

12. MATERIAL ASSETS

12.1 Traffic and Transport

12.1.1 Introduction

12.1.1.1 Purpose of Section

The purpose of this Traffic and Transport EIR Section is to assess the traffic impact of the proposed mixed-use development on the surrounding road network at Knocknacarra, Ragoon, Galway.

This section is written as a concise summary of the Traffic and Transport Assessment (TTA), included as Appendix 3-1 of this EIR. Rather than repeat the detailed traffic assessments carried out within this Traffic and Transport Assessment, it is referred to throughout this chapter, with the impact assessment findings discussed below.

12.1.1.2 Statement of Authority

This EIR Section was written by Kasia Garvey of Atkins, who also assisted in the preparation of the Traffic and Transport Assessment. Atkins is one of the world's leading design, engineering and project management consultancies with well-established client base and project portfolio in Ireland. Atkins has carried out numerous Traffic and Transportation Assessments (TTA's) for various residential, commercial, business and retail developments. Atkins has also drafted various Traffic Chapters for EIR's. The drafting of TTAs and Traffic Chapters involve the followings tasks:

- Liaising with local authorities, TII, clients and other key stakeholders,
- Analysis of the suitability of construction routes,
- Design and analysis of access points to all types of developments,
- Access and site layout arrangements using AutoTRACK, swept path analysis software,
- Junction analysis on priority and signalised junctions

12.1.2 Receiving Environment

12.1.2.1 Location and network summary

The proposed Knocknacarra District Centre will form part of what is currently known as the Gateway Retail Park located as shown in Figure 12-1 below. The Gateway is based in Knocknacarra on the Western Distributor Road, approximately a 10 minutes' drive from Galway City Centre. It is surrounded by a mix of different uses, although it is located largely in a residential area. To the north it is bounded by Aviva and RSA insurances offices and Gaelscoil Mhic Amhlaigh School. A family activity centre and Aldi store are located to the south of the development. In vicinity of the site there are many open spaces, such as the two soccer pitches east of the Gaelscoil Mhic Amhlaigh school.



Figure 12-1 - Location of proposed development

This development forms part of the wider development of this area. For the purpose of the TTA and to allow for all scenarios to be assessed, we have split the area into 4 Phases including the existing, proposed and future development as follows:

- Phase 1 is complete and consists of the existing Gateway Retail Park
- Phase 2 of the development is under construction. This phase consists of development of Retail Park, Gym and Creche. (Total ground floor area (GFA) 11,794 m²).
- Phase 3 of the development is the Knocknacarra District Centre proposing
 - Construction of 332 no. new residential units (138 units per HA) comprising of
 - 93 no. One bed apartments,
 - 219 two bed apartments
 - 20 no. three-bed apartments
 - Provision of 2,667 sq.m of commercial floorspace.
 - Provision of 93 sq.m of community use facilities
 - Provision of 470 sq.m of tenant amenity accommodation including shared workspaces, shared dining and lounge facilities
 - Provision of 174sq.m creche facility including an external secure play area.
 - Provision of 85 no. car parking spaces and provision of realigned road between Gort na Bró and Gateway Retail Park Road.
 - Change of use of underground void within Phase 2 to 181 bay underground car park
 - Provision of shared communal and private open space, car parking, bicycle parking, bin storage, public lighting, site landscaping, services, signage, substation and all associated site development works.
- Phase 4 Future District Centre Use Site envisaged for leisure type facility.

Phase 3 of the development is a main subject of the traffic assessment report; however, Phase 4 is taken into consideration when assessing the requirement for car parking and junction capacity.

The local road network in vicinity of the existing and proposed development site is made up of single carriageway local and connector roads. The Western Distributor Road is a major link through the Gort na Bró to Bishop O'Donnell Road connecting Knocknacarra North and South with Galway City Centre.

There is a 50km/h speed limit on the roads adjacent to the site.

The junctions in vicinity of the site are uncontrolled with roundabout junctions along the Western Distributor Road and Gort na Bró. These two roundabouts and the mini roundabout at the entrance to Gateway Retail park are the busiest junctions in this area. Following traffic counts and traffic condition analysis within the adjoining road network, Junctions 3 to 8 as illustrated in figure 12-2 below have been considered for traffic analysis.

The proposed Phase 3 development is predicted to generate 118 trips in weekday morning peak, 165 trips at weekday PM peak and 186 trips at weekend peak times.

12.1.3 Scoping

An Initial scoping meeting was held with Galway City Council Roads and Traffic Department in December 2018. During the meeting it was advised that a Traffic and Transportation Assessment; a Mobility Management Plan Report and a Stage 1 Road Safety Audit would be required as part of the planning application documents. It was agreed that the Traffic and Transportation Assessment and Mobility Management Plan Report would incorporate all 4 phases of the development. The Stage 1 Road Safety Audit would be for Phase 3 of the development only. The number and location of junctions to be assessed on traffic grounds were discussed and agreed as:

1. *The Gort na Bro roundabout and closing off the roundabout arm*
2. *The proposed upgrade to L5000/Miller's lane road*
3. *The proposed new Link Road location and cross section*

The proposed signalised junction at L5000 and new link road crossing.

12.1.4 Road Safety Audit

A Road Safety Audit was carried out on the 19th Jan 2019 by independent Audit Team in Atkins. Some refinements of the site external road layout have been carried out by the design team on the back of liaison and outcomes of the Road Safety Audit. As a result, the external road layout provides an external roads network adjacent to the development which incorporates measures (such as road markings and surface materials to differentiate pedestrian, cyclist and vehicle routes etc.) that ultimately provide a higher level of safety for the pedestrian, cyclist and the driver without comprising the overall quality of the development.

For more details please refer to the Atkins's Road Safety Audit which is included as Appendix F of the TTA, which is itself included as Appendix 3-1 of this EIAR.

12.1.5 Mobility Management Plan

A Mobility Management Plan has been produced for the proposed development. This is included as Appendix E of the TTA, which is itself included as Appendix 3-1 of this EIAR.

12.1.6 Proposed Development

12.1.6.1 Trip generation of Proposed Development

Atkins have procured Trip Rate Information Computer System (TRICS) data for similar sized developments in order to inform the trip rate associated with such a development. Details of the TRICS data utilized are included in Appendix C of the Traffic and Transport Assessment, which is itself included as Appendix 3-1 of this EIAR.

Table 12.1 below details the associated generated traffic for the AM and PM peak hours.

Table 12.1 Traffic Generation

Peak hour	Phase 3 (Retail + Residential development +Community)		Phase 4 (Leisure type development)		Total	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Weekday AM Peak (08:00-09:00)	44	72	4	1	48	73
Weekday PM Peak (17:00-18:00)	88	66	19	20	107	86
Weekend peak (12:00-13:00)	84	85	39	28	123	113

The above table demonstrates that a total of 121 trip movements in the weekday AM peak and a total of 193 trip movements in the weekday PM peak are expected to result from the proposed development. A total of 236 trip movements are expected during weekend peak.

GCC did raise concern regarding the use of TRICS data, rather than traffic counts in close proximity to the site of similar developments. Sensitivity testing was carried out by modifying the proposed residential trip generation and distribution based on a local traffic count and distribution observed at a nearby residential development. The results of this sensitivity are included in Appendix D of the TTA and generally show that the development will have a very minor impact on the surrounding road network and, in fact, show a reduced impact on Junctions 7 and 8 compared to use of original TRICS data as shown in Table above. The revised data is shown in Table 12.2 below.

Table 12.2 Traffic Generation

Peak hour	TRICS Data		Local Trip Data	
	Arrivals	Departures	Arrivals	Departures
Weekday AM Peak (08:00-09:00)	9	44	23	95
Weekday PM Peak (17:00-18:00)	37	13	95	28
Weekend peak (12:00-13:00)	18	22	46	48

12.1.7 Existing Traffic Flows and Traffic Impact of Proposed Development

Traffic count surveys were taken at different locations within the road network in vicinity of the site to gain an understanding of the current traffic conditions and current traffic flows. These included Automatic Traffic Counts (ATC) and Junction Traffic Counts (JTC) in locations shown in Figure 12-2



below.

Figure 12-2 - Locations of the Traffic Counts

ATC data was collected for a one-week period from Monday October 15, 2018 to Sunday October 21, 2018. The JTC surveys were carried out on Tuesday October 16, 2018 and Saturday October 20, 2018.

In addition, car parking occupancy surveys were undertaken within the existing car park of the Gateway Retail Pak on Tuesday October 16, 2018 and Saturday October 20, 2018.

Based on the JTC survey data following time periods were identified as the peak hour periods:

- Weekday AM Peak (08:00 to 09:00 hours),
- Weekday PM Peak (17:00 to 18:00 hours),
- Weekend Peak (12:00 to 13:00 hours).

The network diagrams showing the peak baseline condition traffic flow condition has been shown in the Appendix C of the TTA.

The peak flow traffic flows at various junctions for baseline scenario are shown Table 1 Section 8.1 of the TTA.

To determine the existing baseline traffic flow conditions Atkins undertook a number of site visits and reviewed online traffic flow data (Google maps). Based on these site visits and from the online data the following points are noted:

- The busiest junctions are junctions 4,6 and 8.
- Analysis of online traffic flow data indicates that all the junctions within the study area operate without significant delays.

12.1.8 Likely and Significant Effects and Associated Mitigation Measures

12.1.8.1 Construction Phase

The Construction and Environmental Management Plan produced by DBFL (See Appendix 3-3) covers in detail the proposed construction of the Development. It is proposed to construct it in two stages, see Figure 12-3 below.

Construction traffic travelling to the proposed Phase 3 development site at Gateway Knocknacarra, Rahoon, Galway will use the Western Distributor Road and Gort na Bro roundabout to access the site from the south. Access from the north will be available outside of the school hours from Rahoon Road and two local roads either side of Gaelscoil Mhic Amhlaigh school. Bothar Stiofain located west of the Gateway development will not be utilized for construction vehicle access due to residential character of this road and to minimize impact on surrounding residences facing onto this road. The contractor will need to agree exact haul routes with Galway City Council.

Stage 1 of the construction includes the proposed Link Road realignment with upgrade to L5000 and proposed signalised junction. The existing access road to the existing retail park will be kept open to traffic until the proposed road diversion is complete. The existing access road will be decommissioned in stage 2 after the new road diversion is complete.

The existing Link road will be closed off during stage 2, however its access off Gort na Bro roundabout will be maintained as a construction access point for traffic.

Specific control measures will be implemented to fully segregate construction traffic from pedestrian and cyclists, taking into consideration the close proximity of a primary school. There will be a requirement for a site marshal in particular during the school pick up / drop off.

Construction traffic for the works in the basement of Phase 2 carpark will be provided through the basement access ramp off local road. This access will be available outside of the school hours. Temporary pedestrian routes will be maintained within the basement carpark with positive traffic management during retail opening hours.

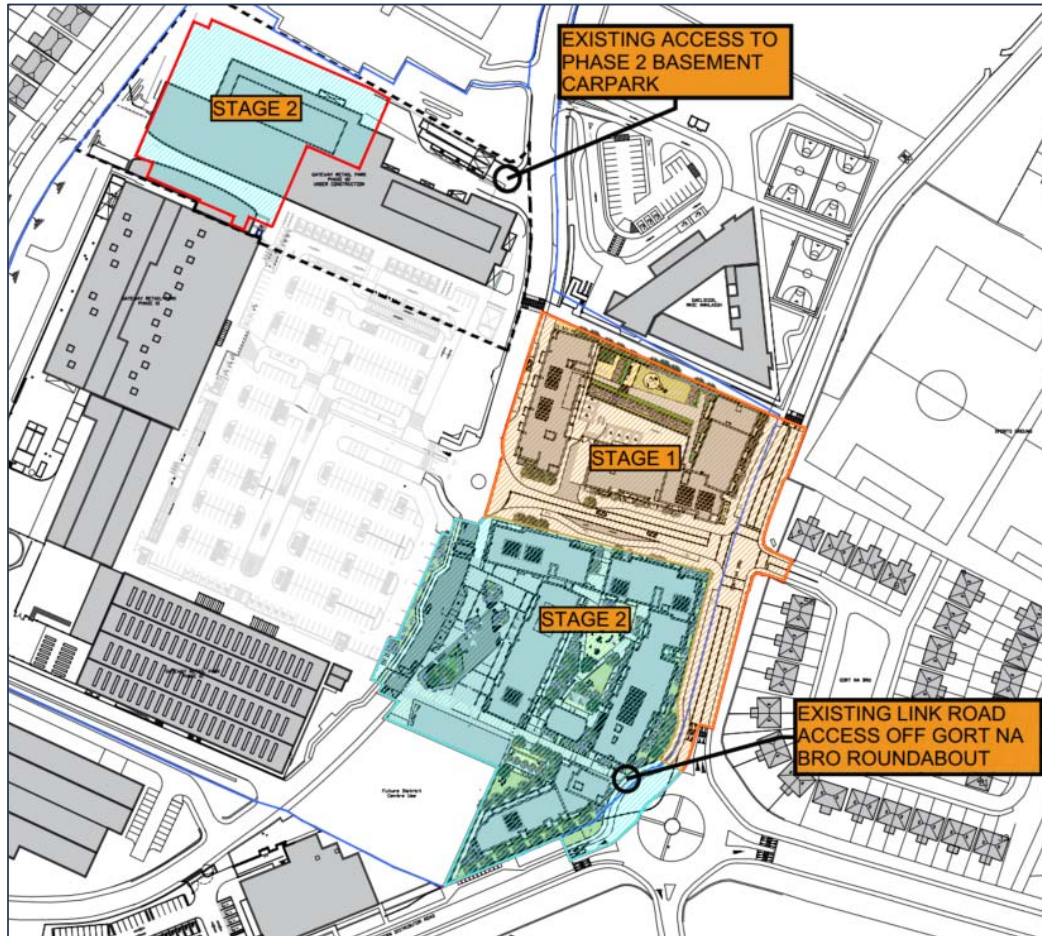


Figure 12.3 – Construction staging

The increase in traffic volumes as a result of construction vehicles visiting the site is not considered to be excessive and will be spread out over the duration of the construction phases of the development. Due to the designated access points off the existing Gort na Bro roundabout and the Local Road, allowing delivery vehicles to pull off onto the site, there will be no significant disruption on the traffic flows as a result of the construction of the development.

It is recommended that all deliveries are provided with instructions/directions on accessing the site from Gort na Bro roundabout and Local Road. Overall there will be a short-term not significant negative impact to local traffic during the construction phase.

12.1.8.1.1 Mitigation measures during the construction phase

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 a preliminary overview of the likely volume and routing of construction vehicles, based on a most likely scenario of construction.

The site as proposed would be expected to require approximately 24 months to complete from commencement of works.

The site is readily accessible by bus services within nearby walking distance. On-site employees will generally arrive before 07:00, thus avoiding the morning peak hour traffic. Construction employees will

generally depart after 17:00. It should be noted that a large proportion of construction workers may arrive in shared transport.

Construction traffic will not be permitted to park on the public roads or within the general area outside the main site. Restricted parking facilities will be provided by the contractor.

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

Due to proximity of site to Gaelscoil Mhic Amhlaigh school the construction traffic adjacent to school will be limited to the outside of the school hours. Additionally, a temporary pedestrian/cycle routes will be required at the proposed site access locations to fully segregate construction traffic from pedestrian traffic. Site marshal will be provided especially during morning and afternoon school drop-off/pick-up times.

For the works within Phase 2 basement full segregation of pedestrians from construction traffic will be provided through temporary pedestrian routes.

There will also be a requirement for comprehensive measures as part of the construction management, such as:

- Temporary warning signs;
- 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;
- 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.

Any increase in volumes on the surrounding highway network as a result of the proposed development's construction traffic will likely have a short-term insignificant impact.

12.1.8.1.2 **Residual Impact**

Overall there will be a short-term not significant negative impact to local traffic during the construction phase.

12.1.8.1.3 **Significance of Effects**

Based on the assessment above and included in the TTA there will be no significant effects during the Construction Phase.

12.1.8.2 **Operational Phase**

Access to the proposed development is to be facilitated via the new traffic signalized junction, inclusive of pedestrian and toucan crossings, Link Road and improvement to the existing L5000 proposed as part of the project. This includes carriageway widening, provision of two-way cycle lane and footpaths. Additionally, a network of pedestrian links are proposed as part of the development, including a link connecting the Gort na Bro roundabout with the Local road and the existing Gateway Retail park enhancing pedestrian connectivity in this area.

TRICS data for similar sized developments were obtained in order to inform the trip rate associated with such a development. It is anticipated that a total of 120 trip movements are expected in the weekday AM peak and a total of 195 trip movements in the weekday PM peak. A total of 236 trip movements are expected during weekend peak. Details of the trip analysis are discussed in Chapter 9.3 of TTA which is included as Appendix 3-1 of this EIAR.

Sensitivity testing was carried out by modifying the proposed residential trip generation and distribution based on local traffic counts and distributions observed at a nearby residential development. The results of this sensitivity are included in Appendix D of the TTA and generally show that the development will have a very minor impact on the surrounding road network.

Overall there will be a long-term slight impact to local traffic.

12.1.8.2.1 **Mitigation measures during the operational phase**

As population grows throughout Ireland and in particular, in popular towns like Galway City, a continued increase in traffic volumes is not sustainable. As a result, an ever-increasing approach by designers and planners to providing sustainable commuting alternatives is required. The use of public transport and promotion of walking and cycling will ultimately increase the overall quality of life for the people living in these fast paced, busy towns and villages located within commuter belts.

The proposed development has integrated a number of measures in line with the relevant standards and guidelines, such as DMURS 2013 and the National Cycle Manual, which promotes the use of sustainable travel to and from the site. The Road Safety Audit carried out for the site allowed the design team to address any concerns initially flagged in the Road Safety Audit. A continued and collaborative approach with the road safety auditors meant that a desirable and safe external road layout could be achieved without negatively impacting the overall quality of the development.

The external roads and junctions on the development have been designed in accordance with the DMURS manual. Liaison was sought with Galway City Council Roads & Traffic Department in relation to the roads and traffic.

The proposed development has undertaken to realign the internal Link road and provide a signalised junction in advance of the Proposed N6 Galway City Outer Ring Road (N6GCRR). N6GCRR was consulted through the design process to ensure all considerations were taken into account and that there were no adverse impacts on the CPO.

The proposed development is located within accessible urban location and well serviced by public transport system. There are several types of retail units on the door step of the development. There is the Irish primary Gaelscoil Mhic Amhlaigh adjacent to the development with St. John the Apostle National School across the Western Distributor Road and within 500m of the proposed development. Within 2km there is Scoil Einde Primary School and Scoil Ide. Within 2km there is also a choice of secondary schools such as Colaiste Na Coiribe, St Enda's and Salerno. Some of the main employment centres and destinations are the University Hospital which is just over 3km and a 11 minute cycle, the University is a 13 minute cycle with the city centre less than 20minutes. All of these are also currently served by bus routes in the area. Additionally, as identified within the Galway Transport Strategy, significant transport upgrades are planned in this area by National Transport Authority further enhancing the benefits of urban location with regards to access to public transport for residents and visitors.

The proposed development will offer further amenity destinations to the residents like shops and cafes. The majority of these amenities are within a reasonable walk of the proposed development.

An appropriate and sustainable level of parking is provided for the proposed development. A total of 169 residential parking spaces at a ratio of 0.8 are proposed (refer to Section 10.5.2 of the TTA for details). This is keeping in line with the census data for existing residential developments within Galway City supporting that 20% of residential units do not own a car. Furthermore, the provision of the parking ratio less than 1 is keeping in line with the National and EU policies to reduce car ownership and carbon footprint.

Promoting the alternative modes of transport, walking, cycling and use of public transport is integral part of national and international policies and initiatives as it has been in the approach to this development. This is driven by need for change and departures from traditional use of car for all transport. National Framework Policies and Local Authority Policies also support this need for a behavioural change and understand that well developed public transport network supported with diversified modes of transport will help to achieve this. Galway Transport Strategy Policies 8, 9 and Projects 1, and Project 6 in particular, which states reducing parking requirements / maximum permitted levels of parking for new developments are in line with this approach.

The above has been recently further highlighted by Irish Government in light of Climate Emergency, *By the end of 2019, a study would look at the potential for congestion charges, low emission zones and changes to car-parking policies in urban areas. The study, which would be published in the first quarter of 2020, would "recommend most appropriate responses for Dublin/Cork/Galway/Limerick".*

National Planning Framework published in 2018 includes plans for compact and sustainable growth for Ireland's five cities to grow by 50% by 2040. Galway is one of them. The NPF has clearly defined National Strategic Outcomes supporting the objectives of this Plan, including transition to a Low-Carbon and Climate Resilient Society, Compact Growth and Sustainable Mobility.

Mitigation measures proposed during the operational stage are as follows;

- Provision of Link Road realignment and upgrade to L5000 in advance of N6 GCRR works
- Upgrade to L5000 including widening and provision of two-way cycle lanes and footpaths.
- Provision of new traffic signals at the junction between the Link Road and L5000
- Provision of suitable road markings and road traffic signs in accordance with the Traffic Signs Manual.
- Provision of a lay-by type bus stop on Link Road
- Improvement to pedestrian permeability and connectivity in the area by provision of additional pedestrian links through the development.
- Provision of the residential parking ratio of 0.8 per apartment keeping in line with the National and EU policies to reduce car ownership and carbon footprint
- Provision of cycle parking facilities, sheltered and secure
- Provision of e-charging parking places
- Provision of car club facility
- Provision of Mobility Management Plan for employees and residents.

12.1.8.2.2 Residual Impact

The volumes of traffic generated from the proposed development will have a long-term negligible negative effect on the surrounding roads and highway network traffic volumes and can be considered within the norms for urban developments.

The provision of cycle and pedestrian links proposed as part of the development will have positive impact on permeability and connectivity within this area. Furthermore, this development will provide substantial bicycle parking facilities and car share club facility all of which will enhance sustainable travel modes and will have positive impact on sustainable travel profile of Knocknacarra suburb.

Mobility Management Plan prepared as part of this development will have positive impact with regards to increasing public awareness and promoting shift to sustainable travel modes for employees as well as residents of the development and wider area.

12.1.8.2.3 **Significance of Effects**

Overall the development will have a long term significant positive impact on the neighbouring area. The proposed layout improves vehicular and pedestrian permeability and connectivity through the site. Proposed cycling and pedestrian facilities improve safety of the users. Provision of car share facility promote alternative transport modes which will have overall positive impact on sustainable travel profile of Knocknacarra suburb.

12.1.8.3 **Cumulative Assessment**

The projects referred to in Section 2.5.2 of this EIAR have been included in this cumulative impact assessment. Based on these projects, some potential cumulative impacts are discussed below.

The planning application for the N6 Galway City Ring Road (N6 GCRR) has been finalized and submitted to An Bord Pleanála for review. It is expected to go to oral hearing in the coming months. The N6 GCRR is a key component of the Galway Transport Strategy (GTS) which realizes Galway City and County Councils' vision of all elements of transport working together to achieve an integrated sustainable transport solution. This new road infrastructure was designed to remove through traffic from the N6 and will therefore facilitate access to the subject development. Galway County Council's consultants for the N6 Galway City Ring Road provided information to Atkins on the impact of the N6 Galway City Ring Road on the Gort na Bro / Western Distributor Road (email 11 Jan 2019). From the review of this data it is noted that the predicted volume of traffic at the Gort na Bro / Western Distributor Road will reduce by approximately 30% once the N6 GCRR is constructed. Furthermore, the proposed N6 GCRR will have no impact on the new proposed signalized junction between Link Road and L5000.

Surrounding the proposed development, all junctions operate within capacity for +15year. There are two junctions that are marginally over capacity, but the impact of the development is negligible - see Section 11.1 of the TTA appended to this report.

Overall the development will have a long term significant positive impact on the neighbouring area. The proposed layout improves vehicular and pedestrian permeability and connectivity through the site. Proposed cycling and pedestrian facilities improve safety of the users. Provision of positive sustainable travel modes initiatives like car share facility and actions of mobility management plan will promote alternative transport modes which will have overall positive impact with regards to public awareness and carbon footprint of the area

12.2 **Water and Other Services**

12.2.1 **Statement of Authority**

This section of the EIAR has been prepared by Thomas Blackwell and reviewed by Michael Watson, both in MKO. Thomas Blackwell is a Senior Environmentalist and Michael Watson is a Project Director with MKO; with over 15 and 18 years of experience in the environmental sector respectively. Their environmental experiences involves report writing of Environmental Reports (ER), Environmental Impact Statements/Environmental Impact Assessment Reports (EIS/EIAR) & Strategic Environmental Assessments (SEA) as well as project management of a variety of small and large scale jobs, including residential and commercial development projects.

12.2.2 Consultation

The relevant national and regional authorities and bodies listed in Section 2.4 were consulted to identify any potential impact on material assets. Acknowledgements were received from ESB Networks and the Department of Culture, Heritage and the Gaeltacht. The Galway City Council Heritage Officer requested that all ground works in the development be archaeologically monitored. The scoping responses are discussed in further detail in Section 2.4.2 of this EIAR.

12.2.3 Construction Methodology

The construction methodology detailed in Chapter 3 of this EIAR describes the manner in which the proposed development will be constructed, including any excavations and installation of services. Prior to works, the area where excavations are planned will be surveyed and all existing services will be identified. All relevant bodies i.e. ESB, Bord Gáis, Eir, Galway City Council etc. will be contacted and all drawings for all existing services sought.

Any underground services encountered during the works will be surveyed for level and where possible will be left in place. If there is a requirement to move the service, then the appropriate body (ESB, Gas Networks Ireland, etc.) will be contacted, and the appropriate procedure put in place. Back fill around any utility services will be with dead sand/pea shingle where appropriate. All works will be in compliance with required specifications. Construction methodologies are described in further detail in Chapter 3 of this EIAR.

12.2.4 Receiving Environment

The proposed development could have the potential to impact the following infrastructure:

- Electricity Network
- Telecommunications Networks (including phone and broadband)
- Gas Distribution Networks
- Water Supply Networks
- Sewage Networks
- Waste Management

12.2.4.1 Electricity Network

There are no major overhead electricity cables on the site of the proposed site. A number of low and medium voltage underground electrical services exist within the proposed site. The striking of an underground electricity cable during construction operations could potentially result in serious injury or death of site staff. A detailed map of all existing electrical cables in the vicinity of the site is provided in Appendix A of the Mechanical and Electrical Basis of Design Report (Appendix 3-5 of this EIAR). Relocation of the underground electrical services that cross the site will be required.

12.2.4.2 Telecommunications Networks

Existing telecommunication services exist within the roadways to the east, west, and south of the site. While it is unlikely that there will be any further underground telecommunications services encountered during the construction works, there is still a possibility that an issue may occur while carrying out works at the site boundaries. The breaking of an underground telecommunications cable during construction operations could potentially result in disruption to businesses and homes in the area. A detailed map of all existing telecommunication cables in the vicinity of the site is provided in Appendix A of the Mechanical and Electrical Basis of Design Report (Appendix 3-5 of this EIAR). All proposed works for the project have been designed to avoid these services as much as possible.

12.2.4.3 Gas Distribution Networks

A medium pressure gas distribution pipe runs along the existing Gateway Retail Park access road through the centre of the site. This pipe connects with a gas main that runs along the Western Distributor Road on the southeastern side of the site. On the western side of the site medium pressure gas distribution lines run north and south along the site boundary and provide service to the commercial development to the west of the site and to the school to the north of the site. The gas line that currently bisects the site will be relocated to align with the new access road. While it is unlikely that there will be any additional underground gas services encountered during the construction works (as the site is already almost entirely excavated), there is still a possibility that an issue may occur while carrying out works at the site boundaries. Rupturing an underground gas line during construction operations could potentially result in serious injury or death of site staff, and/or disruption to local services. A detailed map of all existing gas services in the vicinity of the site is provided in Appendix A of the Mechanical and Electrical Basis of Design Report (Appendix 3-5 of this EIAR). All proposed works for the project have been designed to avoid these services as much as possible.

12.2.4.4 Water Supply Networks

A 150 mm diameter watermain runs along the existing Gateway Retail Park access road through the centre of the site and connects with the 150mm diameter watermain in the Western Distributor. A 150 mm watermain runs along the eastern boundary of the site and services the adjacent residential developments. A watermain of unknown diameter runs along the west of the site and provides service to the Gateway Retail Park. A detailed map of the existing water supply network in the vicinity of the site is provided in the Infrastructure Design Report (Appendix 3-4 of this EIAR).

As part of the proposed development it is proposed to divert the existing watermains within the site, and utilise the existing 150mm diameter watermain to the north-west of the site to supply the development. The proposed watermain layout will connect to the existing 150mm watermain located in the 'Gort Ná Bró' road to the east of the site. The residential blocks will be pumped from a storage tank at ground floor level, while the commercial units will have individual connections. Hydrants will be located within the network, refer to DBFL drawing 180191-3005.

An Irish Water Pre-Connection Enquiry form has been submitted to Irish Water and an Irish Water Feedback form has been received outlining that a water connection can be facilitated for the proposed development.

12.2.4.5 Sewage Networks

A 225 mm diameter foul sewer runs to the crosses the subject site along the existing retail park access road before it discharges into a 300mm diameter foul sewer. This 300mm diameter foul sewer is located in the Gort Ná Bró road to the east of the site and flows towards the Western Distributor Road. In addition, a 225mm diameter foul sewer runs to the west of the site and appears to enter the south-western corner of the site and run beneath the Aldi Supermarket. It is likely that the foul sewer was diverted as part of the Aldi Supermarket construction and it is not as shown on the records. An extract from the Irish Water record map is provided in the Infrastructure Design Report (Appendix 3-4 of this EIAR).

It is proposed to divert the existing foul water sewers within the site to align the drainage layout with the proposed diversion of the existing access road to the Gateway Retail Park. The development will be provided with a foul drainage network to collect foul flows from the apartment blocks and commercial units. The foul drainage from the northern portion of the site will connect with the existing 225mm diameter sewer to the north-west of the site. The foul drainage from the southern portion of the site will discharge to the existing 225mm sewer to the south-west of the site.

An Irish Water Pre-Connection Enquiry form has been submitted to Irish Water and an Irish Water Feedback form has been received outlining that a Wastewater connection can be facilitated for the proposed development.

12.2.4.6 Waste Management

As with any project of this scale, there will be significant volumes of waste produced, both during the construction and operational phases. For the construction phase, a project specific Construction and Demolition Waste Management Plan (CDWMP) will be adhered to by all Subcontractors / Specialists and all other site personnel involved in the project. The CDWMP will be explained during the induction process for all site personnel. The waste hierarchy will always be employed to ensure that the least possible amount of waste is produced during the construction phase. Reuse of certain types of construction wastes such as broken rock will cut down on the cost and requirement of raw materials therefore further minimising waste levels. The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage. Recycling of waste will be the preferred option with disposal of waste to landfill minimised as much as possible. Further details on waste management for the project are provided in Section 3.5.1 and in the CDWMP which is included as Appendix 3-7 of this EIAR.

12.2.5 Likely and Significant Impacts and Associated Mitigation Measures

12.2.5.1 Do-Nothing Impact

The site currently comprises an active construction compound and greenfield site. Should the proposed development not proceed the current state of the site will not change materially. The potential impacts are considered imperceptible.

12.2.5.2 Construction Phase

The construction of the proposed development will have no impact on above ground or underground telecommunications networks. There are no known telecommunication services existing beneath the proposed development main structures, however, there is the potential for brief nuisance to users of local networks and services that may be accommodated underground along the site boundary. It is known that communication cabling runs in an underground duct along the eastern boundary of the site, and the proposed development has been designed to minimise the risk to this.

Construction of the proposed development will require the relocation of existing gas, electric, water and sewer networks that cross the site. There is the potential for brief nuisance to local users of these services while relocation works are completed. The overall proposed development will have a short term, slight negative impact on gas, electricity, water and sewer services.

Mitigation

Specific measures are incorporated into the Construction and Environmental Management Plan, included as Appendix 3-3 of this EIAR, to ensure that the construction of the proposed development will not have any adverse effect on any service networks in the vicinity. The mitigation measures include the following:

- Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works.
- Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified.

- Excavation permits will be completed and all plant operators and general operatives will be inducted and informed as to the location of any services.
- The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks.

Residual Impacts

There will be an overall imperceptible impact on electricity, gas, water, sewage and telecommunications networks.

Significance of Effects

Based on the assessment above there will be no significant effects.

12.2.5.3 Operational Phase

There will be no operational phase impacts or associated effects on electricity, gas, water, sewage and telecommunications networks associated with the proposed development.

12.2.5.4 Decommissioning Phase

The proposed development will become a permanent part of the local commercial and residential housing supply, and therefore the requirement for decommissioning is not foreseen. There is therefore considered to be no potential for impacts on non-traffic material assets.

12.2.5.5 Cumulative Effects

The potential cumulative impacts and associated effects between the proposed development and the projects described in Section 2.5.2 of this EIAR, hereafter referred to as the other projects, have been considered in terms of telecoms and other services.

The measures outlined above and in the Construction and Environmental Management Plan (CEMP), included as Appendix 3-3 of this EIAR, will eliminate any potential for cumulative effects in relation to telecommunications and other services during the construction phases of the proposed development and the other projects.

There will be no cumulative operational phase effects in relation to telecommunications and other services.

12.3 Summary & Conclusions

12.3.1 Summary

An assessment of the traffic impact of the proposed development on the surrounding road network was undertaken. The site is forecast to generate 120 vehicle movements during the AM peak, 195 movements during the PM peak and 236 at the weekend peak times. The main access to the development will be via the proposed link road, however access will also be gained via Bothair Stiofáin and Ragoon Road via L5000.

The Road Safety Audit carried out for the proposed development during the planning stage considered various aspects such as, junction design, provision for pedestrians, provisions for cyclists and road signage, marking and lighting. Recommendations noted from the independent team in Atkins undertaking the road safety audit, have been taken into account and the concerns raised have either

been designed out or will be considered and suitable measures put in place during the detailed design stage.

The proposed development has integrated a number of measures in line with the relevant standards and guidelines, such as DMURS 2013 and the National cycle Manual, which promotes the use of sustainable travel to and from the site.

There are a number of services located in the area surrounding the site including electricity, gas, water, sewage and telecommunications networks. Best practices will be implemented to ensure that there are no significant impacts on these, and to ensure safety of the site workers. Site specific Waste Management Plans will be in operation through the construction and operational phases.

12.3.2 Conclusion

Based on this assessment it is considered that the traffic generated by the proposed development at the Gateway site Galway City will be accommodated on the local highway network in the vicinity of the site. There will be no significant impacts on electricity, gas, water, sewage and telecommunications networks as a result of the proposed development.