



Contact us
+353 1 5242060
info@ors.ie
www.ors.ie

2023

**Proposed Social Housing Scheme,
Ballyburke Road, Co. Galway
Traffic and Transport Assessment**

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Traffic and Transport Assessment

Document Control Sheet

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Executive Summary

ORS has been commissioned by Galway City Council to undertake a Traffic and Transport Assessment (TTA) of a proposed Neighbourhood Centre & Social Housing Scheme in Ballyburke Road, Knocknacarra, Co. Galway. This document forms part of the planning application and should be read in conjunction with all drawings, reports, specifications, and particulars associated with the planning application.

The report will examine existing and proposed traffic conditions and transport activity to determine the effects on the surrounding road network by the proposed development.

The proposed development encompasses the construction of 84No. social units, distributed as follows: 71No. apartments spread across four blocks, and 13No. terraced family units in two blocks. This mix includes 1, 2, and 3-bedroom apartments, as well as 3-bedroom terraced houses. Additionally, the development will incorporate all associated services, landscaping, and site works. Among the proposed apartments, 40% are specifically designed to be age-friendly/universally accessible. The development will also incorporate essential amenities as required by the Galway City Development Plan along with a central plaza space and a landscaped amphitheatre.

The layout of the site is in harmony with the established pattern of development in the area. The building lines of the proposed apartment blocks to the south of Maoilin and Drisin align with the existing building lines of these estates. To facilitate access to the site, three new entrances along the southern access road will be established, along with three new links to the north of the site connecting to neighbouring housing estates. 1No. access road is already established at the southwest corner of the site. Car sharing facilities are also proposed for the site which can potentially be increased depending on demand in the area.

Communal parking facilities will be available throughout the site, offering a total of 118No. car parking spaces. Of these, 7No. spaces are designated for mobility-impaired users. Additionally, provisions will be made for ducting to accommodate EV charging stations across the site, ensuring readiness for future electric vehicle charging needs. Furthermore, the proposed plan will include provisions for car-sharing facilities, with flexibility to increase capacity based on the demand in the area.

The site also incorporates safe and enclosed bicycle storage units in each apartment block. Furthermore, a series of site-specific public open space areas have been proposed, with communal visitor cycle parking facilities available adjacent to all apartment blocks and short-term cycle parking spaces available for sole use by the creche.

ORS engaged with the Galway City Council to scope the requirements for the Traffic Assessment, and it was agreed that this report would focus on 2No. junctions along Ballymoneen Road in order to assess the impact of the proposed residential development on the road network; the Blake Roundabout, a 4-arm roundabout south of the site, and the priority T - Junction between Ballyburke and Ballymoneen Road.

Automatic junction turning counts (JTC) were carried out on Wednesday 27th September 2023

at the junctions mentioned above by a third-party company named IDASO. The traffic counts encompass all movements along the junction and are assumed to be representative of a normal weekday.

The traffic profile likely to be generated by the proposed residential development was obtained by the Trip Rate Information Computer System (TRICS) database and split through the junctions in proportion to the existing traffic flows measured on the traffic counts. The Galway County Council planning website was consulted to include proposed developments in the area that will affect the road network in the vicinity of the proposed residential development.

The expected increase in traffic generated by the proposed residential housing development falls above the 5% TII threshold at the proposed site junction, hence analysis is required. The junctions were tested using PICADY (Priority Intersection Capacity and Delay) and ARCADY (Assessment of Roundabout Capacity and Delay) software for the year of opening, 5-year, and 15-year future design scenarios. Appropriate TII Traffic Growth Factors for Co. Galway were applied to the traffic flows to ensure that the future growth of the road network has been considered in the analysis.

Upon building the traffic model for the proposed development, junction capacity analysis was carried out on the existing junctions to assess the potential worst-case scenarios associated with the development. Ballymoneen Road has a 12-hour traffic volume of over 5,000 vehicles recorded. The trip generation associated with housing development is expected to increase the RFC by a maximum of 18% of the capacity of the priority junction and by a maximum of 3% of the roundabout capacity.

Following the results of the traffic analysis and the trip generation associated with the proposed residential development, it can be confirmed that the proposed development will not negatively affect the functionality of the surrounding road network for all future design year scenarios.

1 Introduction

The purpose of this Traffic and Transport Assessment (TTA) is to address the traffic and transport related issues that may arise in relation to the proposed residential housing development in Ballyburke Road, Co. Galway. This document will form part of the planning application.

This report will follow the principles set out in the TII Publication PE-PDV-02045 'Traffic and Transport Assessment Guidelines' and the Galway City Development Plan 2023 - 2029 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.

1.1 Objectives of this TTA

The objective of this report is to assess the impact the proposed residential development will have on the surrounding road network, with the assessment focusing primarily on 2No. key junctions in the vicinity of the site; the Blake Roundabout and the junction between Ballyburke and Ballymoneen Road.

The selected junctions are illustrated in **Figure 1.1** below.

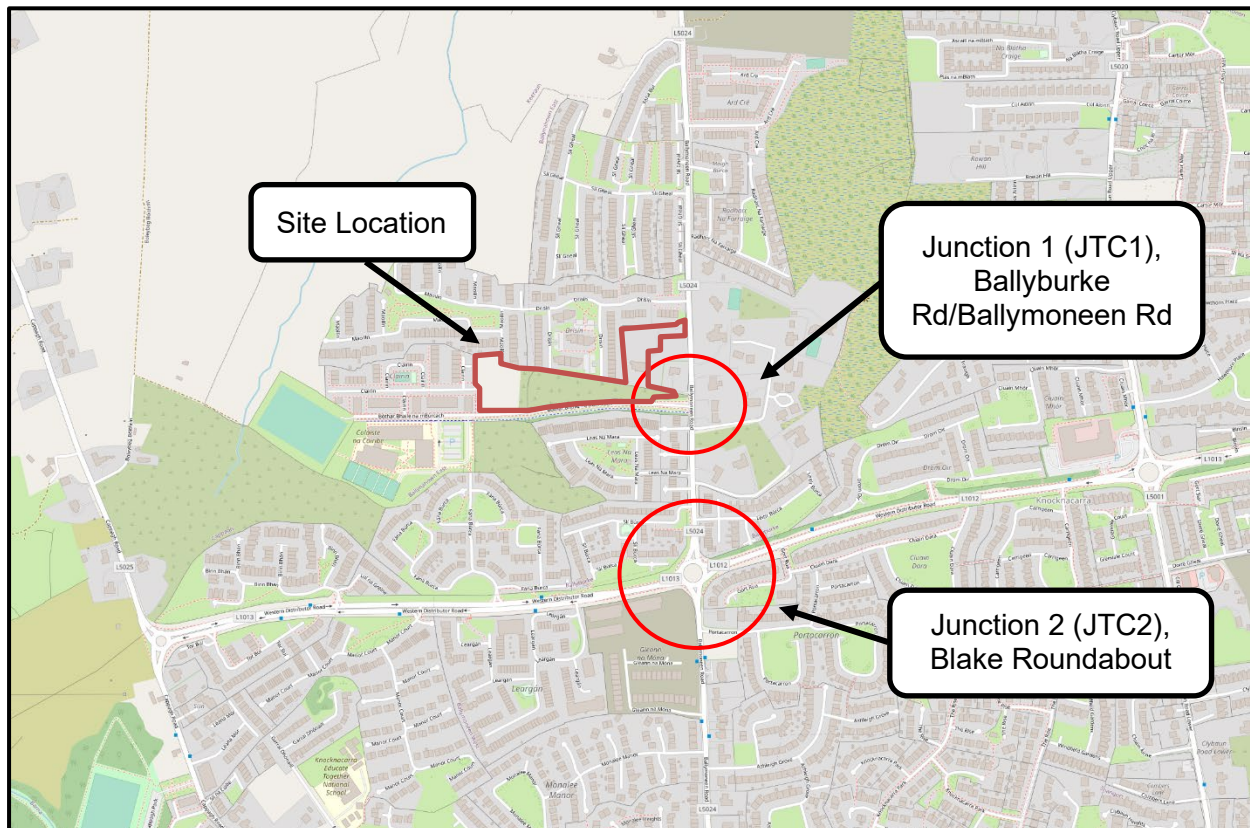


Figure 1.1: Location of Junctions Analysed, Galway (Source: OpenStreetMap)

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;
- The potential effect on the surrounding road network due to the anticipated traffic generated by the proposed residential development;
- Review of the committed developments adjacent to the proposed development;
- The pedestrian, cyclist and public transport connectivity in the vicinity of the site; and
- The proposed parking requirements for the development.

1.2 Methodology

The TII Publication PE-PDV-02045 sets out the methodology to be followed in any given TTA. 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) have been undertaken by IDASO on Wednesday 27th September 2023 at Junction 1 (Ballyburke Rd/Ballymoneen Rd) and Junction 2 (Blake Roundabout) as these junctions are situated near the site and in accordance with the agreement made with Galway City Council.
- Traffic distribution splits on the public road network could be determined from the traffic counts and applied to the anticipated future generated traffic as a result of the proposed development.
- The predicted traffic to be generated by the proposed development was obtained using TRICS (Trip Rate Information Computer System) traffic generation software for similar developments to ensure a worst-case scenario was incorporated into the assessment.
- The effect caused by the proposed development in the neighbouring junctions could be calculated using the existing traffic flows and the expected additional traffic to be generated by the development.
- The effect the increase in capacity will have on the road network was assessed against the TII threshold and it was found that the subject junctions fall below the threshold of 5% increase in traffic.
- The junctions were modelled using the Transport Research Laboratory (TRL) software *Junctions 10* (PICADY and ARCADY) for future design years using Central Sensitivity Growth Factors for Co. Galway to obtain the existing and proposed traffic profiles at the junctions analysed for the year of opening, 5-year and 15 years after the completion of the proposed development.
- Parking requirements were assessed against standards set in Table 15.5 of the Galway City Development Plan 2023 - 2029.

2 The Proposed Development

2.1 Development Site Location

The proposed residential development is situated on an undeveloped greenfield site currently under the ownership of Galway City Council. There is an existing single storey dwelling on one portion of the site which is currently occupied. The site is positioned on the southwestern side of Galway city, close to the R336 and R337.

To the north of the site lie the residential estates of Drisin and Maoilin. Positioned towards the west is the recently completed housing scheme, Clairin, and directly south of this location stands the prominent Colaiste na Coiribe, a large secondary school. Adjacent to the proposed site, there is a roadway that connects to the Ballymoneen Road, serving as the sole existing link and access route to both the school and the Clairin estate. South of this roadway, there is an unoccupied site, earmarked for a future primary school, and southeast of it sits the residential estate of Leas na Mara. The primary access point from the Ballymoneen Road is situated to the east, alongside a solitary dwelling on an individual site.

Exiting the site, vehicles will utilise JTC 1, which is evaluated in this report. It is anticipated that 65% of the traffic during AM and 74% during PM will pass through JTC 2, as shown in **Figure 2.1**. Conversely, 85% of the traffic arriving at the site during AM and 90% arriving during PM is expected to approach from the south, once again utilising JTC 2.

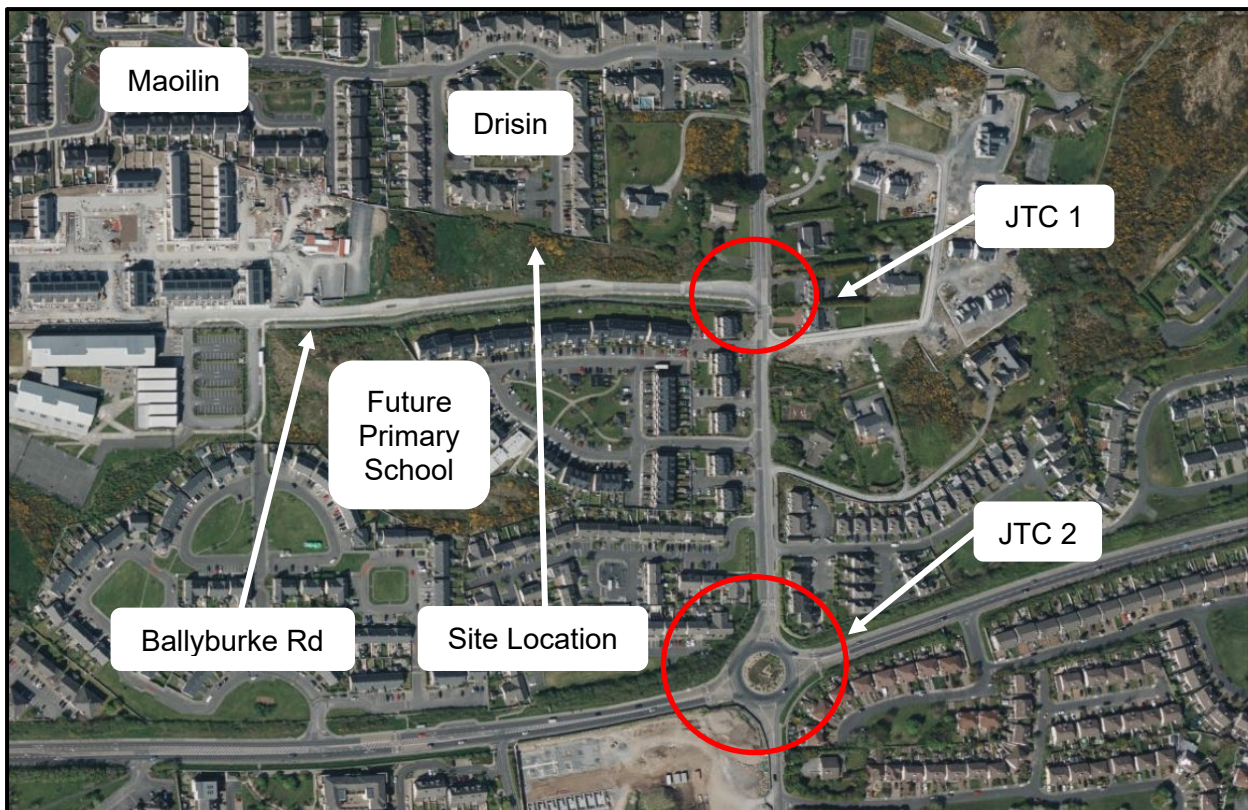


Figure 2.1: Site Location Map and Surroundings (Source: Bing Maps)

2.2 Existing Premises and Land use

The Galway City Development Plan (GCDV) 2023 – 2029 was consulted to determine the future zoning within and around the proposed development. The site, approximately 1.8ha land, is currently zoned as R Residential with the objective of facilitating residential development and associated support amenities, prioritising the preservation of existing residential quality while contributing to sustainable neighbourhood environments. Additionally, the red star designation indicates a need for a neighbourhood center, justifying the commercial aspect integrated into the proposed development.

Figure 2.2 below shows the land use zoning map provided in the GCDV.

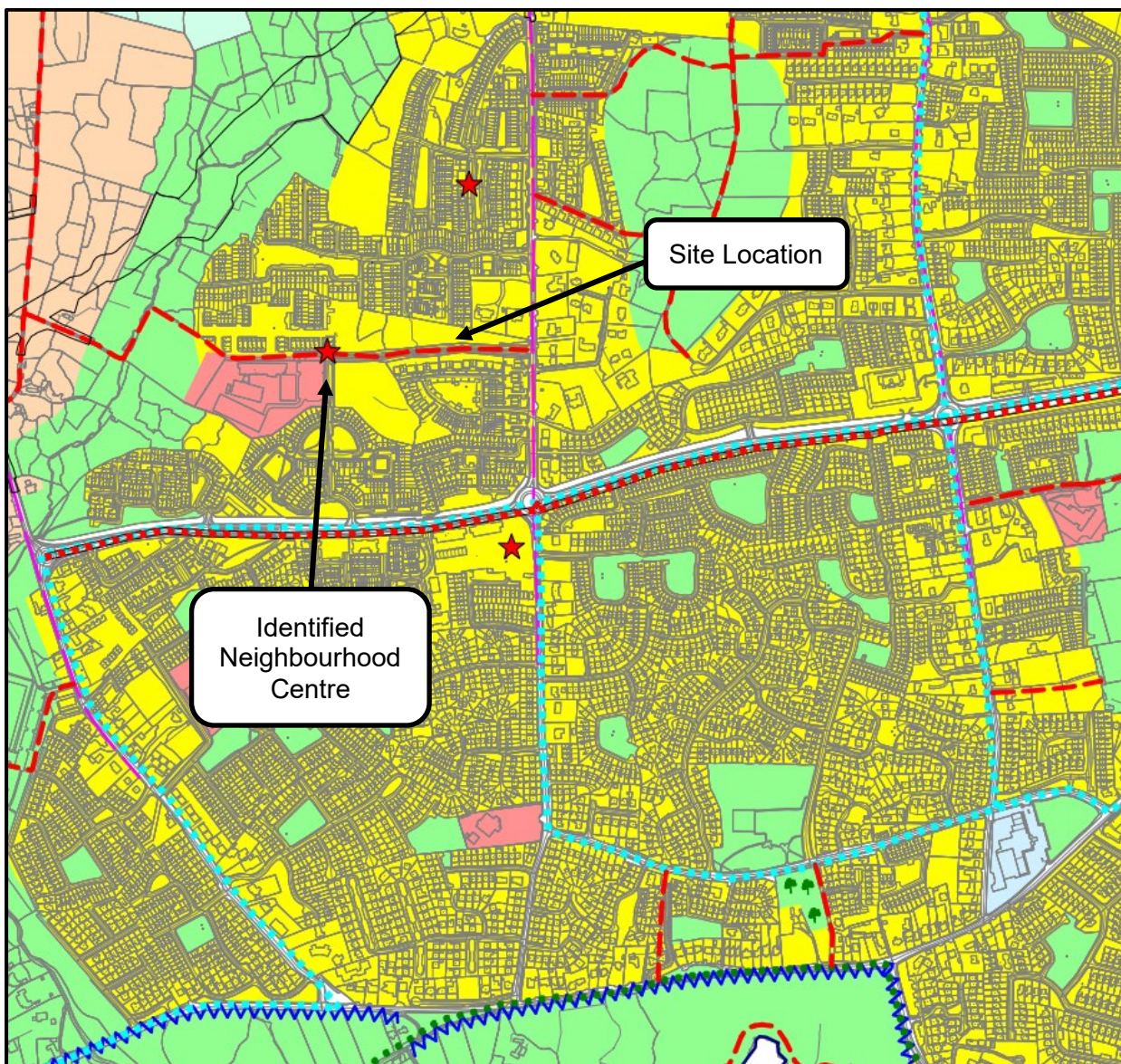


Figure 2.2: Land Use Zoning Objectives Map (Source: Galway City Development Plan 2023-2029)

2.3 Planning History

There are no previous planning applications relevant to the site.

2.4 Description of the Proposed Development

The proposed development put forward by Galway City Council encompasses a mixed residential layout in alignment with GCC's housing objectives and in compliance with the Galway City Housing Strategy and policies. It encompasses a total of 84No. social residential units, consisting of 71No. apartments distributed across four blocks, and 13No. terraced family units in two blocks. This mix includes 1, 2, and 3-bedroom apartments, as well as 3-bedroom terraced houses. Additionally, the development will incorporate all associated services, landscaping, and site works. Within the proposed apartments, 40% are expressly designed to be age-friendly and universally accessible. These units, tailored to tenants with specific mobility requirements, will benefit from the proximity to local services.

The development's intention is to incorporate essential amenities such as local shops, a café, a creche, a central plaza space, and a landscaped amphitheatre. This ensemble of facilities is designed to form a cohesive "Neighbourhood Centre" within the development.

In accordance with the Galway City Development Plan, provision will be made for a creche within the development. A designated creche space has been allocated to the ground floor of Block 02, encompassing a total gross internal area of 213 sqm. Within this space, there is the potential for an internal play area measuring 150 sqm. Additionally, an external play area of 91 sqm is proposed at the front of the building. This configuration will allow the creche to accommodate and care for up to 40 children.

The project involves the demolition of an existing dwelling, allowing for the consolidation of Galway City Council's land holdings to facilitate this new housing development. Parking spaces are provided throughout the site, meeting the requirements of the development plan, totalling 118No., which includes 7No. accessible parking spaces. Additionally, provisions for ducting to accommodate future EV charging stations are included across the site for electric vehicle charging needs.

Each apartment block features secure enclosed bicycle storage units in accordance with development plan standards, with communal visitor cycle parking located adjacent to all apartment blocks. In total, there will be 127No. sheltered spaces and 36No. visitor spaces. An additional 10No. short-term spaces, exclusively for use by the creche, will also be provided.

Access to the site will be facilitated through the existing Ballyburke Road located to the south of the site. The incorporation of a local center element is anticipated to attract existing residents from neighbouring housing developments. To enhance connectivity, an increase in permeability is proposed across the site, achieved by integrating proposed local roads with the adjacent estates, namely Clairin, Maoilin, and Drisin. Consequently, three additional internal links are suggested to Drisin and Maoilin in the north, and one to Clairin in the west. Moreover, pedestrian and cycle links are outlined for the existing Ballymoneen Road to the east. The plan also includes pedestrian routes within the housing estates to the north, as well as to the school situated at the southwest corner of the site and the future proposed primary school.

The proposed layout is illustrated in **Figure 2.3** below. The proposed vehicular and pedestrian links are shown in **Figure 2.4**

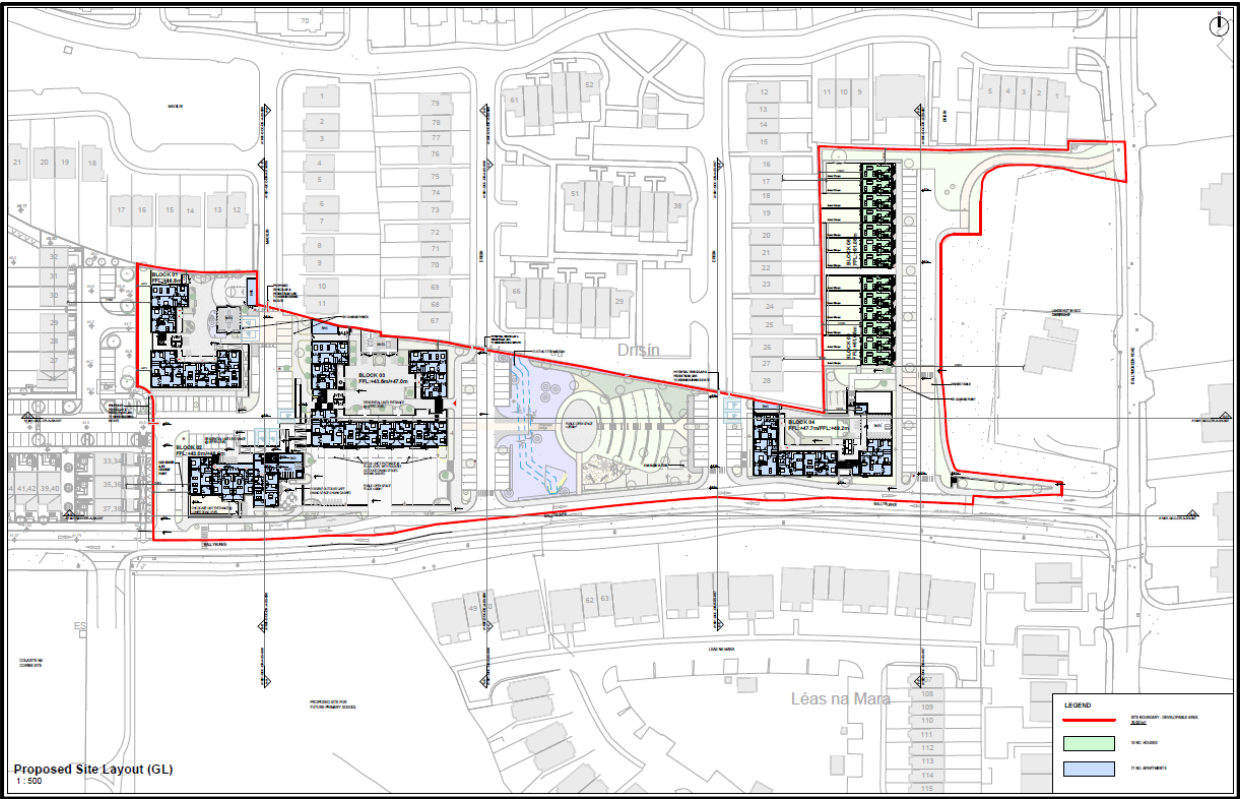


Figure 2.3: Proposed Site Layout (Source: Galway City Council)

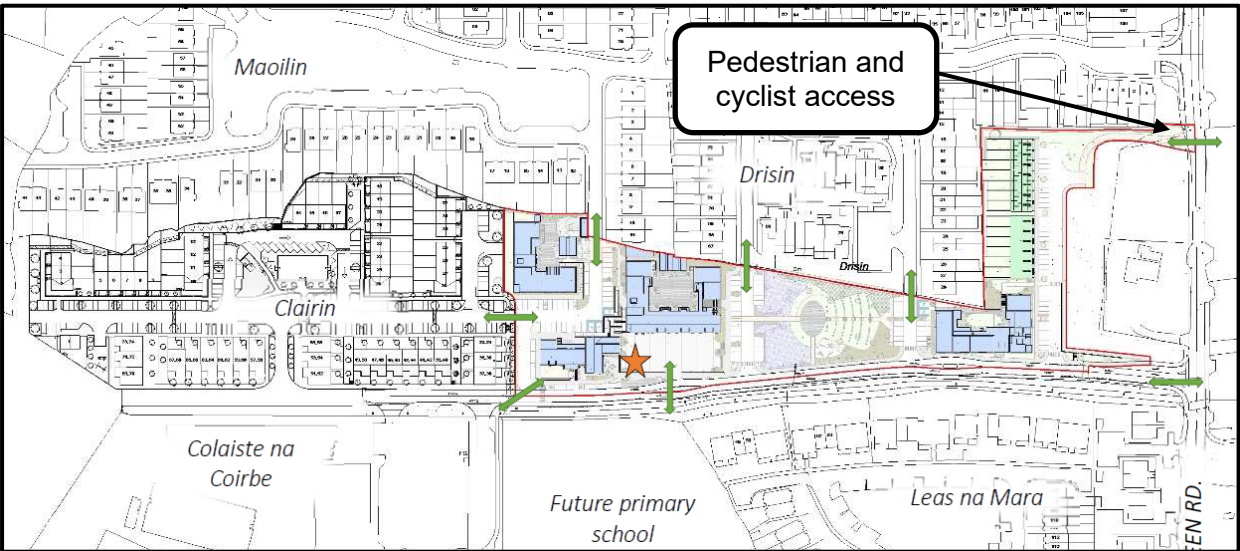


Figure 2.4: Vehicular, pedestrian and cycling links (Source: Galway City Council)

2.5 Accessibility and Parking

The proposed housing development is situated in Knocknacarra, an outer western suburb of Galway city known for anticipated significant settlement growth outlined in the city's development plan. The proposed N6 Galway City Ring Road Scheme (please refer to **Figure 2.5** below), along with planned investments in other Galway Transport Strategy (GTS) 2016-2036 initiatives, if implemented, will further enhance accessibility and connectivity in the area.

The GTS envisions a robust public transport network serving main corridors and destinations across the city and its surroundings, including Knocknacarra. Moreover, the GTS prioritises the enhancement of cycling and walking infrastructure in the city and its environs. Ballymoneen Road is recognised as a route in need of enhancements for cyclists and pedestrians, prioritising accessibility, safety and convenience. The Galway City Development Plan 2023-2029 identifies the importance of Ballymoneen Road as part of the Western Distributor Road that connects to the N59 and the N6. Therefore, it proposes to enhance the Ballymoneen Road by providing cycle lanes, footpaths, bus priority measures, landscaping and public lighting along its length.

Galway City Council has unveiled a series of planned improvements, including the implementation of traffic calming measures along the Ballymoneen Road stretch, spanning from the Western Distributor Road to the Shangort Road and the signalisation of Blake roundabout.

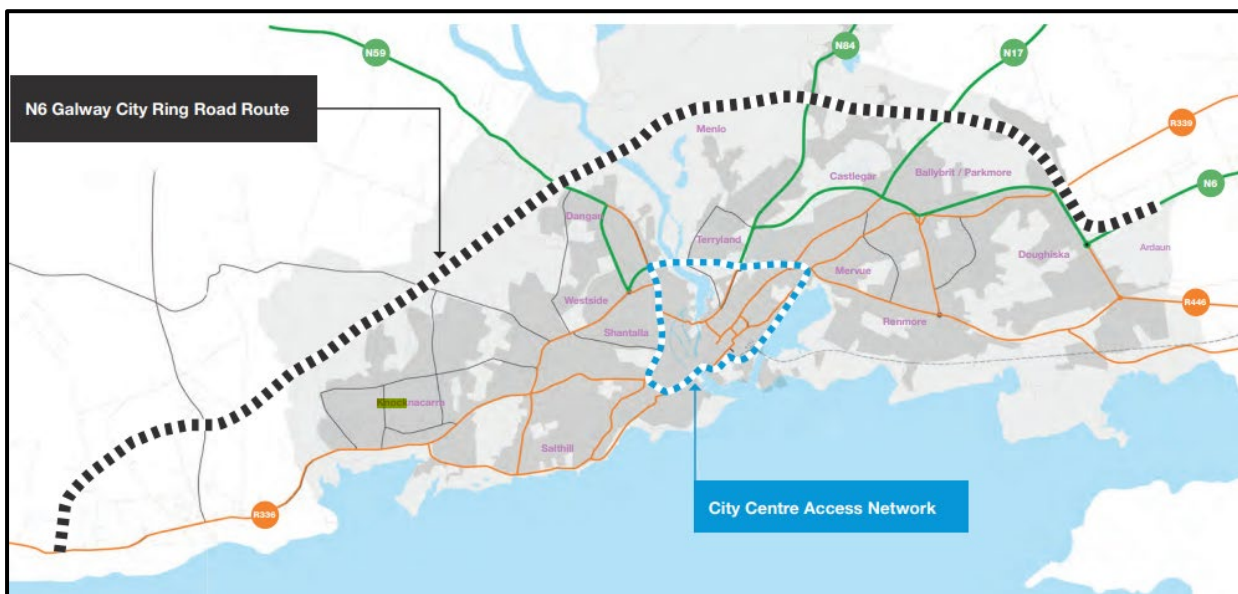


Figure 2.5: N6 Galway city ring road proposed route (Source: Galway Transport Strategy (GTS) 2016-2036)

Vehicles will access the site from Ballymoneen Road, utilising the junction with the Ballyburke Road, and proceeding through Blake Roundabout situated to the south. All vehicular traffic entering/exiting the site will utilise the priority junction along the Ballymoneen Road while the majority of the traffic arriving and leaving the site will travel through the Blake roundabout.

Most residential properties along Ballymoneen Road have their own driveway access and on-

street parking is not observed along this stretch. It is worth noting that there is currently no designated loading provision in place. For visual reference, please refer to **Figure 2.6** displaying the Ballymoreen Road and the junction with Ballyburke Road (left side).



Figure 2.6: Ballymoreen Road (Northbound) at the junction with Ballyburke Road (Source: Google Maps)

2.5.1 Site Access

Vehicular entrance to the site will be facilitated from Ballyburke Road to the south of the site by means of a 4No. priority T-junctions. There is an existing single storey dwelling on one portion of the site which will be demolished in order to allow the access and consolidation of the lands. An additional 3No. links are proposed to Drisin and Maoilin estates to the north and 1No. to Clairin estate to the west of the site. The internal road network will extend from the proposed access points to the north of the site, as shown in **Figure 2.4**, Section 2.4.

Future access points are indicated in **Figure 2.8**.

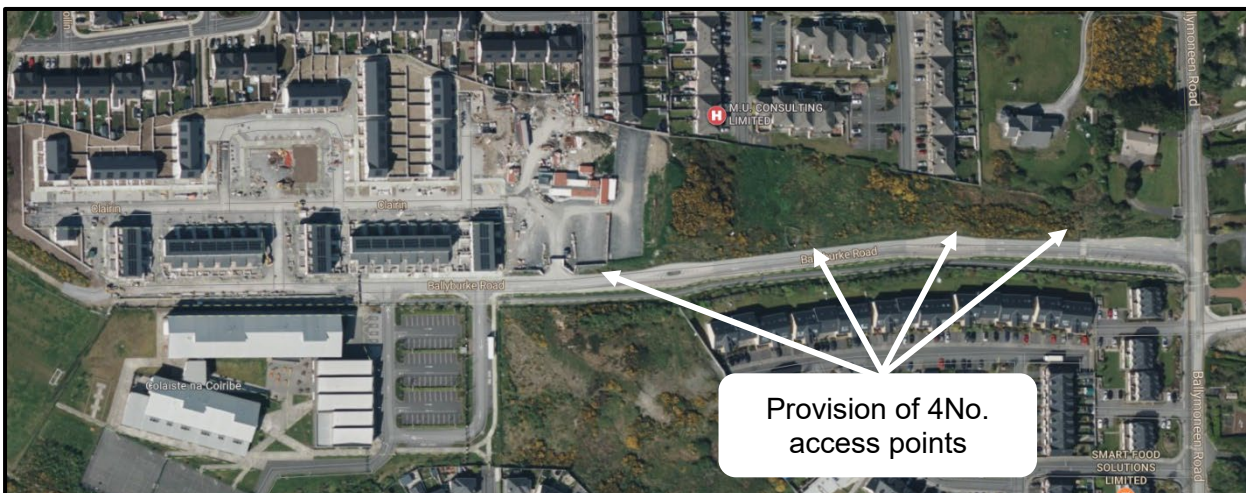


Figure 2.8: Site Access Points (Source: Bing Maps)

The access roads will incorporate footpaths on both sides of the junction to accommodate site

users arriving on foot. In addition, a pedestrian and cycling access point is proposed at the northeast corner of the site using the existing site entrance to the dwelling to be demolished, to facilitate pedestrian and cyclist movements between the housing estates to the north and the broader area.

The Design Manual for Urban Roads and Streets (DMURS) states that the desired sightline for a 50km/h road at a 2.4m setback is 45m. Sightlines of 60m appear to be achievable in both directions from the site access roads onto Ballyburke Road.

2.5.2 Internal Road Layout

The main function of the internal road network is to provide a safe and efficient parking and circulatory system that reduces the potential for conflicting movements, which can comfortably accommodate the anticipated volume of arrivals and departures without presenting a safety risk and not having a negative effect on the road network that it connects to.

The site will provide internal roads connecting all extents of the site with footpaths running along one side of the carriageway. The site will provide pedestrian access to the front of the houses and along the open spaces, which will allow for safe pedestrian and cyclist movements.

Linkages will be established at various points in the northwest boundary of the site, connecting it with the adjacent estates. This will enable residents of these developments to conveniently move through the site when traveling to and from the existing secondary school located directly southwest of the proposed development.

There will be a number of pedestrian crossings located at strategic positions which will enhance pedestrian safety within the development, as shown in **Figure 2.7**. Two raised tables will be implemented; one at the link between Block 01 and Maoilin and one between Block 04 and Block 05 for effective traffic calming. It's essential to note that no roads will feature a straight length exceeding 70 metres.



Figure 2.7: Proposed traffic calming measure locations (Source: Galway City Council)

The internal road network is primarily designed to accommodate private cars which is the main vehicle type to use the residential housing development. However, adequate provision to facilitate the circulation and turning movements of emergency vehicles and bin collection vehicles should be made. In addition, an Autotrack analysis was carried out in October 2022 by a third party to confirm that waste collection vehicles and emergency vehicles, such as ambulances and fire trucks, will be able to manoeuvre the site in a safe and efficient manner. Please refer to **Figure 2.8** below.



Car parking standards for the development were derived from consulting the Galway City Development Plan (GCDP) 2023 – 2029 for the houses, and the Sustainable Urban Housing: Design Standards for New Apartments, published in December 2022, for the apartments. In accordance with the first document, a reduction in the car-parking requirement, as outlined in Section 11.3 – Outer Suburbs, may be considered acceptable provided the application demonstrates alternative methods for addressing traffic generation associated with the proposed development. This planning application is complemented by a Mobility Management Plan, which outlines a set of measures that any given development can implement to

encourage users to consider sustainable transportation options.

Car parking standards for developments of this type are summarised in **Table 2.1** below.

Table 2.1 – Car Parking Standards as per Galway City DP 2023 – 2029	
Development	Maximum Space/Area
Residential – outer suburbs	1.5 grouped spaces per dwelling and 1 grouped visitor space per 3 dwellings

According to the Design Standards for New Apartments, as a general benchmark guideline for apartments in relatively peripheral or less accessible urban locations, it is recommended to provide one car parking space per unit, along with an element of visitor parking, such as one space for every 3-4 apartments, as shown in **Table 2.1**.

Table 2.2 – Car Parking Standards as per Design Standards for New Apartments	
Development	Maximum Space/Area
Residential – Peripheral and/or Less Accessible Urban Locations	1 space per unit and 1 visitor space per 3-4 apartments

The proposed residential development will comprise 84No. residential units with a total of 113No. parking spaces allocated for residents and visitors, as shown in **Table 2.3**. The proposal also envisions integrating car sharing facilities within the site, with the potential to provide 2No. cars, open to both residents and the wider population of Galway City. Depending on usage levels, the provision of additional cars can be considered in the future.

Table 2.3 – Car Parking Requirements	
Development – max. parking allowed	Total car spaces provided
Houses (1.5 spaces x 13No. Dwellings + 4 for visitors): 24 spaces	113
Apartments (1 space x 71No. Apartments + 18 for visitors): 89 spaces	

The Buildings for Everyone (2012) by the NDA document was also consulted relating to disabled parking spaces, where it states that a minimum of 5% of the total car parking capacity should be set aside for accessible car parking, for buildings not normally visited by the public. According to this document, these parking spaces should be located in proximity to building entrance points and suitably signed and demarcated.

The proposal includes 7No. parking bays for mobility-impaired users in the proposed layout, above the minimum 6No. required, located adjacent to Blocks 01, 02, 03 and 04. These bays will be positioned in close proximity to building entrances and should be accompanied by appropriate ramps where necessary.

It's noteworthy that, in accordance with car parking standards, 14No. parking spaces should be allocated for the local shops (commercial units), while the creche would require 10No. spaces based on its capacity. The proposed number of parking spaces falls below the stipulation of the Galway City Development Plan 2022-2028, a decision justified by the strategic location and accessibility to public transportation.

Therefore, parking provisions for the cafe, retail, and creche are deliberately limited, aligning with the intent of offering local services as part of the Neighbourhood Centre for the proposed development and neighbouring estates. The emphasis on walking and cycling is strong, and an abundance of parking spaces is intentionally avoided to encourage sustainable transportation modes. The design prioritises greater permeability to enhance walkability and accessibility to local services. Specifically, 5No. parking spaces, along with a loading bay/drop-off bay, are designated along Ballyburke Road for the commercial/creche units. An additional 3No. spaces to the west of Block 02, which can be shared with visitors and commercial services, are proposed, and these spaces are also intended for potential car-sharing facilities, as previously mentioned.

Additionally, it's important to highlight that Clairin estate, comprising 71No. dwellings, narrowly missed the 75-unit requirement for a creche. With the proposed addition of 84No. units in this development, it is anticipated that the creche will primarily serve residents from these two estates and surrounding adjacent houses, while an emphasis will be placed on encouraging parents/guardians to choose walking or cycling as their preferred modes of transportation to this facility.

Mention is also given to electric vehicle charging points. The GCDP document specifies in Chapter 11.11.2 that *all new buildings should install at least one recharging point and ducting infrastructure for at least one in every 5 car parking spaces to enable the subsequent installation of recharging points for electric vehicles... 10% of communal and private spaces shall be adapted and suitable for Electric car (EV) chargers.*

In line with these guidelines, 12No. EV spaces are proposed throughout the site, in anticipation of the future demand for electric vehicle charging.

2.5.6 Cycle Storage

Providing high-quality, safe, secure, and convenient bicycle parking is crucial to support sustainable transportation options such as cycling, walking, and public transport. In line with the ambitious public transport, cycling, and walking network outlined in Galway City Development Plan 2023 – 2029, and broader policy objectives, high-quality bicycle parking is an integral component to encourage and facilitate these modes of transportation.

In accordance with Smarter Travel Policies, new residential developments are required to provide secure cycle parking facilities. The bicycle parking standards, outlined in Chapter 11.3

of the Galway CDP indicate the minimum provision of 1No. private secure bicycle space per unit and 1No. visitor bicycle space per two housing units. This guidance is also reiterated in the Sustainable Urban Housing document. For Blocks 05 and 06 provision of secure garden space is proposed for each unit, and as such is considered a viable substitute for dedicated bicycle parking infrastructure. For Blocks 01, 02, 03 and 04 requirements are summarised in **Table 2.4** below and comply with Galway CDP 2023 – 2029 development standards.

Table 2.4 – Bicycle Parking Requirements as per Galway City DP 2023-2029 and Sustainable Urban Housing		
Development Type	Total Bicycle Spaces Required	Total Bicycle Spaces Provided
Housing Developments	1 space per ped and 1 visitor space per 2 units: 127No. Sheltered spaces and 36No. Visitor Spaces	134 sheltered and 43 visitor spaces
Creche	not mentioned	10 spaces
Commercial developments (Local shops, Cafe)	25% of the number of car parking spaces	14 spaces

According to the Cycle Design Manual (September 2023), larger non-standard cycles, such as those used by disabled individuals with adapted cycles, tandems, child trailers, cargo bikes, and tricycles, should be accommodated in the cycle parking facilities. The manual recommends a proportion of the cycle parking, typically 1 space per 20 spaces or 5%, to be designated for larger cycles. These spaces should be strategically located in accessible areas, such as near accessible car parking spaces, to enhance convenience and inclusivity.

In summary, Block 01 will provide 28No. sheltered spaces and 2No. cargo/enlarged spaces, Block 2 will include 24No. regular spaces and 2No. designated for cargo/enlarged bikes, Block 3 will offer 40No. regular spaces with an additional 4No. for cargo/enlarged bikes and Block 4 will feature 32No. regular spaces along with 2No. for cargo/enlarged spaces.

Visitor parking will be provided with 10No. regular spaces in Block 01, 10No. regular spaces and 1No. designated for cargo/enlarged bikes on the north side of Block 02, an additional 12No. spaces on the north side of Block 03, and 10No. spaces in Block 4.

3 Existing Traffic Conditions

3.1 Existing Road network

The proposed residential development will be accessed via 4No. vehicular entrances to the south of the site. These access points will be new priority T-junctions formed between Ballyburke Road and the proposed internal access roads.

All vehicular traffic associated with the site will utilise the Ballyburke Road/Ballymoneen Road junction for entry/exit to the development. As previously noted, Ballyburke Road runs along the site's southern boundary. The majority of the road is a standard two-lane carriageway with occasional central islands serving as traffic calming measures. The road typically spans around 6 metres kerb-to-kerb. On the southern side, there is an additional footpath and a segregated cycle track. A zebra crossing is also present on the approach to Ballymoneen Road.

Ballymoneen Road, stretching from its junction with Ballyburke Road to the intersection with the Western Distributor Road at the Blake Roundabout, primarily serves a residential area. Both sides of this section of the road are equipped with footpaths. However, as of now, no dedicated cycle tracks are in place. The speed limit on the road is 50km/h.

The junction between Ballymoneen Road and Ballyburke Road, located north of the Blake Roundabout, takes the form of a priority T-Junction. Approaching from Ballyburke Road, there are two lanes. Ballymoneen Road is a standard two-lane road with a typical width of approximately 7-8 metres. Notably, Ballymoneen Road does not allocate a separate traffic lane for right turns. Additionally, the junction lacks designated cycle lanes, offering only a single controlled crossing on the southern arm.

As previously mentioned, and based on the current traffic patterns, the majority of departing vehicular traffic from the site will make use of the 4-arm Blake roundabout. The Blake roundabout is approximately 28 metres in diameter and features four approaches: two from the Western Distributor Road (L1012, L1013, east and west) and two from the Ballymoneen Road (L5024). The western approach is three lanes wide, with two lanes designated for entering the roundabout and one for exiting. The remaining approaches feature two lanes each, one for entering and one for exiting. All four arms are equipped with footpaths, while the Western Distributor Road additionally offers a dedicated cycle lane.

As shown in **Figure 3.3**, pedestrian crossings are present on each road. The southern approach from Ballymoneen Road features an uncontrolled crossing, while the others incorporate a raised zebra crossing. The footpaths are approximately 2 metres in width.

The roundabout and roads included in this assessment are existing roads already in active usage; as such, their condition and suitability for purpose are not subject to assessment as part of this report.

For visual detail of the junction tested as part of this assessment, please refer to **Figure 3.1**, **Figure 3.2**, **Figure 3.3** and **Figure 3.4** overleaf.

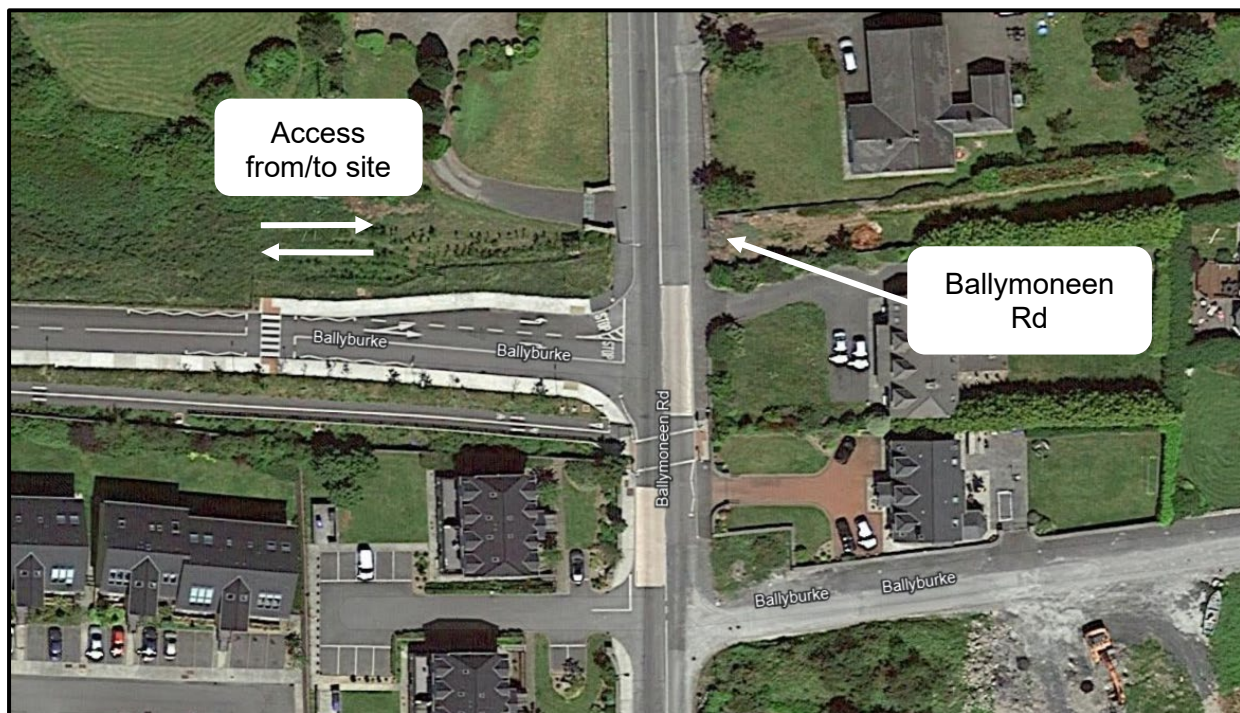


Figure 3.1: Junction 1 Layout (Source: Google Earth)



Figure 3.2: Approach to Junction 1 from Site (Source: Google Earth)



Figure 3.3: Junction 2 Layout (Source: Google Earth)



Figure 3.4: Approach to Junction 2 from Site (Source: Google Earth)

3.2 Pedestrian and Cyclist Connectivity

In close proximity to the site, there are two pedestrian crossings situated on Ballyburke Road, positioned as one approaches the junction with Ballymoneen Road. These crossings are illustrated in **Figure 3.5**. Additionally, one signal-controlled crossing is situated north of the junction along Ballymoneen Road. The Blake roundabout is adequately equipped with pedestrian crossings on each arm, as shown in **Figure 3.6** overleaf.

At present, the Ballymoneen Road is recognised as lacking quality Active Travel facilities. Cyclists must share the road with general traffic, on lanes that are excessively wide, promoting unreasonably high speeds for the residential nature of these roads. This absence of proper cyclist amenities serves as a deterrent for people considering cycling, even for short journeys (e.g., trips less than 15 minutes). Ballymoneen Road has been designated in the GTS as a pedestrian route, with plans in place to introduce additional crossings and upgrade facilities. These improvements aim to enhance the safety and accessibility of pedestrians and cyclists, especially for schoolchildren and residents in the area.

The map shown in **Figure 3.7** illustrates locations of cycleways in the vicinity of the site. It should be noted that footpaths are also located on both sides of the majority of residential roads in the area, which are not shown in this map. These footpaths are of varying widths and conditions.

A Mobility Management Plan has also been compiled for the development providing relative information. Please refer to document 231183-ORSA-XX-XX-RP-TR-13g-001.

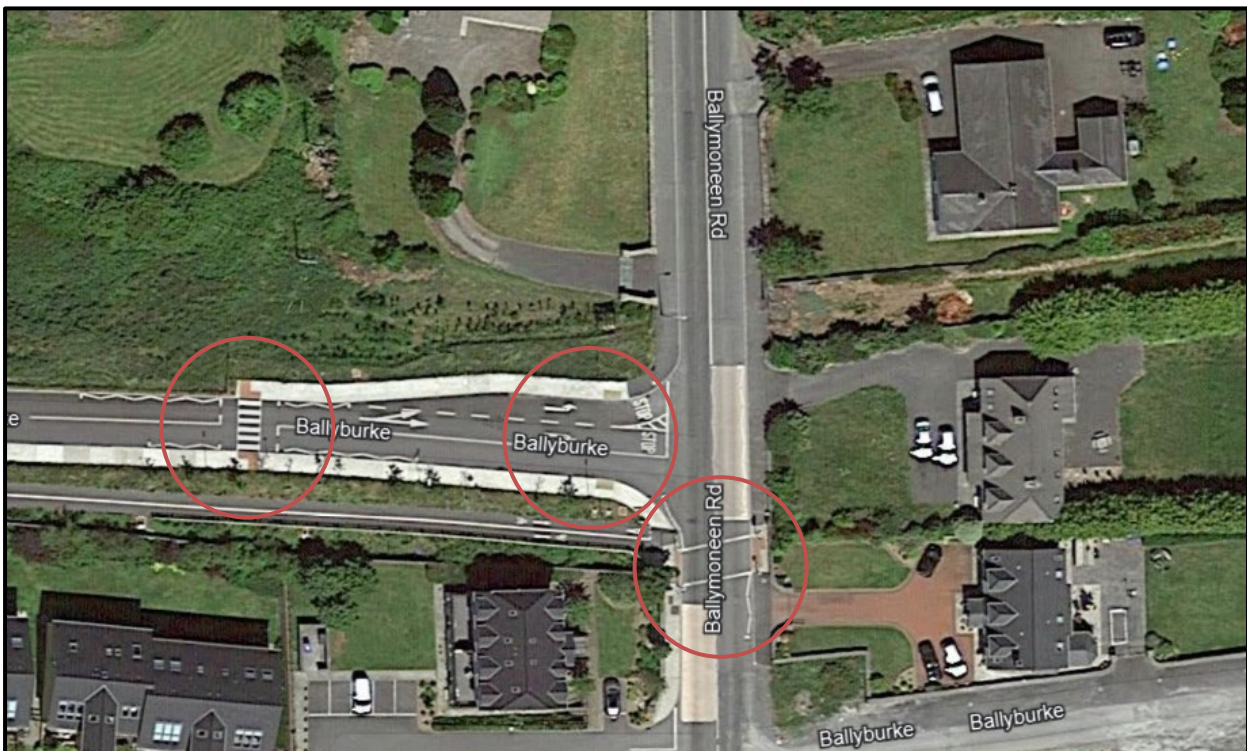


Figure 3.5: Pedestrian Crossings in Ballyburke and Ballymoneen Junction (Source: Google Earth)



Figure 3.6: Pedestrian Crossings in Blake Roundabout (Source: Google Earth)

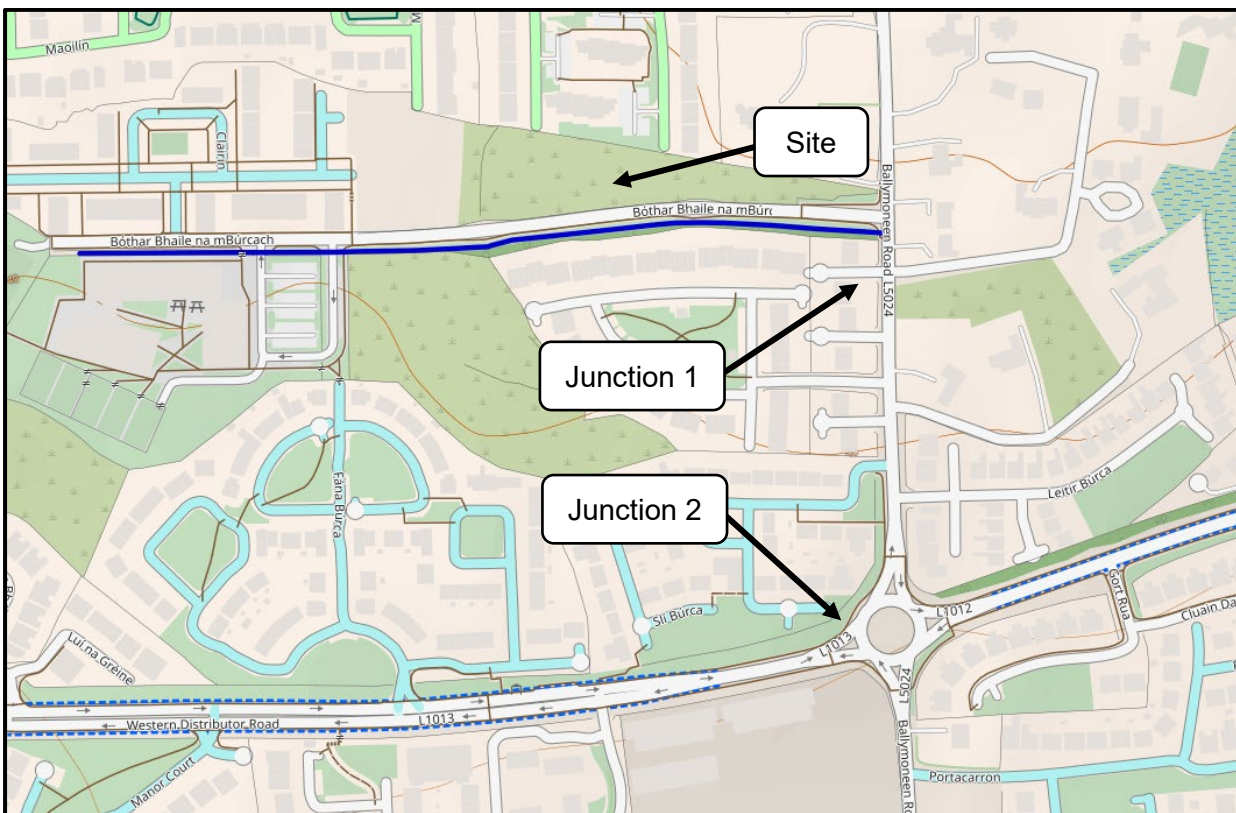


Figure 3.7: Cycleways in the Site Vicinity, Ballyburke (Source: OpenStreetMap.org)

3.3 Public Transport Provision

There are 2No. bus stops located within a walking distance of the site serving 3No. routes as shown in **Figure 3.8** and **Figure 3.9**. The site is within a 7-minute walk of bus routes 411, 412 and 413.

Details of these bus routes are also shown in **Table 3.1**.

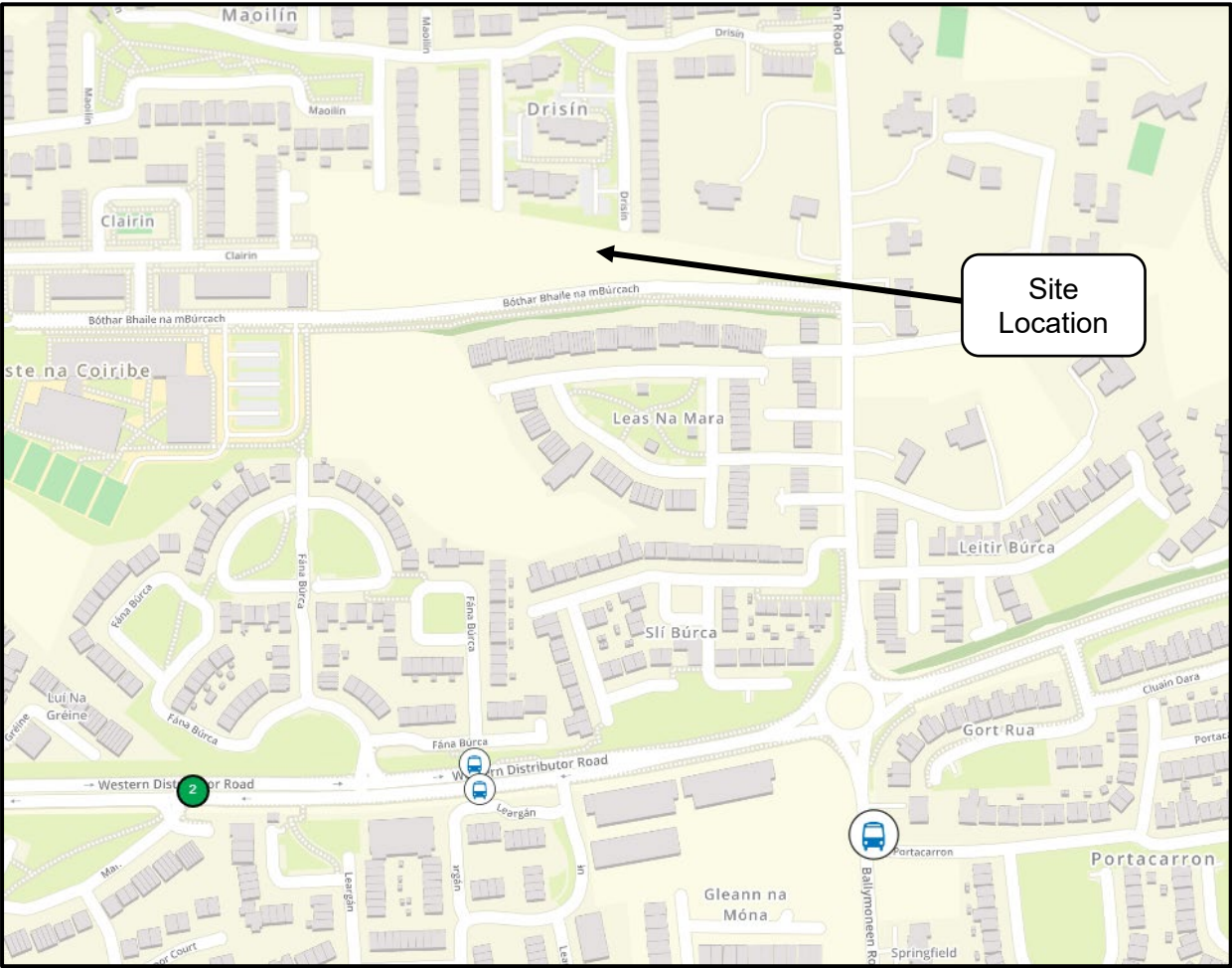


Figure 3.8: Bus Stops in the Vicinity of the Site (Source: TransporforIreland.ie)

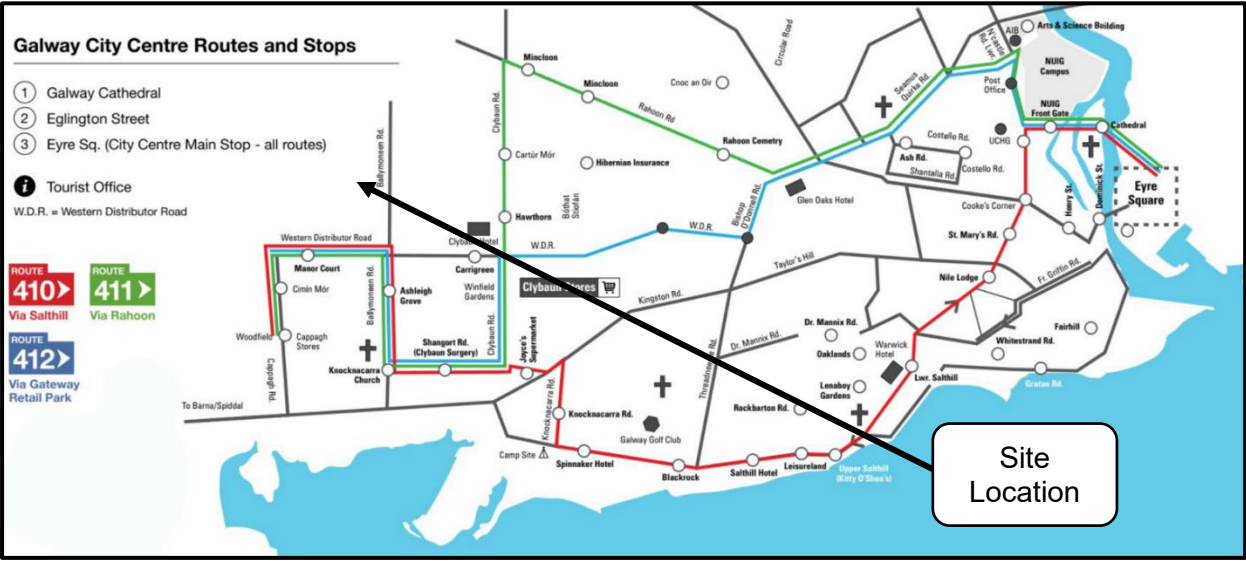


Figure 3.9: Transportation in the Vicinity of the Site (Source: Citydirect.ie)

Table 3.1 summarises the routes and the weekday services of the services available near the site.

Table 3.1 – Bus Services Available (Source: TFI)			
Route No.	Bus Operator	Direction	Weekday Services
410	City Direct	Mount Prospect - Eyre Square, Via: Salthill	Every 60 mins
411	City Direct	Mount Prospect - Eyre Square, Via: Westside	Every 30 mins
412	City Direct	Mount Prospect - Eyre Square, Via: Gateway Retail Park	Every 30 mins

The train station is not in close proximity to the site. It is situated approximately a 16-minute drive or a 23-minute bicycle ride away.

3.4 Proposed Transport Infrastructure

The Galway City Development Plan 2023 – 2029 aims to “develop a compact city, where sustainable land use and transportation are integrated and where there is choice and accessibility to a range of transport modes, with increasing support for a shift to more sustainable modes” as well as to “achieve the concept of a ‘15 minute city’ where land use policies facilitate residents to access their daily needs within a 15 minute walk or bike ride and thereby reduce the dependence on car transport”.

Some of the policies outlined in the development plan are listed below:

- Cycling and Walking Objective 4.4.8: *To Promote, facilitate and maintain maximum connectivity and permeability for pedestrians and cyclists in the design and management of new public and private projects and in upgrading and retrofitting existing developments in accordance with the Design Manual for Urban Roads and Streets (2019) and Permeability a Best Practice Guide, NTA (2015).*
- Public Transport Objective 4.5.2: *To Support the GTS proposals to prioritise public transport movements in the city centre through the implementation of a designated public transport route, the Cross-City Link.*
- Public Transport Objective SO 4.8.5: *To Provide for bus transport and infrastructure along the Western Distributor Road.*
- Public Transport Objective SO 4.8.9: *To Identify through a review of the Galway Transport Strategy the need for bus transport in areas of Galway City currently not serviced by bus transport to include rural Bushypark, Circular Road, Upper Ballymoneen Road, Menlough and other locations as appropriate.*
- Road and Street Network & Accessibility Objective SO 4.8.35: *To Carry out an audit of the road network relative to pedestrian services and standards in all areas outside of the city centre and implement a programme of improvements in accordance with a scheme of priorities relative to accessibility, safety and convenience. Priority of investigation will be given to the following roads namely: Circular Road, Letteragh Road and Ballagh Road, Ballymoneen Road, Cappagh Road, Castlegar Road and all other local roads as deemed necessary.*

3.5 Existing Traffic flows

Automated junction turning counts (JTC) have been undertaken at the junction between the Ballyburke and Ballymoneen Road (JTC1), as well as the 4-arm Blake roundabout (JTC2) on Wednesday 27th September 2023 by a third-party company named 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 junctions. The traffic counts cover movements of pedal cycles, cars, taxis, buses, LGVs and HGVs and 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.

Based on the gathered data, it is evident that the morning peak period occurs between 08:00 and 09:00 in JTC1 and JTC2, registering a maximum traffic volume of 999 and 1727 PCUs respectively. The evening peak period, on the other hand, takes place between 14:45 and 15:45 in JTC1, with a maximum traffic volume of 586 PCUs. For JTC 2, the evening peak traffic occurs between 17:15 and 18:15, recording a maximum traffic volume of 1405 PCUs. **Table 3.2, Figure 3.10 and Figure 3.11** display the traffic flows observed in both junctions in the AM and PM periods.

During the modelling process, it's important to note that both junctions were evaluated during the same peak hours. These hours were selected to align with JTC2 peak times, given that all adjacent future developments appeared to synchronise with JTC2 traffic patterns. Additionally, it was observed that JTC2 consistently registered a higher volume of traffic during the peak periods.

The traffic data indicates that during both the morning and evening periods, the predominant flow of traffic departing from Ballyburke Road is directed southwards towards the Blake Roundabout. This is reflected in the counts of 149 PCUs in the AM period and 43 PCUs in the PM period, equating to 63% of the total for the AM and 74% for the PM peak. Likewise, a substantial majority of the traffic arriving on Ballyburke Road during the AM peak originates from the south and the Blake Roundabout, accounting for 203 PCUs, which equates to 83% of the total. In the PM peak, this percentage is slightly lower at 73%, corresponding to 48 vehicles.

From the traffic counts, the percentage of Heavy Good Vehicles (HGV) travelling along the road network in both morning and evening peak periods could be calculated. Overall, there is a relatively low level of HGV travelling to/from both junctions, with the highest percentage recorded in the morning, from Ballymoneen Road to Ballyburke Road (JTC1) and from the Western Distributor towards the southbound Ballymoneen Road (JTC2) at 4% and 8% respectively. This translates to 6 HGVs at JTC1 and 9 HGVs at JTC2.

Table 3.2 – September 2023 Traffic Flows		
Peak Time		
Junction	08:00 – 09:00	17:15 – 18:15
JTC1	999	498
JTC2	1727	1405

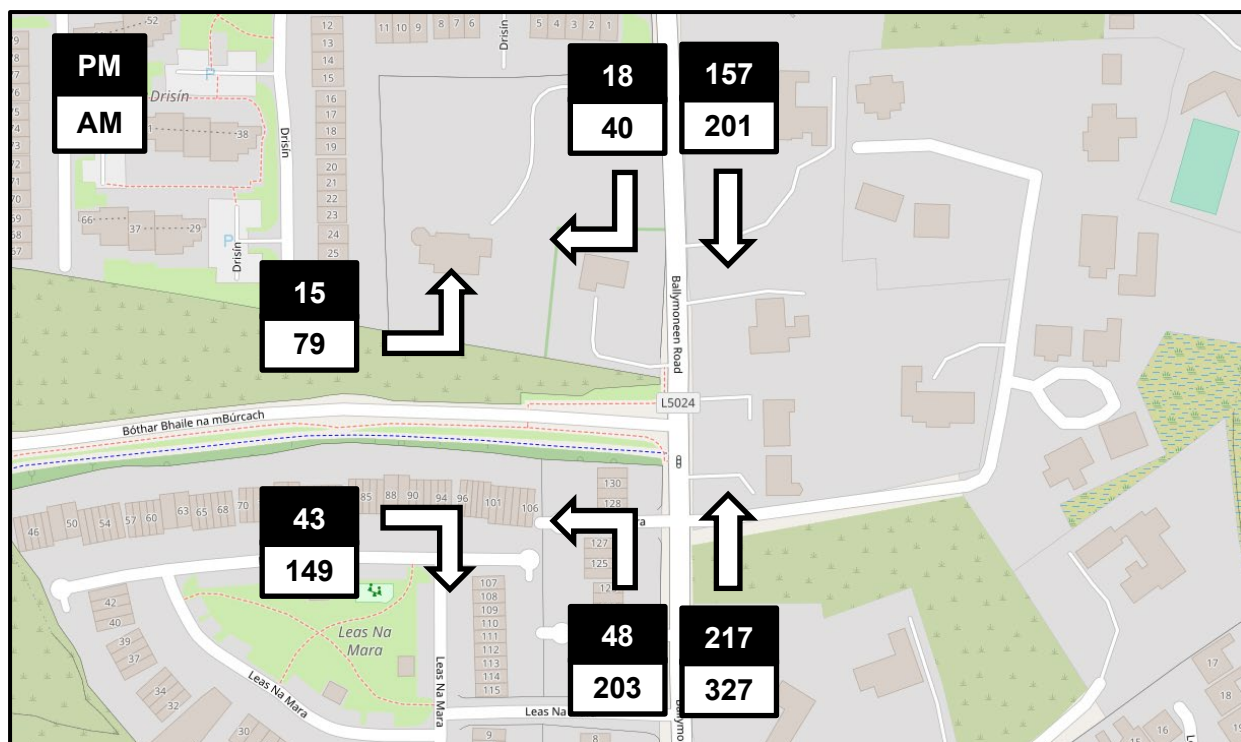


Figure 3.10: September AM and PM 2023 Traffic Counts in JTC1

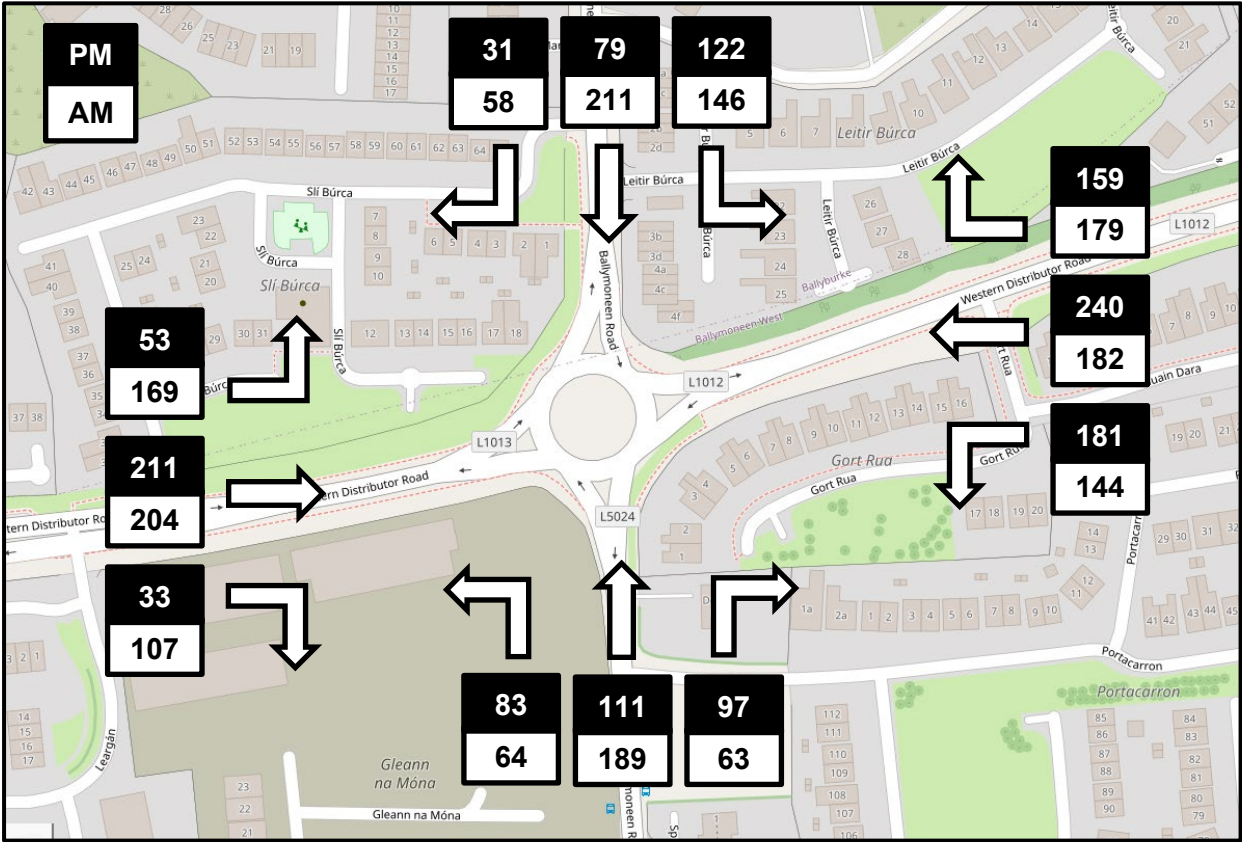


Figure 3.11: September AM and PM 2023 Traffic Counts in JTC2

3.7 Traffic Collisions Data in the Vicinity of the Site

Traffic data on collisions in the vicinity of the site could not be obtained as the Road Safety Authority website is currently in process of reviewing its road traffic collision data. Therefore, this Traffic Assessment is unable to verify the safety along the road network in the vicinity of the site.

4 Trip Generation, Distribution and Impact on the Road Network

In order to obtain a comparative trip rate for the proposed data centre development once operational, the Trip Rate Information Computer System (TRICS) database was consulted. The TRICS database contains traffic generation data for developments of a similar nature to the proposed development. TRICS was established in the UK and is a substantial source of validated empirical data which contains information on arrival and departure rates for a range of different types and sizes of development throughout Ireland.

4.1 Traffic Generation and Distribution Slips

For the purposes of generating a robust representation of likely traffic profile for the future, a traffic generation profile based on the proposed layout was prepared. The proposed residential development was evaluated using the most relevant option available in TRICS, which was classified as affordable/local authority houses. The trip rate data for the proposed residential development, consisting of 84 dwellings, has been summarised in **Table 4.1**.

Table 4.1 – TRICS Output for the Residential development						
TRICS 7.10.1						
Trip Rate Parameter: No of Dwellings						
TRIP RATE for Land Use 03 - RESIDENTIAL/B - AFFORDABLE/LOCAL AUTHORITY HOUSES						
Calculation Factor: 1 DWELLS						
Count Type: TOTAL VEHICLES						
TIME RANGE	ARRIVALS			DEPARTURE		
	No. Days	Ave. Dwells	Trip Rate	No. Days	Ave. Dwells	Trip Rate
07:00-08:00	2	156	0.039	2	156	0.158
08:00-09:00	2	156	0.061	2	156	0.18
09:00-10:00	2	156	0.064	2	156	0.093
10:00-11:00	2	156	0.064	2	156	0.068
11:00-12:00	2	156	0.068	2	156	0.103
12:00-13:00	2	156	0.093	2	156	0.084
13:00-14:00	2	156	0.061	2	156	0.074
14:00-15:00	2	156	0.09	2	156	0.09
15:00-16:00	2	156	0.125	2	156	0.103
16:00-17:00	2	156	0.132	2	156	0.058
17:00-18:00	2	156	0.164	2	156	0.109
18:00-19:00	2	156	0.151	2	156	0.084
Daily Trips Rates:			1.112			1.204

The TRICS output is presented in a trip rate per unit. The unit reference is dependent on the development in question, such as per person, per house or unit area. In this case, the multiplication factor to be applied to the unit rate is the number of new residential units (84No.).

Table 4.2 shows the expected traffic generation profile once the residential development is fully operational.

Table 4.2 – Total Typical Daily Generated Profile for 84 dwellings			
Time Range	Arrivals	Departures	Total
08:00-09:00	5	15	20
17:00-18:00	14	9	23

The proposal encompasses the provision of 1No. creche, 1No. café, and local shops. These amenities were assessed using the most pertinent options available in TRICS.

Table 4.3 shows the trip rate data obtained from the TRICS database for the proposed creche (per 1 pupil) to be multiplied by the multiplication factor of 40 pupils to represent the traffic to be generated by the proposed development.

Table 4.3 – TRICS Output for the creche						
TRICS 7.10.1						
Trip Rate Parameter: Number of pupils						
TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY						
Calculation Factor: 1 PUPIL						
Count Type: TOTAL VEHICLES						
TIME RANGE	ARRIVALS			DEPARTURE		
	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate
07:00-08:00	11	59	0.167	11	59	0.075
08:00-09:00	11	59	0.307	11	59	0.237
09:00-10:00	11	59	0.133	11	59	0.13
10:00-11:00	11	59	0.043	11	59	0.026
11:00-12:00	11	59	0.052	11	59	0.031
12:00-13:00	11	59	0.08	11	59	0.122
13:00-14:00	11	59	0.066	11	59	0.089
14:00-15:00	11	59	0.052	11	59	0.043
15:00-16:00	11	59	0.083	11	59	0.07
16:00-17:00	11	59	0.116	11	59	0.13
17:00-18:00	11	59	0.242	11	59	0.318
18:00-19:00	10	63	0.019	10	63	0.067
Daily Trips Rates:			1.36			1.338

Table 4.4 shows the expected traffic generation profile once the creche is fully operational.

Table 4.4 – Total Typical Daily Generated Profile for 40 pupils			
Time Range	Arrivals	Departures	Total
08:00-09:00	1	1	1
17:00-18:00	1	1	1

Table 4.5 shows the trip rate data obtained for the proposed café, which will be multiplied by a factor of 154.2 sqm of gross area to accurately depict the anticipated traffic generated. **Table 4.6** shows the expected traffic generation profile once the café is fully operational.

Table 4.5 – TRICS Output for the café						
TRICS 7.10.1						
Trip Rate Parameter: Gross floor area						
TRIP RATE for Land Use 06 - HOTEL - FOOD & DRINK/K - CAFÉ						
Calculation Factor: 100 sqm						
Count Type: TOTAL VEHICLES						
TIME RANGE	ARRIVALS			DEPARTURE		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
07:00-08:00	1	74	0	1	74	0
08:00-09:00	4	137	0.916	4	137	0
09:00-10:00	4	137	3.114	4	137	1.465
10:00-11:00	4	137	2.198	4	137	3.297
11:00-12:00	4	137	2.564	4	137	2.198
12:00-13:00	4	137	2.381	4	137	2.564
13:00-14:00	4	137	2.564	4	137	2.198
14:00-15:00	4	137	1.465	4	137	2.198
15:00-16:00	4	137	1.099	4	137	2.198
16:00-17:00	3	155	0.431	3	155	0.431
17:00-18:00	1	200	0	1	200	0.5
18:00-19:00						
Daily Trips Rates:			16.732			17.049

Table 4.6 – Total Typical Daily Generated Profile for the cafe			
Time Range	Arrivals	Departures	Total
08:00-09:00	1	6	1
17:00-18:00	0	1	1

Table 4.7 shows the trip rate data obtained for the proposed café, which will be multiplied by a factor of 154.2 sqm of gross area to accurately depict the anticipated traffic generated. **Table 4.8** shows the expected traffic generation profile once the café is fully operational.

Table 4.7 – TRICS Output for the local shops

TRICS 7.10.1						
Trip Rate Parameter: Gross floor area						
TRIP RATE for Land Use 01 - RETAIL/I - SHOPPING CENTRE - LOCAL SHOPS						
Calculation Factor: 100 sqm						
Count Type: TOTAL VEHICLES						
TIME RANGE	ARRIVALS			DEPARTURE		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
07:00-08:00	3	402	7.303	3	402	7.469
08:00-09:00	3	402	7.801	3	402	7.552
09:00-10:00	3	402	9.793	3	402	9.046
10:00-11:00	3	402	10.539	3	402	10.29
11:00-12:00	3	402	10.29	3	402	10.539
12:00-13:00	3	402	11.701	3	402	11.286
13:00-14:00	3	402	11.618	3	402	11.452
14:00-15:00	3	402	10.954	3	402	11.286
15:00-16:00	3	402	11.867	3	402	12.365
16:00-17:00	3	402	14.44	3	402	14.025
17:00-18:00	3	402	14.772	3	402	15.353
18:00-19:00	3	402	14.523	3	402	14.108
Daily Trips Rates:			135.601			134.771

Table 4.8 – Total Typical Daily Generated Profile for the shops

Time Range	Arrivals	Departures	Total
08:00-09:00	27	26	53
17:00-18:00	51	53	104

Table 4.9 presents the total trips arriving/leaving the site from Ballyburke Road.

Table 4.9 – Total Typical Daily Generated Profile for the shops

Time Range	Arrivals	Departures	Total
08:00-09:00	34	48	76
17:00-18:00	65	64	129

4.2 Cumulative Impact

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 Galway City Council planning website was consulted to include all committed developments in the area. 4No. committed developments were identified which would affect the junctions analysed in the vicinity of the proposed development, as shown in **Figure 4.1** below.

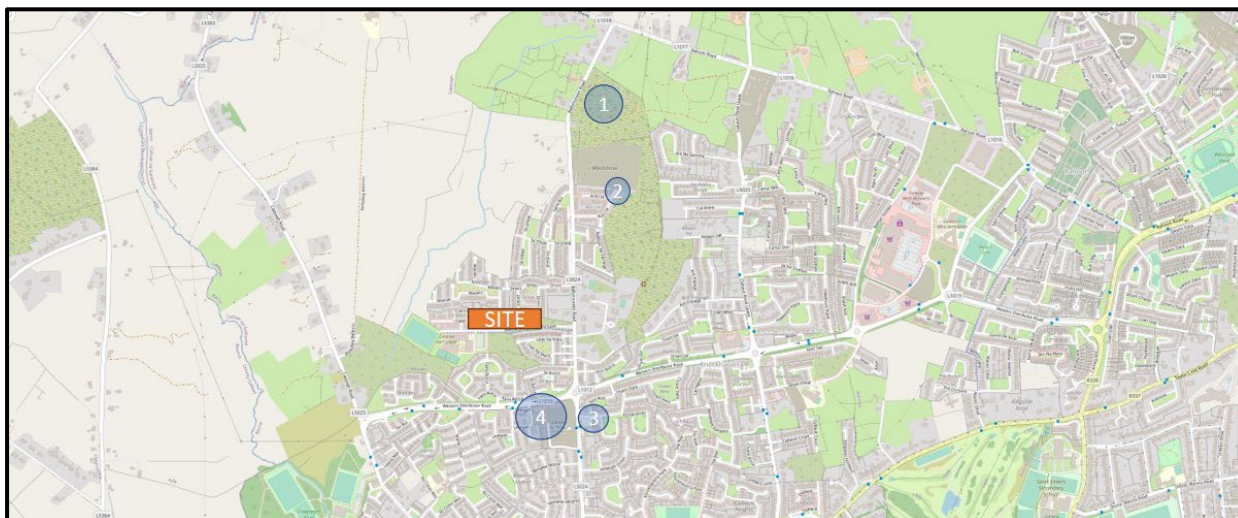


Figure 4.1: Planning applications in the vicinity of the proposed development

As the developments are not implemented yet, the traffic profile generated by them was not contained in the traffic counts carried out in September 2023. Therefore, this Traffic Assessment have included the expected traffic flows in the future year scenarios in the assessed junctions to ensure a robust assessment of the future conditions of the road network.

The expected traffic flows for two of the developments were obtained from TRICS database. These developments are presented in **Table 4.10** below.

Table 4.10 – Committed Developments in the Vicinity of the Facility				
Planning Reference	Decision Type	Description	Traffic generation	
			AM	PM
20/286	Conditional	Construction of 58 no. residential units	26	33
20/286	Permission granted	Construction of one pair of two-storey semi-detached dwelling houses	1	1
20/164	Permission granted	Construction of 8No. own door apartments/townhouses, car parking and all associated site works	2	2
21/406	Permission granted	Construction of No.32 residential units	115	126

4.3 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 **Table 4.11**, **Table 4.12** and **Table 4.13** below.

Table 4.11 – Development Location Information

Location of Development	Galway
Sensitivity Area	Central
Year of Traffic Counts	2023
Year of Assessment	2023
Year of Development Construction	2026

Table 4.12 – TII Annual Growth Rates (Central Growth) for Co. Galway

Year	LGV	HGV
2016 – 2030	1.0169	1.0217
2030 – 2040	1.0097	1.0182
2040 – 2050	1.0095	1.0220

Table 4.13 – Growth Factors for Future Design Years for Co. Galway

	Counts	Completion	Completion +5	Completion +15
	2023	2026	2031	2041
LGV	1.000	1.052	1.135	1.250
HGV	1.000	1.067	1.183	1.422

4.4 Generated Traffic Splits Through Neighbouring Junctions

Based on the traffic counts obtained at the 2No. junctions in September 2023, the travel distribution could be established. It was noted that during the morning peak, the majority of traffic departing from Ballyburke Road turns south at the junction, heading towards the Blake Roundabout and continuing on the Ballymoneen Road. In the evening peak, a similar trend is observed, with the distinction that traffic turns westbound onto the Western Distributor Road. Additionally, it was observed that the majority of traffic arrives from the south and passes through the Blake Roundabout from all arms during the AM peak, while in the PM period, most traffic arrives from the Western Distributor Road from the east.

From the traffic counts obtained, it could be noticed that the AM peak at the junctions aligns with the projected peak times for a residential development as indicated by the TRICS analysis. However, there is a discrepancy in PM peak times between the two junctions. The Blake Roundabout (JTC2) exhibited a PM peak between 17:15 and 18:15, mirroring the forecasted peak for a residential development according to TRICS. A third peak occurs in the middle of the day, as JTC1 displayed a PM peak between 14:45 and 15:45. Considering these observations, it is reasonable to assume that traffic associated with the development will arrive between 08:00 – 09:00 and depart between 17:15 – 18:15.

Figure 4.2 and **Figure 4.3** display the expected levels of traffic on both junctions affected in the vicinity of the site, projected for the proposed year of development conclusion in 2026.

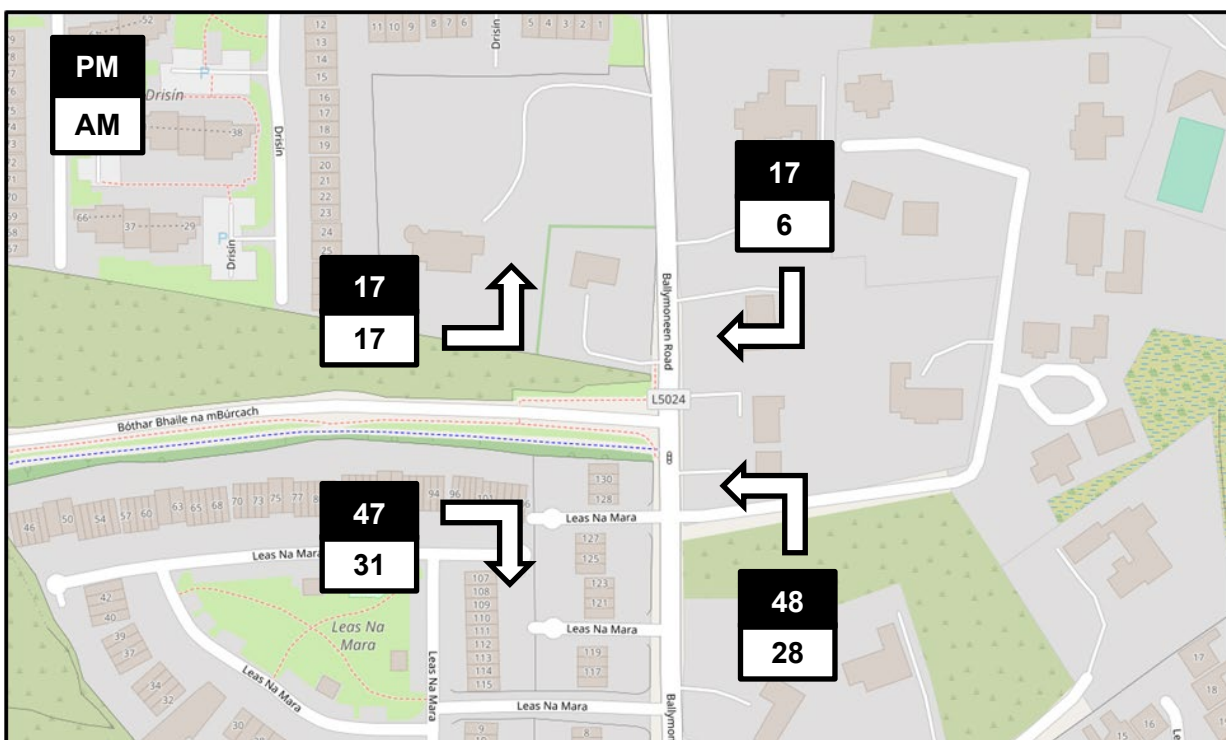


Figure 4.2: AM and PM Traffic Splits in JTC1

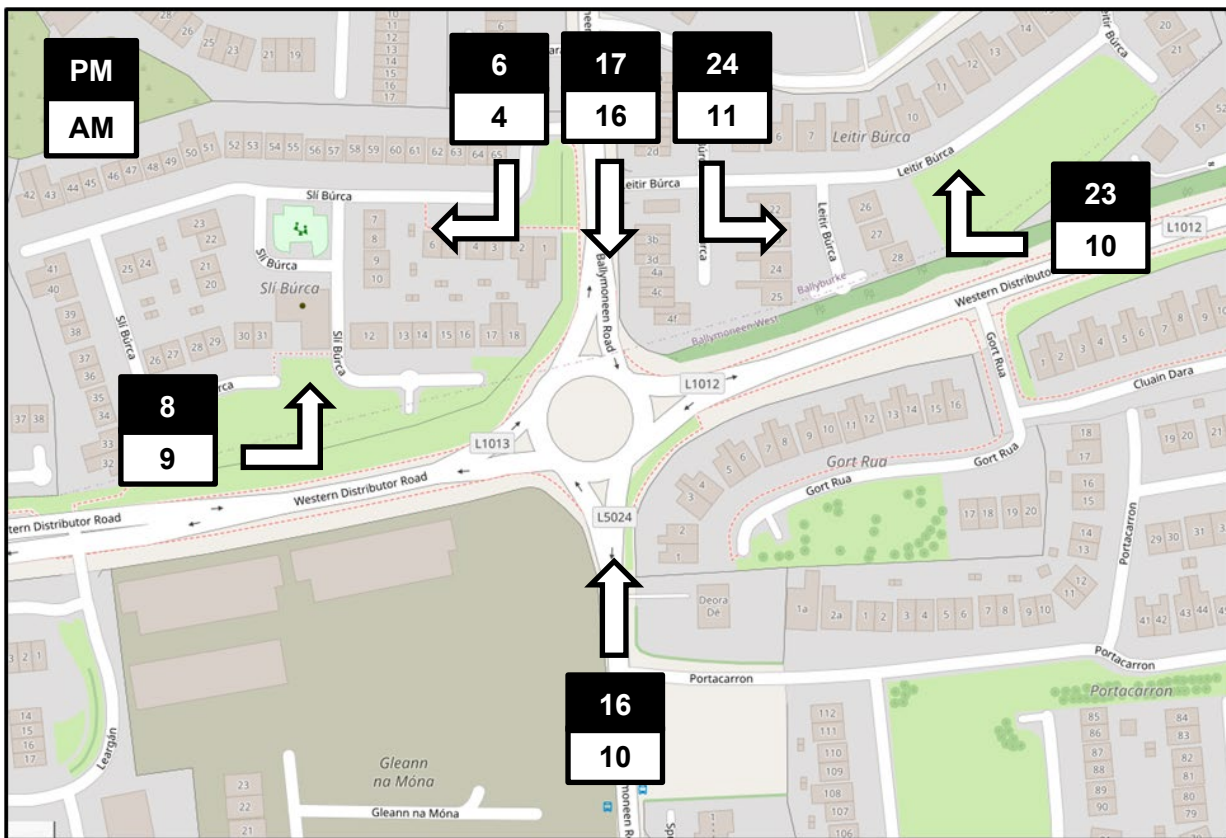


Figure 4.3: AM and PM Traffic Splits in JTC2

Following the completion of the proposed residential development, three local roads will connect with the neighbouring estates of Maoilin and Drisin, while one local road will link with the adjacent Clairin. Traffic from Clairin is already utilising the existing entrance off the Ballyburke Road, and as a result, this traffic has already been accounted for in the assessed junction in September 2023.

Concerning the Maoilin and Drisin estates, the introduction of new links through the proposed residential development suggests that roughly 50% of their residents may choose to utilise the local network, subsequently accessing the associated junction JTC1. Since specific traffic and transport assessments for these developments were not accessible online, data from the TRICS system was once again utilised. This data pertained to similar developments, aiding in the evaluation of the generated traffic originating from these estates.

It's important to highlight that this existing traffic already exists but presently utilises the priority junction between Drisin Road and Ballymoneen. As a result, it has already been factored into the September 2023 traffic counts for the Blake Roundabout.

Given the specific size of the adjacent existing developments, there is no anticipation of an increase in their traffic for the design years of 2026, 2031 and 2041.

The additional traffic generated for JTC1 is depicted in **Figure 4.4** overleaf.

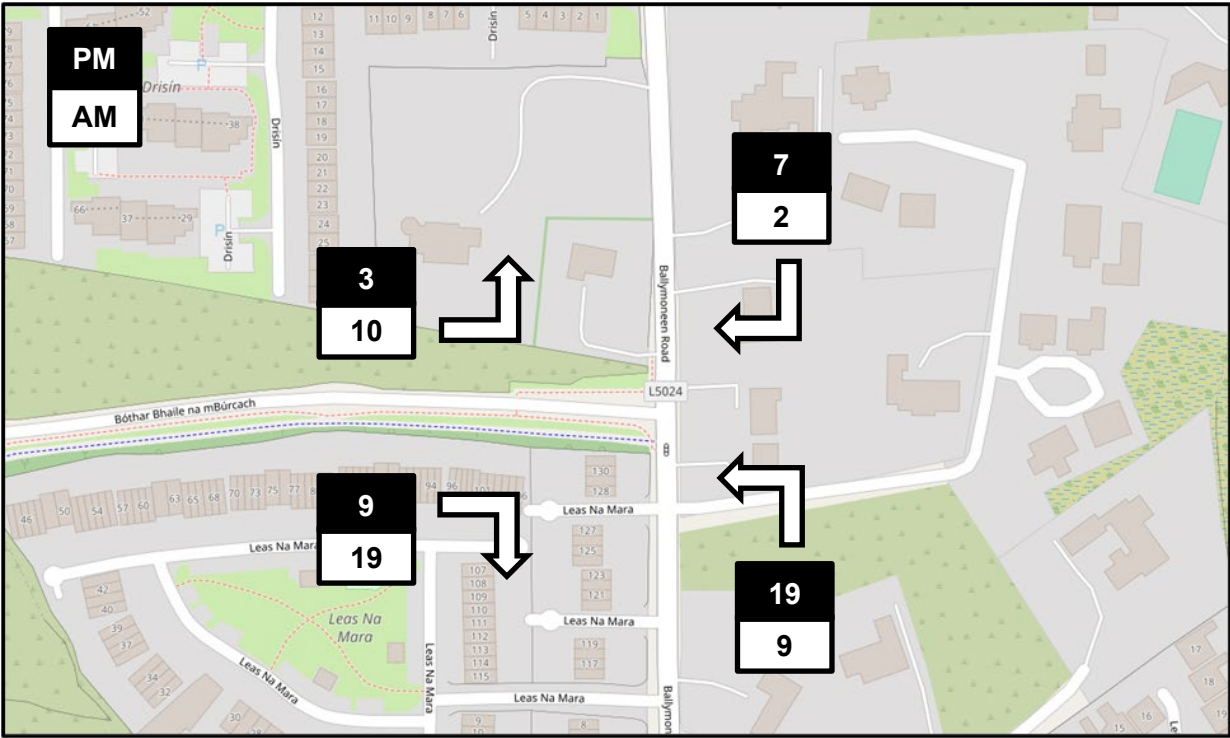


Figure 4.4: AM and PM Traffic Splits in JTC1 originating from adjacent estates.

4.5 Traffic and Transport Assessment Guidelines

The Galway City Development Plan 2023 – 2029, in Section 11.11 - Transportation, requires a Traffic and Transport Assessment to be provided as part of a development proposal in the case of developments with significant car trip generation potential and shall be in accordance with the Traffic and Transport Assessment Guidelines (TII 2014).

The TII Publication PE-PDV-02045 Traffic and Transport Assessment Guidelines, published in May 2014, recommends that junction modelling should be carried out where new traffic exceeds 5% of existing flows if congestion already exists and if traffic generated by the development exceeds 10% where no traffic congestion is present.

As the proposed development is assumed to be fully constructed and operational in 2026, the projected 2026 traffic flows could be calculated using TII's Central Growth Factor for Co. Galway. The impact on traffic for the assessed junctions is presented in **Table 4.14**.

Table 4.14 – Traffic Impact on Neighbouring Junctions from the development

Junction	2026 Projected Traffic		Traffic from Development		Increase in Traffic		TII Threshold of 5%	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
JTC1	1051	524	82	130	7.8%	24.8%	Above	Above
JTC2	1816	1477	59	95	3.2%	6.4%	Below	Above

Table 4.15 provides the thresholds for a Traffic and Transport Assessment (TTA).

Table 4.15 – Traffic Management Guidelines Thresholds for Transport Assessments (TII)

YES	Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road.
YES	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	Retail and leisure development in excess of 100m ²
N/A	Office, education and hospital development in excess of 2,500m ²
N/A	Industrial development in excess of 5,000m ²
N/A	Distribution and warehousing in excess of 10,000m ²

Upon comparing the traffic to and from the development with the threshold requirements outlined in **Table 4.15** above, it is recommended by TII that if any of the listed conditions apply to the development then a TTA is deemed necessary. As can be seen in **Table 4.15**, two of these conditions are applicable in this case.

5 Capacity Analysis

5.1 Introduction

A capacity assessment was undertaken at 2No. junctions (JTC1 and JTC2) in the vicinity of the site, as previously noted. The performance of the junctions during the AM and PM peak hours was assessed using ARCADY software for roundabouts and PICADY for priority T – junctions for the following design years:

- 2023, the base year
- 2026, the opening year
- 2031, 5 years after development conclusion
- 2041, 15 years after development conclusion.

Figure 5.1 below shows the junctions in which a traffic simulation was undertaken in order to obtain the Ratio of Flow to Capacity (RFC) and the queue levels to determine if the junction would cater for the predicted level of traffic by the proposed residential development.

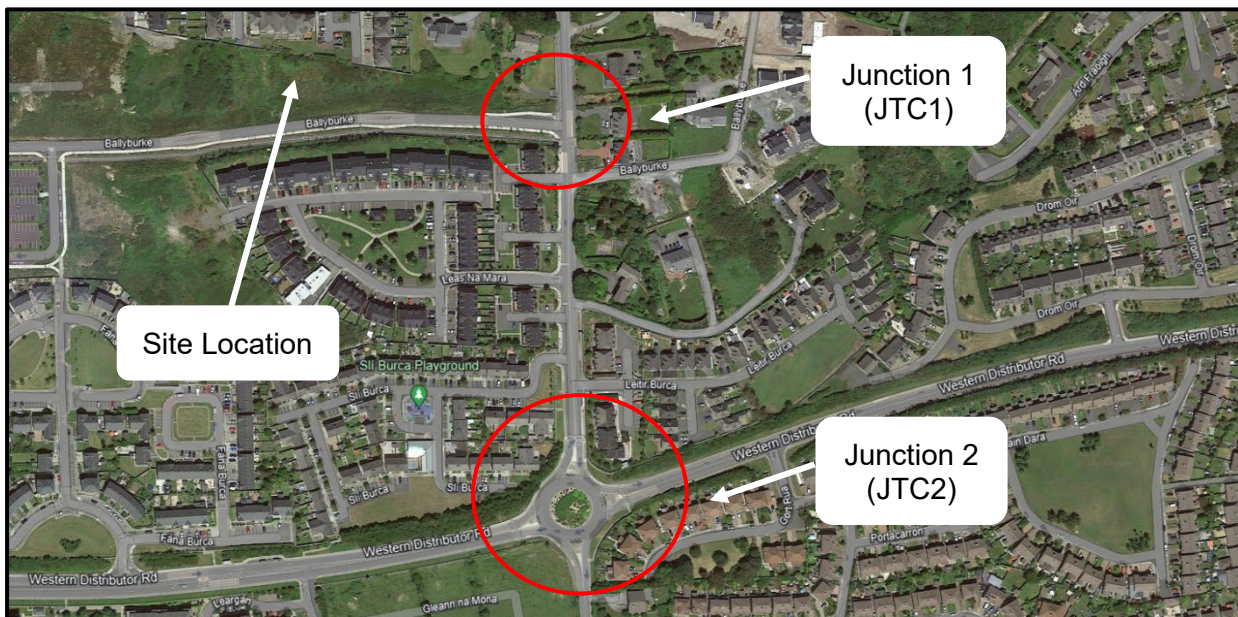


Figure 5.1: Location of Junctions Analysed (Source: Google Earth)

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.

5.2 Traffic Impacts of the Proposed Development on the Local Road Network

As stated in **Section 3.5** above, traffic counts were undertaken in September 2023 at the 2No. junctions. The cumulative effect of adjacent developments described in **Section 4.2** was considered into the analysis. Central traffic growth rates for Co. Galway, specified in the TII's Publication PE-PAG-02017 of October 2021, were applied to existing background traffic only and were not applied to the development traffic, since it is limited by development size. The capacity assessment was modelled for three different scenarios;

- Base-year: 2023 traffic flows modelled according to traffic counts obtained in September 2023.
- Do-nothing: modelled without the intervention of the proposed development. For this analysis, the traffic counts were factored up using TII's Growth Factor for the design years 2026, 2031 and 2041.
- Do-something: the impact of the traffic generated by the development were added to the design years 2026, 2031 and 2041. This analysis will enable the comparison with the 'Do-nothing' scenario.

5.2.1 Junction 1 – Ballyburke Rd/Ballymoneen Rd

In the following analysis, the junction was assessed for the AM and PM peak period and the arms were labelled as follows:

- Arm A: Ballymoneen Rd - South
- Arm B: Ballyburke Rd
- Arm C: Ballymoneen Rd - North

Figure 5.2 depicts the arm names as used in modelling with PICADY software.

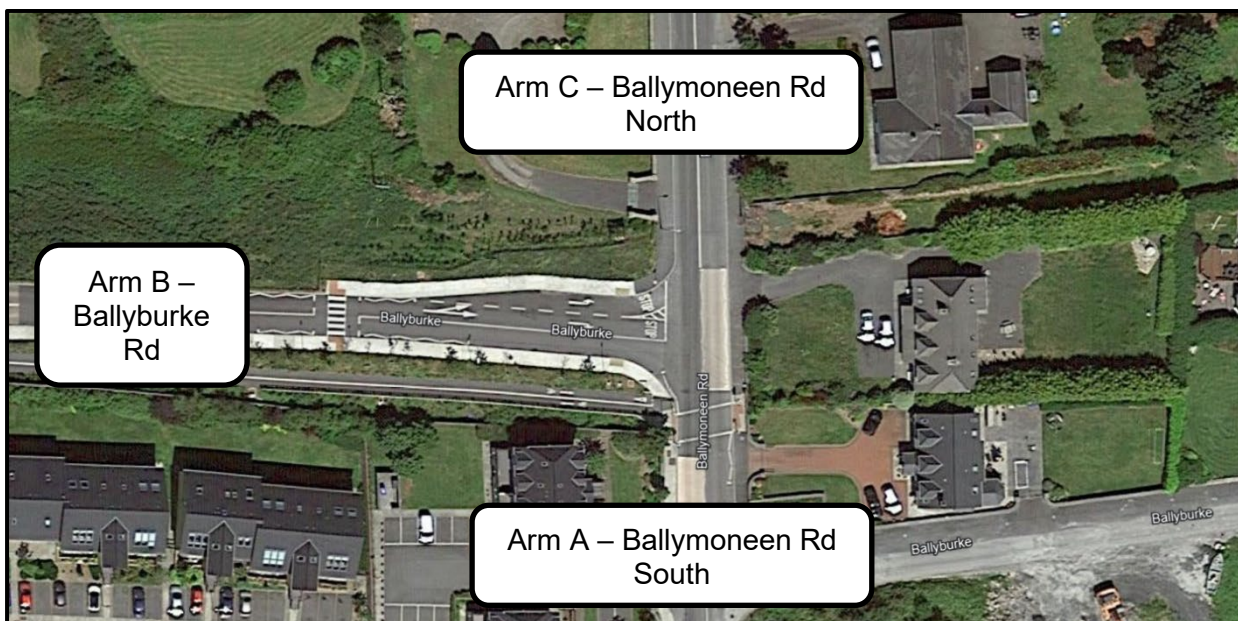


Figure 5.2: JTC1 Arm Names (Source: Google Earth)

Table 5.1 shows the results of the analysis of the junction modelled using PICADY transport modelling software for priority junctions for the assessment year (2023), the expected year of opening (2026), 5 years after the development completion (2031) and 15 years after the development completion (2041) for the 'Do-Nothing' and 'Do-Something' scenarios.

Table 5.1 – PICADY Results for JTC1 Analysis					
Analysis	Stream	AM		PM	
		Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
1 – 2023, base traffic	B-C	0.2	0.19	0.0	0.03
	B-A	0.7	0.41	0.1	0.10
	B-AC	0.2	0.11	0.1	0.04
	C-AB	0.3	0.20	0.1	0.10
2 – 2026, do-nothing	B-C	0.3	0.22	0.0	0.03
	B-A	0.9	0.48	0.1	0.12
	B-AC	0.2	0.12	0.1	0.04
	C-AB	0.3	0.23	0.1	0.12
3 – 2026, do-something	B-C	0.5	0.32	0.1	0.08
	B-A	1.8	0.64	0.3	0.26
	B-AC	0.3	0.14	0.2	0.11
	C-AB	0.3	0.24	0.2	0.14
4 – 2031, do-nothing	B-C	0.3	0.24	0.0	0.04
	B-A	1.2	0.54	0.1	0.13
	B-AC	0.3	0.13	0.1	0.05
	C-AB	0.3	0.25	0.1	0.13
5 – 2031 do-something	B-C	0.6	0.37	0.1	0.09
	B-A	2.3	0.70	0.4	0.27
	B-AC	0.3	0.16	0.2	0.11
	C-AB	0.4	0.26	0.2	0.15
6 – 2041, do-nothing	B-C	0.4	0.29	0.0	0.04
	B-A	1.6	0.62	0.2	0.14
	B-AC	0.3	0.15	0.1	0.06
	C-AB	0.4	0.27	0.2	0.14
7 – 2041, do-something	B-C	0.9	0.49	0.1	0.09
	B-A	3.6	0.80	0.4	0.29
	B-AC	0.4	0.18	0.2	0.12
	C-AB	0.4	0.28	0.2	0.16

As shown in **Table 5.1**, the junction is currently operating well below the theoretical capacity of 0.85, with a maximum Ratio of Flow to Capacity (RFC) of 0.41 (41%) in stream B-A (Ballyburke Rd to Ballymoneen Rd South). In analysis 2, with the inclusion of the committed developments mentioned in **Section 4.2**, the junction operates with a maximum RFC of 0.48 (48%) also in arm B – Ballyburke during the AM peak. When incorporating the traffic from the proposed development in Analysis 3, there is an increase in RFC of 0.16, resulting in a value of 0.64 (64%) in arm B (Ballyburke Road) during the AM period, compared to 0.48 (48%) in Analysis 2.

In Analysis 6, for the projected year 2041 and without the additional traffic from the proposed development, the junction is anticipated to operate below capacity for both the AM and PM periods. The maximum RFC is projected to be 0.62 (62%) in arm B during the AM period. With the inclusion of the proposed development traffic in Analysis 7, the effect on the junction's capacity is modest. The maximum RFC increases from 0.62 (62%) in arm B during the AM period to 0.80 (80%). During the PM period Arm B operates comfortably below theoretical capacity with a maximum RFC value of 0.29 (29%). Arms A and B operate well below capacity for every scenario assessed. Therefore, the influence of the proposed traffic generated by the residential development is deemed to be minor and does not adversely impact the capacity of the evaluated junction in all future design years.

5.2.2 Junction 2 – Blake roundabout

In the following analysis, the roundabout was assessed for the AM and PM peak period and the arms were labelled as follows:

- Arm 1: Western Distributor Road (WDR) - East
- Arm 2: Ballymoneen Rd - South
- Arm 3: Western Distributor Road (WDR) - West
- Arm 4: Ballymoneen Rd - North

Figure 5.2 depicts the arm names as used in modelling with ARCADY software.



Figure 5.3: JTC2 Arm Names (Source: Google Earth)

Table 5.2 shows the results of the analysis of the roundabout modelled using ARCADY transport modelling software for the assessment year (2023), the expected year of opening (2026), 5 years after the development completion (2031) and 15 years after the development completion (2041) for the ‘Do-Nothing’ and ‘Do-Something’ scenarios.

Table 5.2 – ARCADY Results for JTC2 Analysis					
		AM		PM	
Analysis	Arm	Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
1 – 2023, base traffic	Arm 1	0.8	0.45	0.9	0.46
	Arm 2	0.5	0.41	0.4	0.31
	Arm 3	0.6	0.11	0.3	0.21
	Arm 4	0.6	0.20	0.3	0.21
2 – 2026, do-nothing	Arm 1	1.1	0.51	1.1	0.53
	Arm 2	0.7	0.42	0.6	0.39
	Arm 3	0.7	0.41	0.3	0.24
	Arm 4	0.8	0.44	0.3	0.25
3 – 2026, do-something	Arm 1	1.1	0.53	1.3	0.56
	Arm 2	0.8	0.43	0.7	0.42
	Arm 3	0.7	0.42	0.3	0.25
	Arm 4	0.9	0.47	0.4	0.29
4 – 2031, do-nothing	Arm 1	1.3	0.56	1.3	0.58
	Arm 2	0.9	0.46	0.7	0.43
	Arm 3	0.8	0.45	0.4	0.26
	Arm 4	0.9	0.48	0.4	0.27
5 – 2031 do-something	Arm 1	1.4	0.58	1.5	0.60
	Arm 2	0.9	0.47	0.8	0.45
	Arm 3	0.9	0.46	0.4	0.27
	Arm 4	1.0	0.51	0.5	0.31
6 – 2041, do-nothing	Arm 1	1.7	0.63	1.7	0.63
	Arm 2	1.1	0.51	0.9	0.48
	Arm 3	1.0	0.51	0.4	0.29
	Arm 4	1.2	0.54	0.4	0.30
7 – 2041, do-something	Arm 1	1.9	0.65	1.9	0.66
	Arm 2	1.0	0.53	0.51	0.29
	Arm 3	0.4	0.52	0.31	0.12
	Arm 4	0.5	0.57	0.35	0.16

As indicated in **Table 5.2**, the current operation of the junction is significantly below its theoretical capacity of 0.85. The highest RFC is observed in arm 1 (Western Distributor Road (WDR) - East) at 0.46 (46%) during the PM peak. In Analysis 2, considering the committed developments mentioned in **Section 4.2**, the junction continues to operate comfortably below capacity. The maximum RFC, observed in arm 1 is 0.53 (53%) during the PM peak, with a maximum queue length of 1.1 PCU equivalent to 6.3m.

Upon introducing the traffic from the proposed development in Analysis 3, there is a minimal increase in RFC, reaching 0.56 (56%) in arm 1 during the PM period, compared to 0.53 (53%) in Analysis 2.

Looking ahead to 2041, in Analysis 6, even without the additional traffic from the proposed development, the junction is projected to operate below capacity for both the AM and PM periods. The highest RFC is anticipated to be 0.63 (63%) in arm 1 during both the AM and PM period. When the proposed development traffic is included in Analysis 7, the impact on the junction's capacity is marginal. The maximum RFC rises from 0.63 (63%) in arm 1 during the AM period to 0.65 (65%). Similarly, in the PM period, Arm 1 operates comfortably below its theoretical capacity, with a maximum RFC value of 0.66 (66%).

Arms 2, 3 and 4 consistently operate well below capacity for all scenarios assessed.

In conclusion, the influence of the proposed traffic generated by the residential development is considered minor, with no adverse impact on the capacity of the evaluated junction in all future design years.

6 Conclusions

The main conclusions of this study are summarised as follows:

- This Traffic and Transport Assessment was conducted to accompany the planning application for a proposed residential development at lands owned by the Galway City Council in Ballyburke Road, Co. Galway.
- The proposal will encompass 84No. residential units broken up into 71No. apartments across four blocks and 13No. terraced family units across two blocks. Of the apartments proposed 40% of these are designed as age friendly / universal design units. The development will also incorporate essential amenities such as local shops, a café, a creche, a central plaza space, and a landscaped amphitheatre. The creche will have capacity to accommodate 40No. children.
- Communal parking facilities will be available throughout the site, offering a total of 118No. car parking spaces. Of these, 7No. spaces are designated for mobility-impaired users. Additionally, provisions will be made for ducting to accommodate EV charging stations across the site, ensuring readiness for future electric vehicle charging needs.
- The plan also includes the provision of 4No. access points, comprising 3No. new entrances and 1No. recently established access point, all connecting the site with the neighbouring estates of Maoilin, Drisin, and Clairin.
- ORS liaised with the local authority to scope the requirements for the Traffic and Transport Assessment (TTA) and it was agreed that this report would focus on the junction between Ballyburke and Ballymoneen Road and the Blake roundabout. The chosen junctions were subjected to capacity analysis to examine the potential traffic levels generated from the development to the existing road network.
- Automatic junction turning counts (JTCs) were undertaken by a third-party company named IDASO, on Wednesday the 27th of September 2023, at the junctions mentioned above. The recorded peak hours at the junctions were between 08:00 and 09:00 in the morning period, and in the evening period, they were between 17:15 and 18:15 for the Blake roundabout. For the Ballyburke Rd/Ballymoneen Rd junction, the PM peak times were between 14:45 and 15:45. During the peak hours, the priority junction recorded 999 PCUs in the morning and 498 PCUs in the evening. In contrast, the roundabout experienced higher traffic volumes with 1727 PCUs in the morning and 1405 PCUs in the evening.
- The Galway City Council planning website was consulted to obtain information about committed developments near the proposed site to be included in this traffic analysis. It was found that 4No. granted planning applications will make use of the 2No. junctions analysed, therefore, they were included in future scenarios of the junctions modelling.
- The traffic splits in the examined junctions could be calculated from the traffic counts and it is expected that the traffic from the proposed development will follow the same trend. The trip generation from the development was assessed from the TRICS database.
- The junctions were examined using *Junctions 10* (PICADY and ARCADY) software for the AM and the PM peak conditions under conservative future projections and Central background Traffic Growth for the considered year of opening, 2026, 5-years and 15-years after development conclusion.
- The proposed junctions analysed in this traffic assessment were assessed against the TII threshold and it was found that junction between the Ballyburke and Ballymoneen Road was

above the threshold of 5% increase in traffic, therefore a TTA was required.

- From a transportation planning perspective, the proposed residential development will not adversely impact the operation of the 2No. junctions analysed. Both junctions are currently functioning well below theoretical capacity, and the inclusion of the additional traffic will not generate any significant delays or queues along the road and the junctions will still operate below capacity for all future design years.

Appendix A – Traffic Data

Traffic data available upon request.

Appendix B – TRICS Data

TRICS data available upon request.

Appendix C – Junctions10 Modelling Data

Junctions10 Modelling data available upon request.

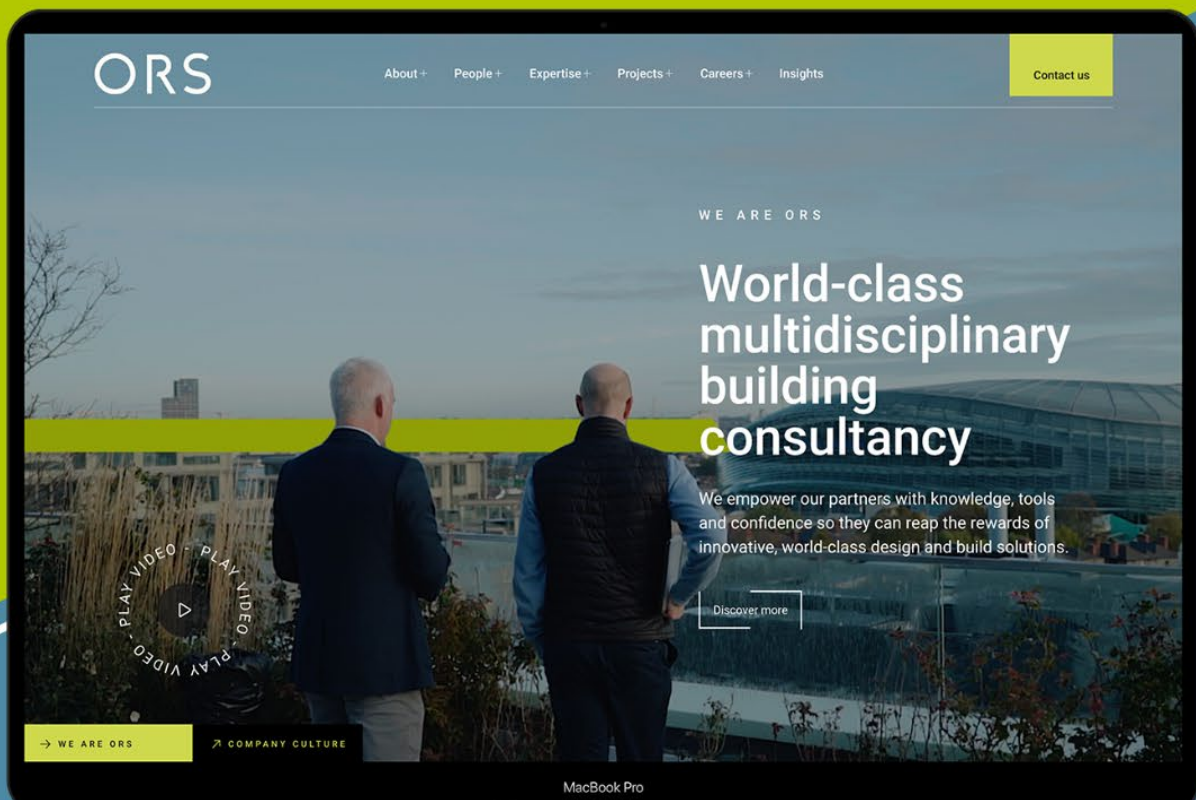
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Galway Technology Park,
Parkmore, Co. Galway,
Ireland, H91 A2WD

 Office 2, Donegal Town,
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Donegal Town, Co. Donegal,
Ireland, F94 KT35

 Office 4, Spencer House,
High Road, Letterkenny,
Co. Donegal,
Ireland, F92 PX8N

 NSQ2,
Navigation Square,
Albert Quay, Cork
Ireland, T12 W351