, therefore, be a requirement for comprehensive measures as part of the construction management, such as:

- Banksmen controlling access and egress from the site;
- All marshalling areas and site offices will be contained within the site boundary and will therefore have little impact on external roads;
- Wheel washers/judder bars to clean off vehicles exiting the site during spoil removal;
- All loads to be properly stowed and secured with a tarpaulin, where appropriate;
- Routine sweeping/cleaning of the road and footpaths in front of the site; and
- No uncontrolled runoff to the public road from dewatering/pumping carried out during construction activity.
- Hoarding will be provided along the site frontage to protect pedestrians using the footpaths.

The mitigation measures will therefore ensure that the presence of construction traffic will not lead to any significant environmental degradation or safety concerns in the vicinity of the proposed works. Furthermore, it is in the interests of the construction programme that deliveries, particularly concrete deliveries, are not unduly hampered by traffic congestion, and as a result continuous review of haulage routes, delivery timings and access arrangements will be undertaken as construction progresses to ensure smooth operation.

8 Modal Split

The mode share by trip purpose, obtained from the Central Statistics Office (CSO), is shown in **Table 8.1** and illustrated for all trip purposes in **Figure 8.1**.

Car is the dominant mode, accounting for 64% of all trips. Walking provides for a high proportion of trips, amounting to 16% overall mode share.

Mode	All trip Purposes	Home to Education	Home to Work
On Foot	289	285	574
Bicycle	45	24	69
Bus, Minibus or Coach	35	218	253
Train, DART or LUAS	22	17	39
Motorcycle or Scooter	10	0	10
Car Driver	1390	65	1455
Car Passenger	132	765	897
Van	147	0	147
Other (incl. lorry)	10	0	10
Work mainly at or from home	57	0	57
Not Stated	116	46	162
Total	**2253**	**1420**	**3673**

Table 8.1: Mode Share by Trip Purpose (Source: SAPMAP CSO.ie)

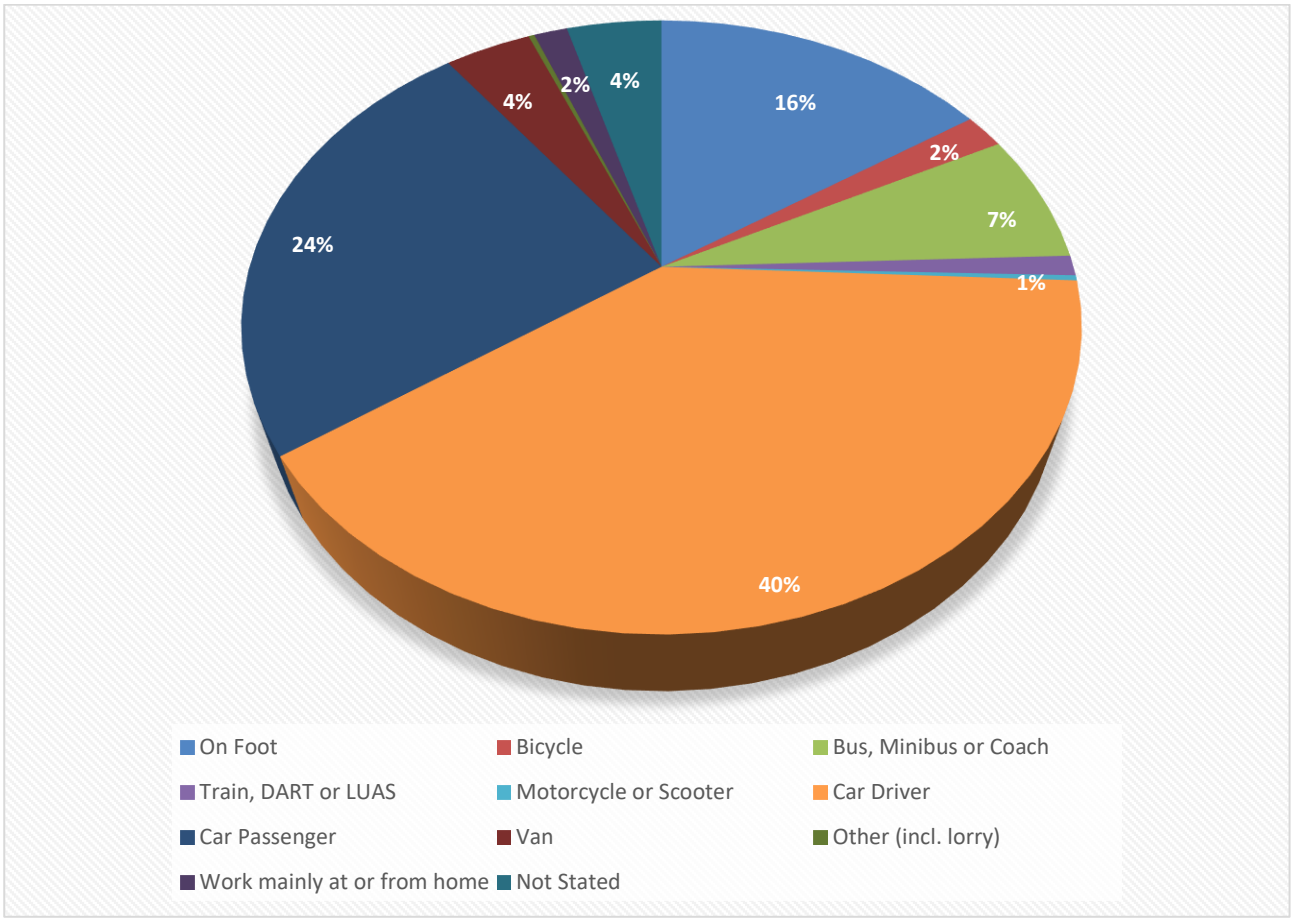

Figure 8.1: Mode Share for all Trip Purposes (Source: SAPMAP CSO.ie)

9 Cumulative Impacts

Pre-planning discussions were held with Galway County Council in relation to the proposed development. During these discussions we were not informed of any potential committed large developments within the vicinity of the proposed development which should be included in our analysis. We have included the development currently under construction (palling ref 19/1978, housing & creche) and the proposed future cinema in the traffic analysis.

10 Trip Assignment and Distribution

The trips generated by the proposed development and committed development were distributed on the study area road network using existing turning proportions observed from the traffic survey at the Grand Canal Roundabout. For the Dunlo Shopping Centre Roundabout we assumed 50% of development traffic both entering/ exiting will use the ALDI entrance to the housing estate and the remaining 50% will take the proposed development access to housing development.

The assumed percentage distributions at the existing junctions and proposed junction in the vicinity of the development site and the resulting AM and PM peak hour traffic turning flows generated by the proposed development are detailed in the diagrams presented in **Appendix C.**

11 Assessment and Road Impact

11.1 Description

The impact on the local road network has been assessed by examining the projected traffic flows on the local road network both 'with' and 'without' the proposed development in place. The morning peak period and the evening peak period have been examined in order to assess the busiest case in terms of local traffic on the road network and traffic generated by the proposed development.

11.2 Junction Analysis

Capacity analysis was carried out using the TRL software package ARCADY for both junctions.

These junctions are shown in Figure 11.1 and were analysed for the following traffic flow scenarios:

- 2025 Opening Year AM and PM peak hour flows without proposed development in place;
- 2025 Opening Year AM and PM peak hour flows with proposed development in place;
- 2030 Opening Year + 5 Years AM and PM peak hour flows without proposed development in place;
- 2030 Opening Year + 5 Years AM and PM peak hour flows with proposed development in place.
- 2040 Opening Year + 15 Years AM and PM peak hour flows without proposed development in place;
- 2040 Opening Year + 15 Years AM and PM peak hour flows with proposed development in place.

The existing junctions were also analysed in the current year, 2022, without the development in place.

Estimated turning movements for each of the above scenarios were calculated by summing the predicted generated flows and the expanded baseflows. Total traffic turning flow diagrams for each analysis scenario have been reproduced in the traffic flow diagrams in **Appendix C**. The following sections summarise the findings of the junction capacity modelling for each of the junctions within the study area.

ARCARDY Analysis Note:
The ratio of flow to capacity (RFC) is an indicator of the likely performance of a junction under design year loading. Due to site-to-site variation, there may be a standard error of prediction of the entry capacity by the formulae of + or - 15% for any site. Thus, queuing should not occur in the various turning movements in the chosen design year peak hour in 5 out of 6 peak hour periods or sites if a maximum RFC of about 85% is used.

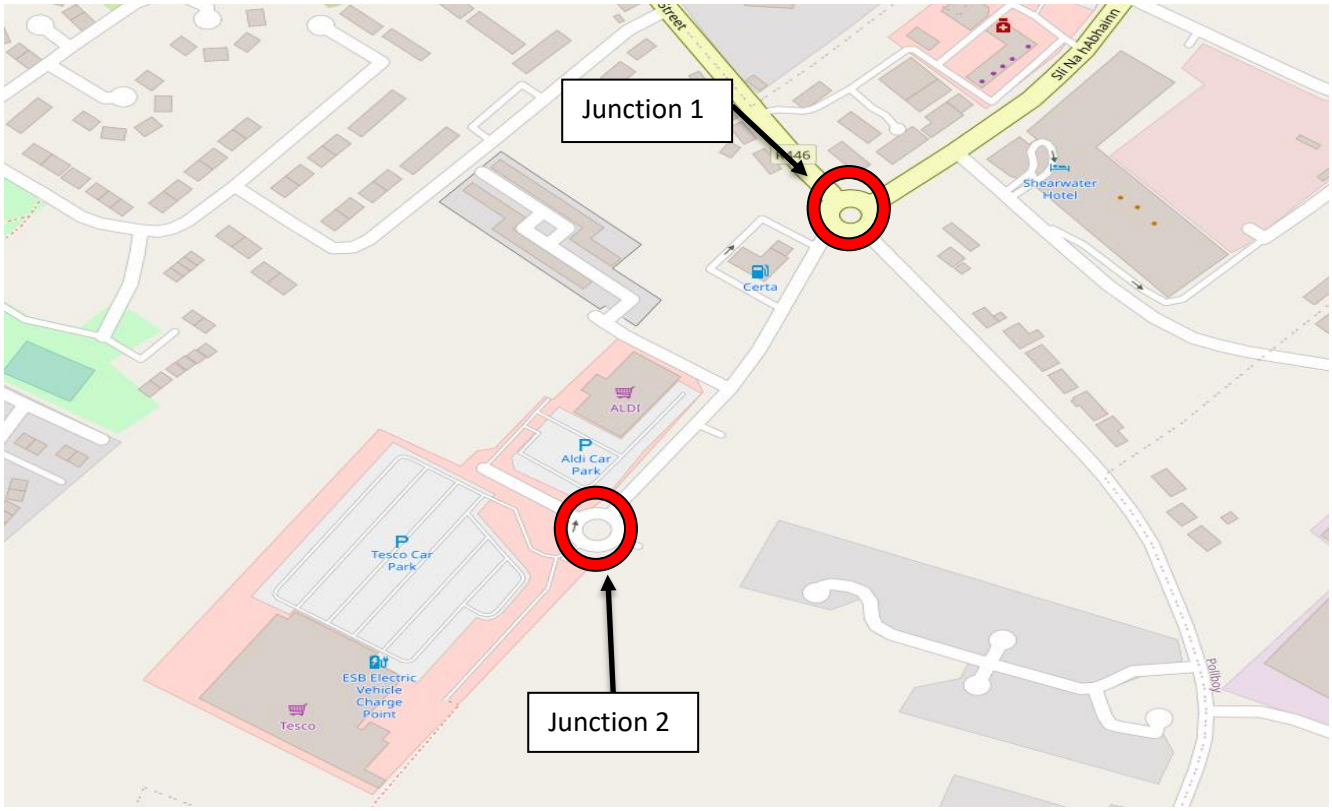

Figure 11.1: Identified Junctions for Analysis (© OpenStreetMap contributor)

11.2.1 Grand Canal Roundabout (Junction 1)

The results of the ARCADY analysis for the junction have been summarised in the tables overleaf and are reproduced in full in **Appendix D1**.

Approach Arm/Turning Movement	RFC (%)	Delay (s)	Max. Queue (PCU)
	Without Dev.	Without Dev.	Without Dev.
R446 Townparks	28.7	3.560	0.7
L4602 Dunlo Quay	16.9	4.462	0.2
Dunlo Shopping Centre	21.8	5.343	0.3
R446 Harbour Road	27.1	3.275	0.4

Table 11.1: 2022 AM Peak Period – Grand Canal Roundabout

Approach Arm/Turning Movement	RFC (%)	Delay (s)	Max. Queue (PCU)
	Without Dev.	Without Dev.	Without Dev.
R446 Townparks	35.0	4.042	0.7
L4602 Dunlo Quay	29.2	5.434	0.5
Dunlo Shopping Centre	32.2	6.600	0.7
R446 Harbour Road	37.3	3.638	0.6

Table 11.2: 2022 PM Peak Period – Grand Canal Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
R446 Townparks	30.4	32.7	3.797	3.924	0.5	0.5
L4602 Dunlo Quay	19.3	19.8	4.678	4.574	0.2	0.3
Dunlo Shopping Centre	22.9	29.5	5.267	5.794	0.3	0.5
R446 Harbour Road	28.8	30.4	3.314	3.576	0.4	0.7

Table 11.3: 2025 AM Peak Period – Grand Canal Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
R446 Townparks	36.0	41.8	4.145	4.617	0.6	0.7
L4602 Dunlo Quay	29.5	33.1	5.409	6.243	0.4	0.7
Dunlo Shopping Centre	36.2	47.3	6.725	7.847	0.5	0.7
R446 Harbour Road	38.4	44.0	3.954	4.421	0.6	0.9

Table 11.4: 2025 PM Peak Period – Grand Canal Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
R446 Townparks	34.7	36.4	3.964	4.183	0.6	0.6
L4602 Dunlo Quay	21.4	22.9	5.093	5.311	0.3	0.4
Dunlo Shopping Centre	27.1	33.9	5.660	5.967	0.4	0.4
R446 Harbour Road	34.2	35.6	3.533	3.609	0.5	0.7

Table 11.5: 2030 AM Peak Period – Grand Canal Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
R446 Townparks	42.4	47.6	4.888	5.501	1.2	1.2
L4602 Dunlo Quay	35.7	38.9	6.119	6.672	0.6	0.6
Dunlo Shopping Centre	42.2	53.2	8.002	8.211	0.7	0.9
R446 Harbour Road	46.3	49.9	4.209	4.704	0.8	1.0

Table 11.6: 2030 PM Peak Period – Grand Canal Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
R446 Townparks	43.3	44.3	4.616	5.188	0.9	0.9
L4602 Dunlo Quay	28.4	30.0	5.715	6.326	0.4	0.4
Dunlo Shopping Centre	32.8	39.1	6.261	6.847	0.6	0.6
R446 Harbour Road	40.6	43.7	4.195	4.195	0.8	0.9

Table 11.7: 2040 AM Peak Period – Grand Canal Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
R446 Townparks	51.9	58.4	5.736	6.932	1.2	1.8
L4602 Dunlo Quay	43.8	49.5	8.074	9.192	1.0	1.2
Dunlo Shopping Centre	52.2	63.3	9.194	10.248	1.0	1.4
R446 Harbour Road	55.2	59.8	5.570	6.293	1.4	1.5

Table 11.8: 2040 PM Peak Period – Grand Canal Roundabout

This analysis demonstrates that the existing roundabout junction in its current format is predicted to operate below capacity both with and without proposed development up to 2040. The analysis predicts that by 2040 with development in place the junction would be operating at 44.3% capacity in the AM peak hour and 63.3% during the PM peak hour.

11.2.2 Dunlo Shopping Centre Roundabout (Junction 2)

The results of the ARCADY analysis for the junction have been summarised in the tables overleaf and are reproduced in full in **Appendix D2**.

Approach Arm/Turning Movement	RFC (%)	Delay (s)	Max. Queue (PCU)
	Without Dev.	Without Dev.	Without Dev.
Dunlo Shopping Centre Entrance	27.5	5.271	0.4
Housing Development	0	0	0.0
Tesco Entrance	19.6	7.646	0.2
Aldi Entrance	3.1	3.132	0.0

Table 11.9: 2022 AM Peak Period – Dunlo Shopping Centre Roundabout

Approach Arm/Turning Movement	RFC (%)	Delay (s)	Max. Queue (PCU)
	Without Dev.	Without Dev.	Without Dev.
Dunlo Shopping Centre Entrance	26.5	5.181	0.4
Housing Development	0	0	0.0
Tesco Entrance	28.2	7.838	0.4
Aldi Entrance	4.3	3.079	0.1

Table 11.20: 2022 PM Peak Period – Dunlo Shopping Centre Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
Dunlo Shopping Centre Entrance	30.4	36.3	5.244	6.110	0.5	0.7
Housing Development	0	3.8	0	3.868	0.0	0.1
Tesco Entrance	21.7	21.7	7.527	7.915	0.2	0.3
Aldi Entrance	3.3	6.9	3.180	3.369	0.1	0.2

Table 11.11: 2025 AM Peak Period – Dunlo Shopping Centre Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
Dunlo Shopping Centre Entrance	26.5	38.5	5.109	6.222	0.4	0.7
Housing Development	0	5.7	0	3.828	0.0	0.1
Tesco Entrance	29.4	32.0	7.811	8.513	0.4	0.4
Aldi Entrance	4.7	10.2	3.283	3.582	0.1	0.1

Table 11.12: 2025 PM Peak Period – Dunlo Shopping Centre Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
Dunlo Shopping Centre Entrance	32.5	40.4	5.667	6.175	0.6	0.6
Housing Development	0	3.6	0	3.849	0.0	0.0
Tesco Entrance	24.0	24.6	7.536	7.979	0.4	0.3
Aldi Entrance	3.6	7.2	3.152	3.279	0.0	0.1

Table 11.13: 2030 AM Peak Period – Dunlo Shopping Centre Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
Dunlo Shopping Centre Entrance	31.4	40.9	5.471	6.502	0.6	0.8
Housing Development	0	6.2	0	3.945	0.0	0.1
Tesco Entrance	34.9	34.5	8.074	8.571	0.4	0.4
Aldi Entrance	5.5	11.1	3.452	3.795	0.1	0.2

Table 11.14: 2030 PM Peak Period – Dunlo Shopping Centre Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
Dunlo Shopping Centre Entrance	40.8	47.7	6.064	7.186	0.7	1.0
Housing Development	0	3.6	0	4.181	0.0	0.1
Tesco Entrance	27.6	30.4	8.282	8.298	0.3	0.4
Aldi Entrance	4.9	8.0	3.389	3.434	0.1	0.1

Table 11.15: 2040 AM Peak Period – Dunlo Shopping Centre Roundabout

Approach Arm/Turning Movement	RFC (%)		Delay (s)		Max. Queue (PCU)	
	Without Dev.	With Dev.	Without Dev.	With Dev.	Without Dev.	With Dev.
Dunlo Shopping Centre Entrance	37.6	47.5	5.927	7.531	0.6	0.9
Housing Development	0	6.3	0	3.866	0.0	0.1
Tesco Entrance	38.8	41.2	8.486	9.306	0.6	0.5
Aldi Entrance	7.1	12.6	3.461	3.961	0.1	0.2

Table 11.16: 2040 PM Peak Period – Dunlo Shopping Centre Roundabout

This analysis demonstrates that the existing roundabout junction in its current format is predicted to operate well below capacity both without and with proposed development in place up to 2040. The analysis predicts that by 2040 with development in place the junction would be operating at 47.7% capacity in the AM peak hour and 47.5% during the PM peak hour.

11.3 Analysis Summary

The two roundabouts that were analysed are predicted to operate within the maximum desirable capacity (85%) with all development in place meaning the proposed development will have minimal impact on the junctions.

12 Road Safety

No change to the existing road network is proposed.

The design team will ensure adequate sightlines are achieved and pedestrian and vulnerable users are adequately catered for.

A Road Safety Audit was carried out by CST Group as part of this planning application. Recommendations made as part of this Road Safety Audit have been included within the design submitted with this application.

13 Internal Layout

The proposed development consists of residential development (c. 15,992 m^2 gross floor area), consisting of 165 No. residential units and all associated and ancillary site development and infrastructural works, hard and soft landscaping and boundary treatment works.

The prospective SHD application also includes the proposed development of outdoor play areas, site landscaping, vehicular and pedestrian access, site services and associated site development works.

It is stated that 163 car parking spaces are proposed for the apartments and 118 in-curtilage car parking spaces for housing units.

The road layout was developed with the road objective through the southern portion of the client's lands in the 2015-2021 development plan in mind. The Dunlo Shopping Centre Roundabout has 2 arms that can service the development and road links from both of these are developed to connect to the east-west road referred to above thereby give 2 options to enter/ leave the estate.

14 Parking

14.1 Car Parking

The Draft Galway County Development Plan 2022 – 2028 outlines the car parking standards for Ballinasloe, in which the site is located. As such it sets out the following Car Parking Standards:

Type of Development	Car Parking Standard	GFA (m^2) of Dev. / No. of Res. Units within Dev.	Parking Standard	Provision
Apartments/ Duplexes (1-3 bed)	1.5 spaces per Unit	106 Units	159	163
Houses (1-3 bed)	1.5 spaces per Unit	59 units	89	118 (in-curtilage)
TOTAL			**248**	**281**

Table 14.1: Draft Galway County Development Plan 2022 – 2028 Car Parking Standards

The parking proposal for the proposed development is greater than the requirements of the Draft Galway County Development Plan 2022 – 2028 (33 additional spaces). It is noted that a minimum of 8 of the apartments/ duplex parking spaces will be allocated for wheelchair accessible use.

14.2 Bicycle Parking

The Draft Galway County Development Plan 2022-2028 sets out the following Minimum Cycle Parking Standards for Galway:

Type of Development	Bicycle Parking Standard	No. of Dwellings/ Bed Space	Min. Parking Standard	Provision
Upper Floor Apartments/ Duplexes	1.5 per Dwelling	42 Dwellings	63	99
Upper Floor Apartments/ Duplexes	1 space per Bed Space	85 Bed Spaces	85	

Table 14.2: Draft Galway Development Plan 2022-2028 Bicycle Parking Standards for Proposed Development

Draft Galway County Development Plan 2022-2028 requires that a minimum of 85 spaces be provided for cyclists at the development as shown in **Table 14.2** above. It is proposed that 99 spaces shall be provided. Cycle parking facilities are illustrated on the architect's site plans, submitted with this application.

15 Public Transport

To ensure future transport sustainability and to endeavour to make new developments as accessible as possible to travel by other modes of transport, an assessment has been made of the proposed and existing pedestrian, cyclist and public transport facilities.

15.1 Public Transport

High frequency public transport is available in the area of the development, as described below.

15.1.1 Train Services

Ballinasloe Train Station is very accessible from the site and there are regular train services going from Dublin to Galway and Galway to Dublin which pass through Ballinasloe Train Station.

The site is located approx. 2km from Ballinasloe Train Station making it a 25-minute walk and is accessible by public transport and non-car-based transport. Irish Rail connects Ballinasloe to the rest of the country and is a reliable and efficient service running throughout Ireland.

15.1.2 Bus Services

The local area surrounding the development is served by existing Bus Éireann services. There is a bus stop located on Dunlo street, just north of the development. The Galway to Dublin and Dublin to Galway bus routes pass through Ballinasloe like the train station and operate on a regular basis.

Other bus routes (by private operators) may be available at other stops in the vicinity of the site. The site is in a prime location within Ballinasloe for availing of frequent and regular bus services.

15.1.3 Taxi Services

There is a constant flow of taxis in Ballinasloe collecting and depositing passengers. This will facilitate taxi use by providing a safe and convenient means of accessing this form of transport. The objective is to encourage lift sharing in taxis to help reduce the demand on parking and congestion at peak times.

16 Pedestrian/ Cyclists

16.1 Pedestrians

As the potential for pedestrian trips to and from the development is moderate, it is important that the development is properly integrated into the existing footpath network. There are footpaths on both sides of all roads surrounding the site including the R446, the L4602 and the road leading into Dunlo Shopping Centre.

The development is less than a 5-minute walk from the Main Street in Ballinasloe.

In addition to direct pedestrian routes from the development to/from surrounding areas, the pedestrian network also provides routes to/from surrounding public transport network, including the nearby bus stops on Dunlo Street.

16.2 Cycling

Cycling is to be significantly encouraged as part of the development. There are currently cycle lanes and designated routes for the use of cyclists in the surrounding area.

The development will facilitate the provision of a cycle lane along the main internal development roads.

The development will provide 99 bike spaces for the apartments/ duplexes.

The Ballinasloe Local Transport Plan aspires to bring about improvements which are able to connect together to create a new “east-west” cycle link through the town, such that the road networks forming the link are sufficiently “cycle friendly” to actively encourage cycle travel between the different areas of the town.

17 Access for People with Disabilities

Parking facilities for disabled users are provided throughout the apartment parking in close proximity to the apartments within the development and should be provided in line with the Draft Galway County Development Plan 2022 – 2028. Disabled friendly accesses to the proposed development are designed to the Technical Guidance Document M of the Building Regulations.

18 Mitigation

No mitigation required.

19 Summary and Conclusion

- Planning permission is being sought for a residential development in Dunlo, Ballinasloe, Co Galway.

- A manual classified traffic count was carried out on the following junction
  - Junction 1: Grand Canal Roundabout

- The surveys found that the mean morning peak hour traffic flow occurred between 10:15am and 11:15am and the evening peak hour occurred between 4:45pm and 5:45pm.

- Capacity analysis was carried out on the following junctions:
  - Junction 1: Grand Canal Roundabout
  - Junction 2: Dunlo Shopping Centre Roundabout

- In order to estimate the likely volumes of traffic that will be generated by the proposed and committed development, trip rates recommended by TRICS (Trip Rate Computer Information System) were extracted from the database and applied pro-rata to the number of dwellings/ Gross Floor Area of the development.

- Predicted development traffic was added to the existing flows at the junctions as well as traffic growth figures up to a design year of 2040.

- The analysis of both roundabouts demonstrates that the existing priority roundabouts are predicted to operate below desirable maximum capacity (85%) for uncontrolled junctions with all development in place for all future years.

APPENDIX A

TRAFFIC SURVEY RESULTS

APPENDIX B

TRICS ANALYSIS

APPENDIX C

TRAFFIC FLOW CALCULATIONS

APPENDIX D1: GRAND CANAL ROUNDABOUT

(ARCADY OUTPUTS)

APPENDIX D2: DUNLO SHOPPING CENTRE ROUNDABOUT

(ARCADY OUTPUTS)