Watfore Limited

Creamfields Residential Development

Traffic and Transportation Assessment and Mobility Management Plan Statement

252666-00-RPT-TTAMMP-SHD

Issue 4 | 18 February 2022

Job number 252666-00

Ove Arup & Partners Ireland Ltd

Arup
50 Ringsend Road
Dublin 4
D04 T6X0
Ireland
www.arup.com

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		Name	Simon van Jaarsveld	Tony Lynch	Stephen Ginn
		Signature			
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		Name	Simon van Jaarsveld	Tony Lynch	Stephen Ginn
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		Name	Simon Van Jaarsveld	Tony Lynch	Stephen Ginn
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1 Introduction

Arup was commissioned by Watfore Limited to undertake a Traffic and Transportation Assessment and to prepare a Mobility Management Plan Statement for a Strategic Housing Development at the former “CMP Dairies” site at Kinsale Road / Tramore Road, Cork.

Watfore Limited intend to apply to An Bord Pleanála (the Board) for permission for a Strategic Housing Development with a total application site area of c. 3.39 ha, on lands located at the former "CMP Dairies" site at Kinsale Road / Tramore Road, Cork.

The proposed development will consist of a strategic housing development of 609 no. residential dwellings (561no. apartments and 48no. townhouse apartments, to include 189no. 1-bed dwellings; 338no. 2-bed dwellings; 48no. 3-bed dwellings; and 34no. 4-bed dwellings) and ancillary facilities arranged in 12no. buildings (Buildings B, C, E, F, G, H, I, J, L, M, and N, and a standalone 100sq.m. coffee kiosk) varying in height from 1 to 15 floors over ground.

All of the dwellings proposed in Buildings E and F (257no. dwellings) will consist of Build To Rent apartments, and a 289sqm crèche with ancillary outdoor play area, a 547.5sqm community hub facility, a 550sqm gym, a 218sqm retail unit, and a 272sqm café at ground floor level. The proposed development will also include 209 no. shared car parking spaces (including EV charging points) provided on surface and within an undercroft carpark; and 1,145 no. bicycle parking spaces provided in dedicated external and internal cycle stores/shelters and 21no. motorcycle spaces. The proposed total gross floor area above ground is 60,833.7sqm.

The proposed development will also include the provision of private, communal and public open space, including all balconies and terraces at all levels; internal roads and pathways; pedestrian access points; hard and soft landscaping; boundary treatments; waste storage; 5 no. ESB substations and 1no. ESB kiosk; plant, including rooftop solar PV panels; signage; new footpath and cycle lane along Kinsale Road; new access from Kinsale Road; an upgrade of the Kinsale Road/Mick Barry Road junction; a cycle lane on Tramore Road; an upgrade to the existing access from Tramore Road; public lighting; all site development works, including the demolition of existing hardstanding areas; and all drainage works, to include a new foul pumping station, and the diversion of the existing combined sewer and manhole, at the c. 3.39ha former CMP Dairies site, known as Creamfields, at Kinsale Road and Tramore Road, Cork.

Issue 1 (the original) of this report was submitted to Cork City Council (CCC) as part of the Tripartite content. CCC raised a number of comments and subsequent to the Tripartite meeting a review of the comments was held to discuss CCC’s opinions and Arup’s responses in more detail on 18 October 2021. A file note which documented the agreements made during this meeting is included as Appendix A of this report. Issue 2 (this report) has been updated to reflect the agreements reached during this meeting.

2 Study Methodology

A brief description of the methodology of this assessment is presented below:

Section 3 of this report describes the 'Planning Context', with National, Regional and Local transport policy and relevant guidelines all presented and examined.

Section 4 this report describes the 'Existing Receiving Environment'. It describes the location of the proposed development in its context with Cork City Centre and other nearby urban nodes and gives a detailed description of the surrounding road network, in respect of the proposed development. It also sets out the existing traffic patterns on the surrounding road network.

Section 5 sets out the 'Proposed Development'. Within this section, the nature of the proposed development is set out in terms of the proposed use and scale of development. It also details the proposed vehicular access, pedestrian access, proposed car parking and cycle parking, proposed road improvements and development assessment scenarios to be undertaken in context of the construction phasing to be undertaken.

Section 6 outlines the trip generation; mode share and trip distribution assumptions were made and how these factors were applied to derive development and construction traffic trips.

Section 7 sets out the 'Impact of the Proposed Development'. This section includes the link and junction assessment analysis that were carried out for the development, showing both with and without development traffic and considers the difference between these two scenarios to develop an understanding of the relative impact of the development on the road network.

Section 8 includes a mobility management plan statement for the development while Section 9 outlines how the proposed development complies to DMURS.

Finally, Section 10 includes a conclusion which reiterates the key findings of the report.

3 Planning Context

The following documents set out the transport planning policy framework on a national, regional and local level. The overarching emphasis of these documents is to promote and encourage the use of sustainable modes, reducing unnecessary trips, to limit trip length and to connect residential nodes, places of work and education with one another via an integrated footpath, cycle and quality public transport network.

3.1 National Transport Policy

3.1.1 Smarter Travel – A Sustainable Transport Future 2009

This document sets out the transport policy for Ireland for the years 2009 – 2020 and remains valid despite currently lying outside its' statutory timeframe. It identified a target for reducing work-related commuting by car from its current modal share of 65% to 45% by 2020.

The document admits that the targets are ambitious and may need to be adjusted in light of improving knowledge and changing trends, but also taking cognisance of the present economic situation.

3.1.2 National Cycle Policy Framework 2009 – 2020

The National Cycle Policy Framework (as part of Smarter Travel – A Sustainable Transport Future 2009) outlines national policy for cycling, in order to create a stronger cycling society and a friendlier environment for cycling.

The policy document set a target of 10% of all trips by bicycle by 2020, and equally recognises the needs of promoting and integrating cycle networks.

3.1.3 Design Manual for Urban Roads and Streets

The Design Manual for Urban Roads and Streets (DMURS), published by Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government, 2019, provides guidance relating to the design of urban roads and streets. It presents a series of principles, approaches and standards that are necessary to achieve balanced, best practice design outcomes with regard to networks and individual streets.

DMURS aims to re-balance the transport modes and place the pedestrian and cyclist ahead of the vehicle when examining the street. The pedestrian perspective focuses on:

- **Connectivity and legibility:** where traffic movement is not given priority over pedestrians.
- **Comfort:** increased width and reduced clutter on footpaths. Promotion of passive surveillance and active street edges to help pedestrians feel less isolated and vulnerable; and
- **Safety:** by designing a street with a perceived increase level of risk for drivers encourages reduced speed. Therefore, designing a street for pedestrian comfort will naturally be designed for reduced vehicle speed.

Integrated approaches incorporate elements of urban design and landscaping that instinctively alter behaviour, thus reducing the necessity for more conventional measures (such as physical barriers and the road geometry) alone to manage behaviour. Streets and junctions are more compact, providing better value for money.

Consequently, there are four 'Key Design Principles' which are presented in DMURS. These are:

- **Connected networks:** To support the creation of integrated street networks which promote higher levels of permeability and legibility for all users, and in particular more sustainable forms of transport.
- **Multi-function streets:** The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment.
- **Pedestrian focus:** The quality of the street is measured by the quality of the pedestrian environment; and
- **Multidisciplinary approach:** Greater communication and co-operation between design professionals through the promotion of a plan-led, multidisciplinary approach to design.

3.2 Regional and Local Transport Policy

3.2.1 Southern Regional Spatial and Economic Strategy (RSES)

All Regional Assemblies in the country have now adopted a Regional Spatial and Economic Strategy (an RSES) to give effect to the National Planning Framework at regional level. All Local Authorities are also required to ensure alignment of Development Plans and Local Area Plans with the RSES to ensure the achievement of national and regional policy objectives.

The RSES for the Southern Region outlines numerous objectives within Part 6, Section 2, 'The Regional Transport Strategy', including:

- To provide for the integrated development of sustainable transport infrastructure, including walking, cycling (including emerging e-modes) and public transport to accommodate the necessary switch from the private car, for the travel needs of all individuals in the region, in line with the stated government transport policy.
- To support improved strategic and local connectivity;
- To cater for the demands of longer-term population and employment growth, in a sustainable manner; and
- Supporting compact and smart growth through the achievement of mutual consistency between land -use and transport planning, investment, and service provision.

3.2.2 Cork City Development Plan (2015-2021)

The current Cork City Development Plan (2015-2021) sets out a number of strategic transport objectives, including the following:

- Provide for the greater consolidation of development within the City Centre, Docklands, Key Development Areas and Strategic Corridors, facilitated through the integration of land-use and transport planning, investment and service provision;
- To reduce the percentage of persons who drive to work to 60% by 2021;
- To invest in transport infrastructure based on the transport user hierarchy: pedestrians, cyclists, public transport users, freight, delivery and waste vehicles; private vehicle users;
- To encourage and facilitate cycling and walking for short/local trips by providing appropriate infrastructure, promoting "soft-measures" that influence change in transport behaviour, and by encouraging proximate, compact land uses;
- To work with transport stakeholders to further integrate transport modes and facilitate multi-modal trip chains;
- To provide new local roads, streets, upgraded streets, and pathways where required to increase connectivity;
- To actively manage capacity of the city's street system to reduce the negative impacts of congestion and to maximise the use of the existing street network; and
- To encourage the use of innovative measures to reduce the requirement for car parking.

3.2.3 Draft Cork City Development Plan (2022-2028)

Cork City Council has released the Draft Cork City Development Plan (2022 – 2028) for public comment recently. Similarly, to the current development plan, the new development plan includes a Transport and Mobility chapter which outlines strategic transport objectives.

The Transport and Mobility Development Objectives of the Draft Development Plan includes amongst others the following:

- Cork City Council is in support of the CMATS initiative and the Cork City Movement Strategy and will work together with other government bodies to deliver the strategy fully;
- All new residential, employment and commercial development to be focussed in areas with good access to the planned high frequency public transport network;
- To actively promote walking and cycling as efficient, healthy and environmentally friendly modes of transport by securing the development of a network of direct, comfortable, convenient and safe cycle routes and footpaths across the city; and
- All new development, particularly alongside the possible routes for public transport improvements, shall include permeability for pedestrians and cyclists by creating direct links to adjacent roads and public transport networks.

These objectives provide a good framework for new developments. The proposed development at the corner of Kinsale Road and Tramore Road relates very well to these objectives and therefore are in support of it.

3.2.4 Cork Metropolitan Area Transport Strategy (CMATS)

The National Planning Framework (Ireland 2040) envisages sustained high growth in Ireland's urban centres, with Cork expected to record a 50-60% population growth in the period to 2040.

This population growth will see a commensurate increase in travel demand across the metropolitan area. To meet this challenge the NTA, in collaboration with Cork City and County Councils, has developed the Cork Metropolitan Area Transport Strategy 2040 (CMATS), a €3.5 billion strategy which sets out a framework for the planning and delivery of transport infrastructure and services to underpin the metropolitan area growth.

In terms of land use, some of the priorities of CMATS include the following:

- Targeting higher development densities in areas where opportunities exist for sustainable transport provision and in a manner that better aligns the provision of transport with demand
- Availing of existing transportation infrastructure, nearby amenities and facilities to deliver a critical mass of growth in population and employment which can support the transition and sequencing of investment to higher capacity public transport infrastructure and services; and
- The provision and design of new development in locations, layouts and at densities which prioritise walking and cycling and enable the efficient provision of public transport services.

These land use priorities are supported, and we believe it can be achieved in the delivery of the proposed development.

CMATS sets out a wide range of proposals across the entire transport network, including the following:

- Development of a new proposed metropolitan area bus network encompassing radial bus corridors into the city and orbital bus services across the network;
- Provision of a greenway following Tramore River to connect to Tramore Valley Park. This route could potentially be linked to the development site via proposed pedestrian and cycle lanes along Kinsale Road;
- The Frankfield to Fairhill Bus Connects route (also referred to as the Airport to City Centre route and Route 9) is proposed along Kinsale Road and therefore directly links the development into the future public transport network;
- A primary cycle route with footpaths along Kinsale Road which connects the development into the strategic cycle and pedestrian network and provides a direct link to Cork City Centre and other service nodes within the City;

- Nearby BusConnect services are proposed on the N27 including the Kent Station to Airport, the Carrigaline to City Centre and the Ringaskiddy to City Centre via Passage West;
- Development of an east-west high frequency public transport corridor from Mahon to the City Centre and on to Ballincollig, envisaged to be provided as a Light Rail Transit (LRT) system in the medium to long-term, preceded by a high-frequency bus service in the interim;
- New city centre infrastructure to include several new river crossings at the Mill Road Bridge, Water Street Bridge and the South Docklands Eastern Gateway Bridge;
- Major supporting road infrastructure projects, including the Cork Northern Ring Road, Cork Northern Distributor Road and Cork Southern Distributor Road;
- Implementation of the Cork Metropolitan Area Cycle Network Plan with some additional or upgraded links from this plan; and
- Walking and cycling improvements throughout the metropolitan area.

These initiatives are supported and will improve the overall accessibility of the development site and its connectivity to the City Centre and other service and employment centres in and around Cork.

The CMATS proposals in the development site vicinity are discussed in further detail later in this assessment.

3.2.5 Cork Metropolitan Area Cycle Network Plan

The Cork Metropolitan Area Cycle Network Plan was developed in 2016 and outlined recommendations for cycling infrastructure and development of an integrated and coherent cycling network across the study area. The CNP outlined ambitions for an average cycling mode share within the overall South City Environs of 11% (with specific trip types targeted for a mode share of up to 20%). The CNP developed Primary, Secondary, Interurban and Greenway routes for the study area, with the Passage West Greenway identified as a major cycling route between the south-east city and the city centre.

The proposals within the CNP have largely been subsumed into the CMATS cycle network proposals. Proposals relating to the site vicinity are detailed later in this assessment.

4 The Existing Receiving Environment

4.1 Site Location

The proposed development site is located about 2km to the south of Cork City Centre on the southwestern corner of Kinsale Road and Tramore Road as shown in Figure 1. The site is located to the north of the N40 Ring Road and west of the N27, which is a direct link into the City Centre. 2km is a walkable distance for future residents to avail of employment, shopping and services available within the City Centre, provided that good quality infrastructure is available to connect the two locations. The University College Cork (UCC) located towards the northwest is also located within 2km of the development site.

There are several local employment areas closer to the development site to the south and the southwest. These include the Tramore, Commercial Park the Pouladuff, Forgehill, Lehenaghmore and Ballycurreen Industrial Estates and the South Ring West Business Park amongst others. Further beyond these areas of employment is the Cork Airport approximately 3.5km away which is another major area of employment.

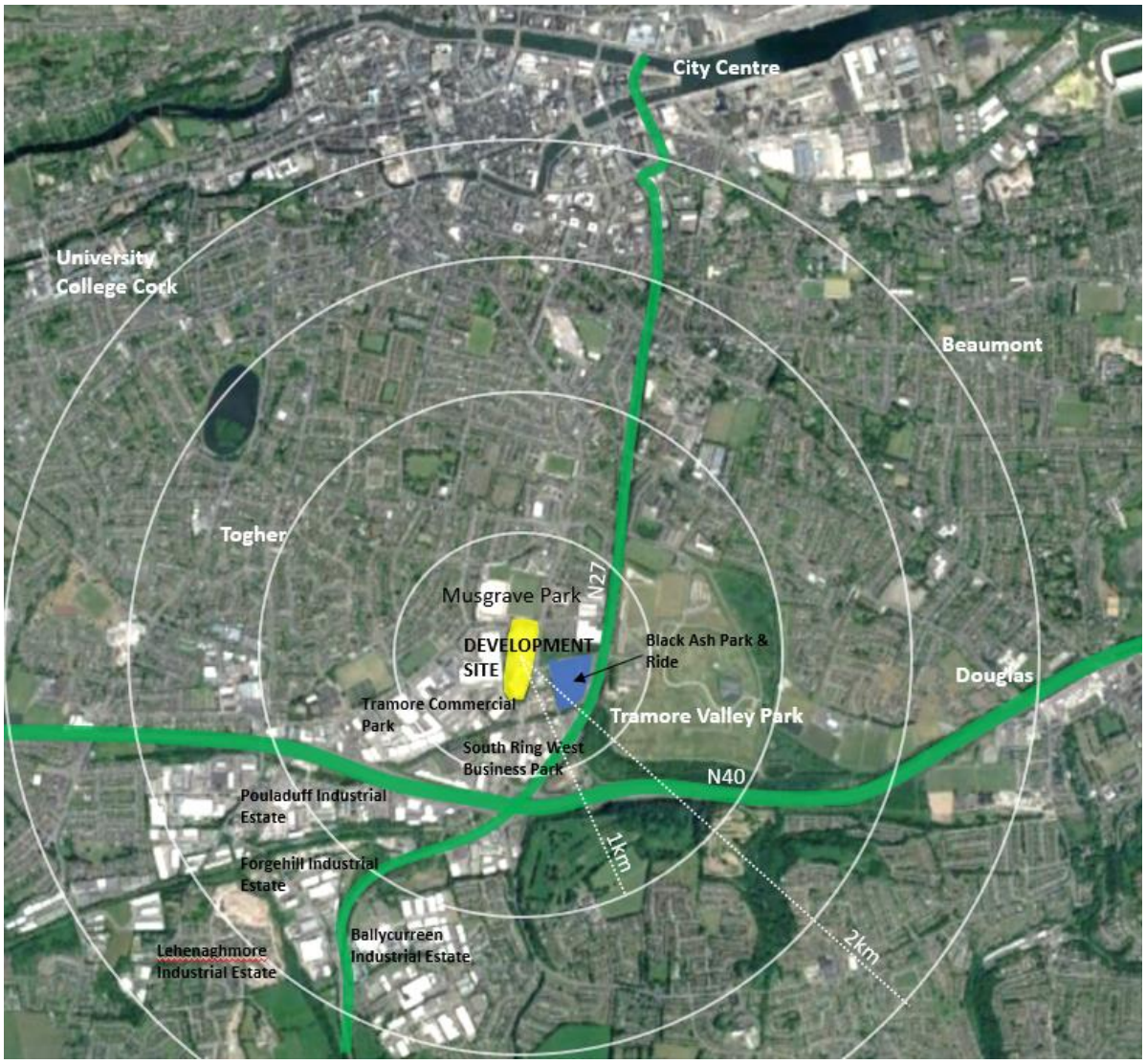
There are also several local shopping facilities in close proximity to the site including the Kinsale Road Retail Park to the northeast of the site and a variety of warehouse shops to the south of the site including a Centra, which is the closest convenience store to the site. A neighbourhood centre anchored by an Aldi is located approximately 600m to the north of the site, within walking distance.

There are many amenities within the vicinity of the site including the Tramore Valley Park, Musgrave Park and a variety of parks and sport fields within the residential areas to the west.

The site also lies next to the Black Ash Park and Ride which presents a great opportunity for residents to avail of bus services to the City Centre, Airport, and major employment areas like Ringaskiddy located further away.

Considering the proximity of employment, shopping and amenity facilities in close proximity, the proposed residential development is ideally located for a high percentage of short distance trips that can be by foot or bicycle.

Figure 1: Site Location



4.2 Pedestrian Environment

Figure 2 shows the existing pedestrian environment within the vicinity of the development. Footpaths are provided on all surrounding roads; however, it is only available on one side along Kinsale Road and Tramore Road. Pedestrian crossings are provided at Tramore Road / Kinsale Road junction as well as Kinsale Road / Mick Barry Road junction. Pedestrian footpaths and crossings are provided on Kinsale Road at the underpass at the Kinsale Road Interchange on the N40.

The Tramore River walking route links the Togher Community Park to the west to Kinsale Road. This route is within a greenbelt and continues underneath motorways and roads via underpasses. Unfortunately, the walking route does not connect with Tramore Valley Park. The section of the route along the River between Kinsale Road and Tramore Valley Park is prone to flooding and the headroom under the N27 is limited.

Figure 2: Existing Pedestrian Environment

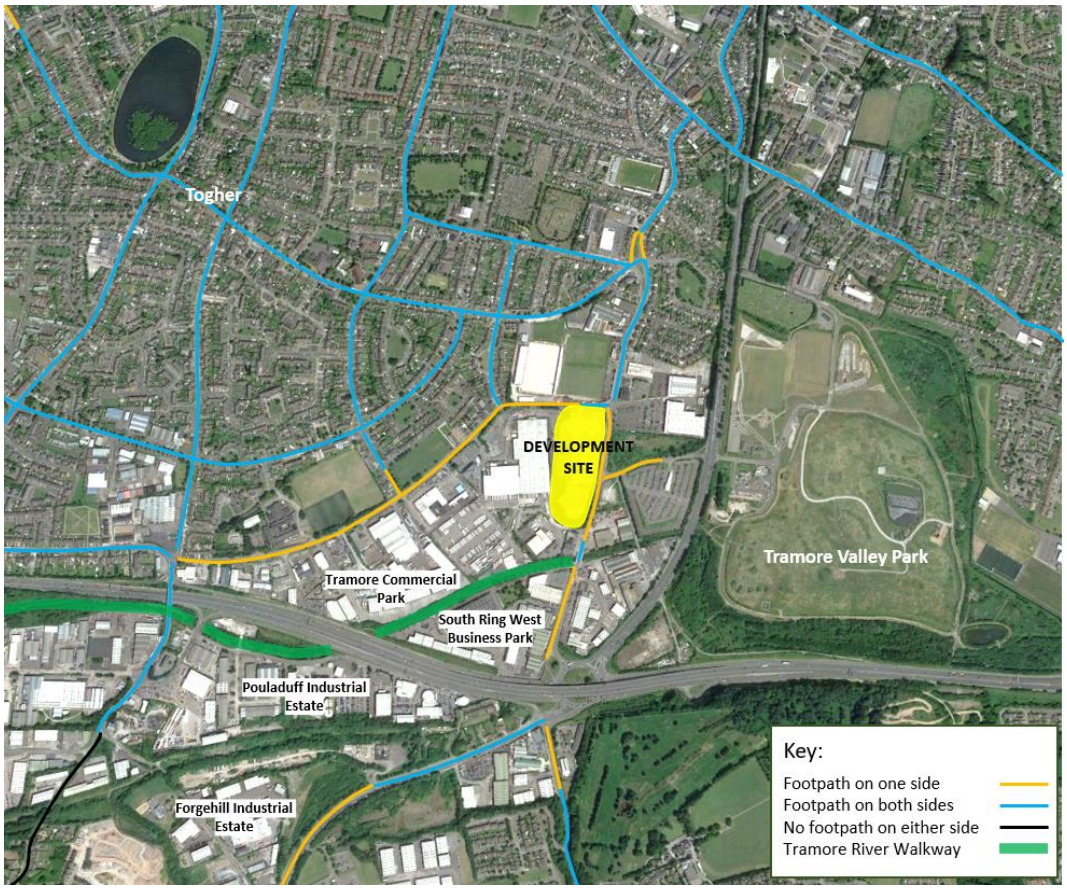


Figure 3 shows the footpath on Kinsale Road adjacent to the development site currently. Although a continuous footpath is available the existing footpath is narrow and the footpath is completely barriered from the development site by the palisade fence and vegetation, leaving a harsh environment for pedestrians next to fast moving traffic.

Figure 3: View on Kinsale Road from junction with Mick Barry Road towards the south

Figure 4 shows that there is a footpath on the northern side of Tramore Road. The footpath on the southern side is only available up to the site entrance and does not continue on the other side of the entrance.

Figure 4: View on Tramore Road from junction with Kinsale Road towards the west

Figure 5 shows that there is an existing footpath along the south side of Mick Barry Road that extends from its junction with Kinsale Road as far as the a the Park and Ride Facility.

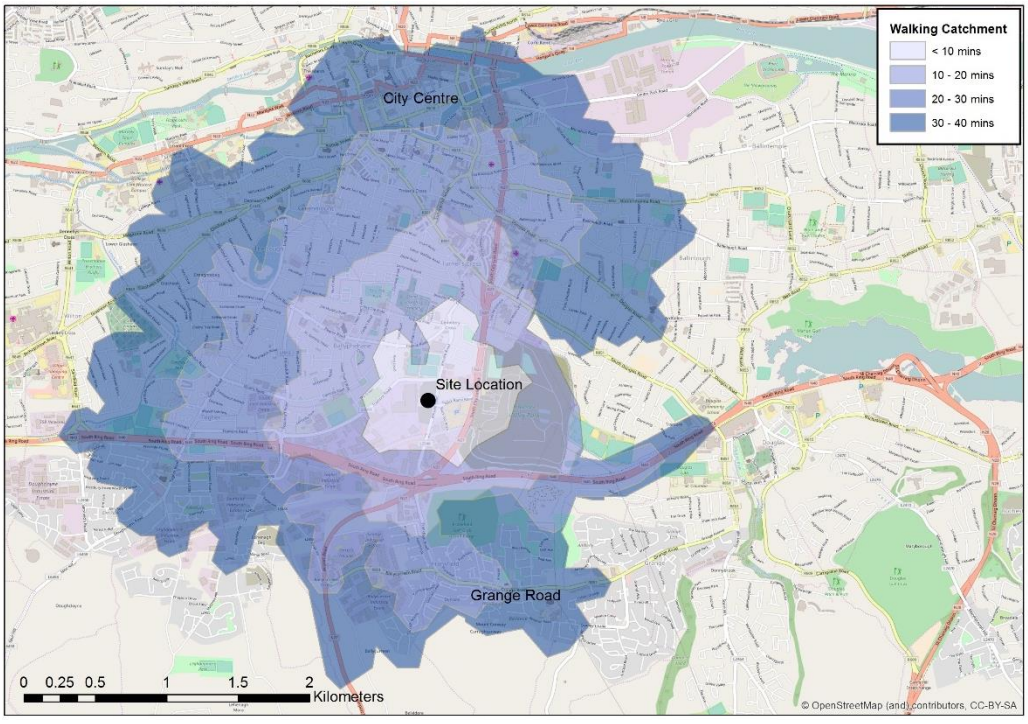
Figure 5: View on Mick Barry Road from Kinsale Road junction to the east

Figure 6 shows the footpath available that will link the Centra convenience store to the development site. The pedestrian path is narrow, and pedestrians are required to cross wide car access roads.

Figure 6: View to Centra shop on Kinsale Road towards the south

There is more than 42,000 people living within a 40-minute walk from the proposed development as illustrated in Figure 7. This catchment reaches as far as the city centre to the north, and Grange Road to the south. All the local shopping opportunities (including Aldi), Tramore Valley Park, Musgrave Park and the Black Ash Park and Ride are within 10 minutes walking distance. Both the City Centre and the University College Cork is within a 40-minute walk of the development site.

Figure 7: Pedestrian Accessibility



4.3 Cycling Environment

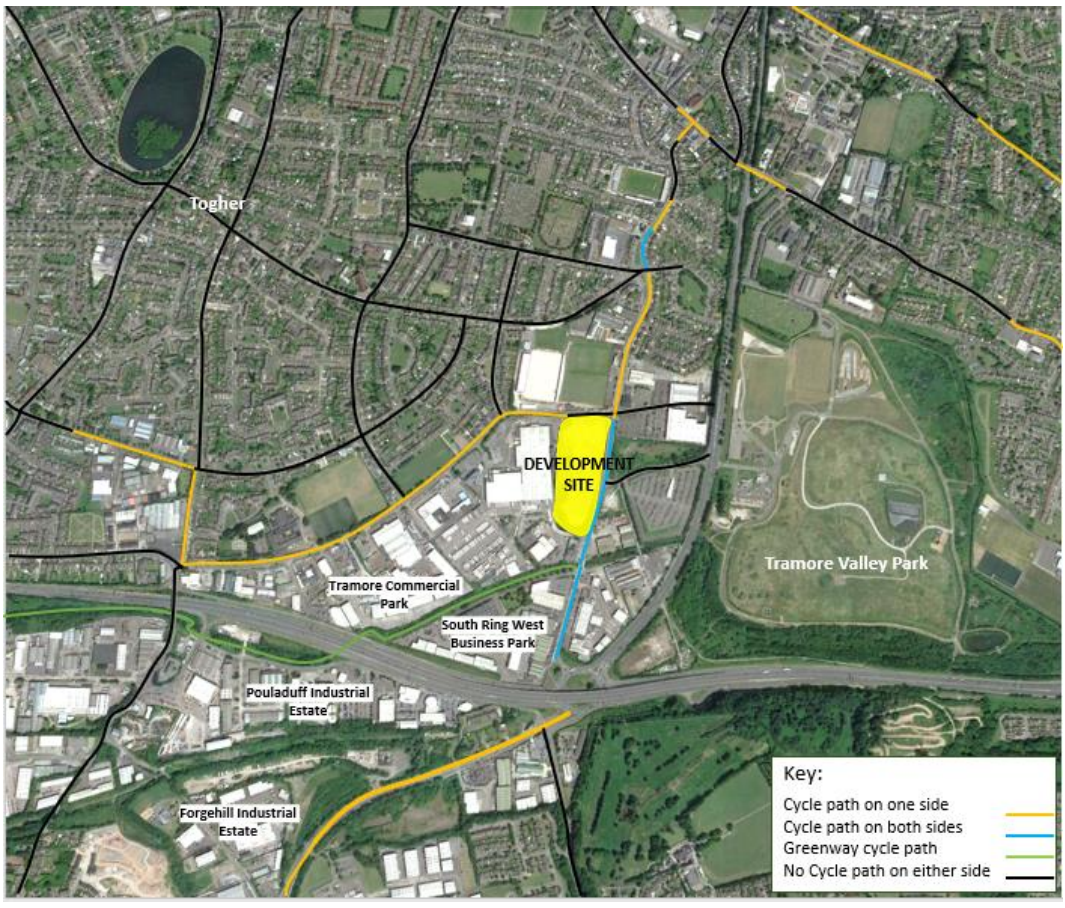
4.3.1 Existing Facilities

The existing cycle route network is shown in Figure 8. Cycle lanes are available currently on some of the major routes within the vicinity of the development including Kinsale Road, Tramore Road and the N27 (Airport Road) south of the junction with the N40. The current cycle network therefore mainly accommodates for a cycle desire line between the Airport and the City Centre. Although the cycle lanes are provided on the N27 to the south of the N40, the route continues on Kinsale Road, rather than the N27. Kinsale Road is more suitable for cycling as vehicle speeds on this route is lower and the route is an activity spine, providing access to various land uses including shopping and services.

This route is however busy with high vehicular volumes. There are however cycle lanes available to provide some protection to cyclists using the route. In many locations the cycle route discontinues, forcing cyclists to either use the vehicular lane or footpath, which is not ideal.

There is also a westbound cycle lane on Tramore Road. This cycle lane only starts beyond the boundary of the development site.

Figure 8: Existing Cycle Route Network



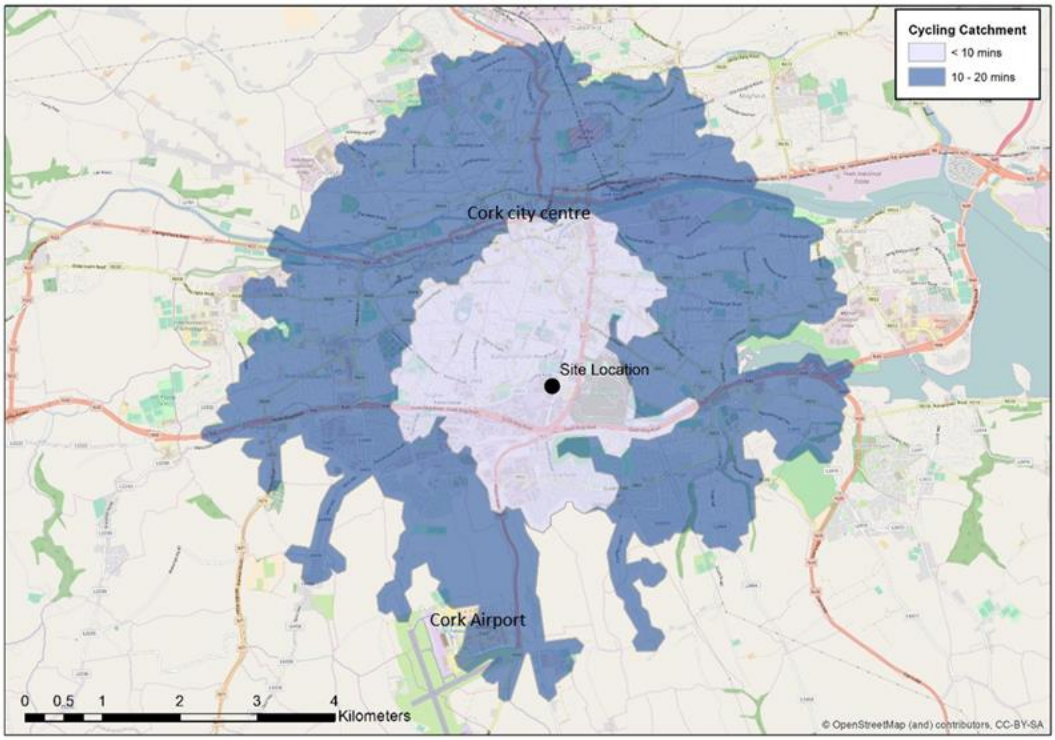
The available cycle lanes are currently in a state of disrepair as shown in Figure 9. The current routes are also narrow and directly adjacent to the traffic lanes, making them quite dangerous to use especially if the footpath gets crowded.

Figure 9: Current state of cycle lanes on Kinsale Road

The overall experience of a cyclist using these routes are that the network is disjointed and difficult to use especially for inexperienced cyclists or those not familiar with the environment. Cyclists are often forced to join fast moving traffic lanes and must cross roads in search of a continuous route.

Figure 10 shows the 10 and 20-minute catchment area from the development site. The 10-minute catchment area reaches to the City Centre to the north and the UCC Campus to the northeast, Tramore Valley Park to the east, Togher to the west and all the business and industrial parks to the south. The 20-minute cycle catchment includes the majority of Cork City. To the south this catchment reaches Cork Airport. There is more than 113,000 people living within this catchment area.

Figure 10: Cycling Catchment



4.3.2 Proposed Cork Cycle Network

Significant improvement of the cycle route network is proposed for Cork City by CMATS. The proposed cycle route network used the Cork Metropolitan Cycle Network Plan 2017 as a starting point, by retaining most of the routes planned, although some additional routes were added. The proposed cycle network includes primary, secondary and greenway cycle routes.

Primary cycle routes cater for expected high cycle demand and these routes are direct and connects major destinations to one another.

Secondary cycle routes supplements primary routes and provides connections from residential and areas of employment to the primary network. These routes may be full cycle lanes, off road routes, shared bus lanes, or traffic calmed areas and cycle demand on these routes is expected to be lower.

Greenways are traffic free or low trafficked routes and comprise of routes through parks, routes next to Rivers or repurposed rail tracks.

Figure 11 shows the proposed cycle route network proposed within the vicinity of the proposed development.

A primary cycle route is proposed along Kinsale Road. This route forms part of a strategic route linking Cork Airport to the south, via cycle routes on the N27 to the City Centre via Kinsale Road, Douglas Road and a variety of other routes. This route would be a great asset for the proposed development due to its strategic connection it provided to both the Airport and the City Centre.

It however also provides access via the wider proposed primary network to University College Cork, various hospitals, schools, shopping areas and other services.

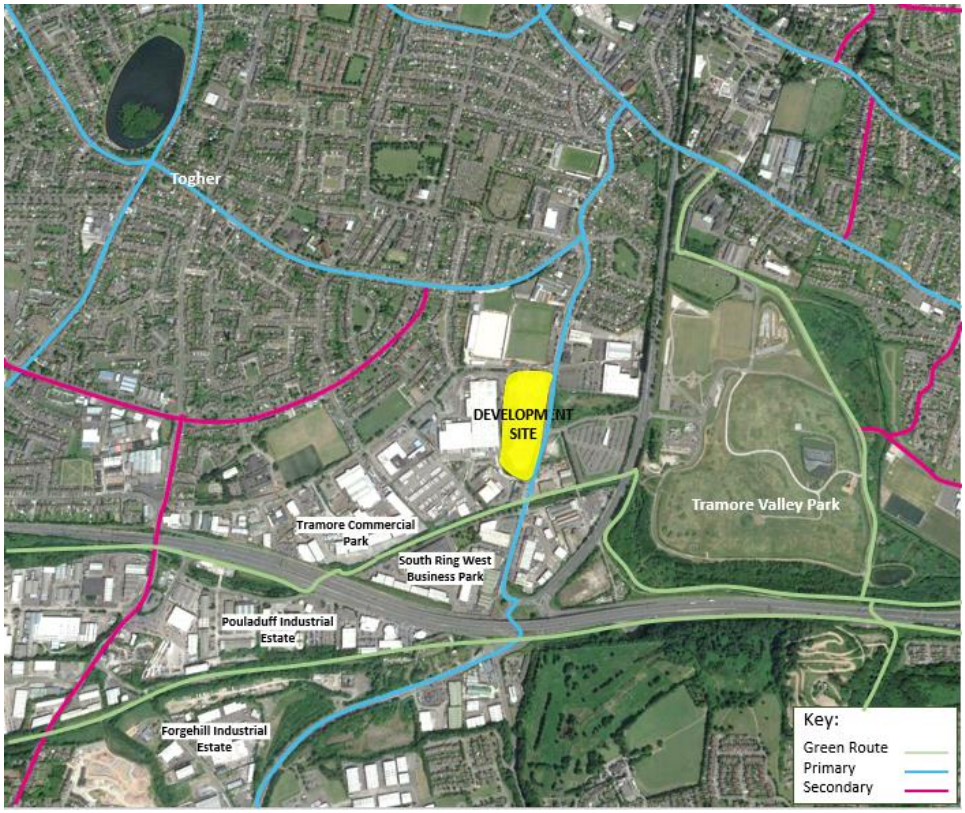
A network of greenways is proposed to the south of the proposed development to take advantage of the natural open areas and available park lands. Two east-west greenways are proposed within the vicinity of the site including the Tramore River Walk which follows the river and provides a direct link into Tramore Valley Park, and a second greenway to the south of the N40 which follows the alignment of an abandoned railway track. A north south greenway is also proposed along the eastern boundary of Tramore Valley Park which also provides linkage between the two east west greenways.

Connecting the Tramore River Walkway Greenway to Tramore Valley Park via a route underneath the N27 is challenging due to the current low overhead and flooding issues.

As part of the Grange Road to Tramore Valley Park Road Improvement Scheme, an overbridge connection over the South Link Road (N40) for the Tramore Valley Greenway is now underway.

The greenways and Tramore Valley Park will provide important amenity facilities to the future residents of the proposed development, and it would be vital to ensure that the primary cycle route on Kinsale Road is connected to these facilities and that there are no barriers to gain access to these facilities by future pedestrians and cyclists. It is understood that funding has been approved in principle for a link from Mick Barry Road to Tramore Valley Park.

Figure 11: Proposed Cycle Network by CMATS within the vicinity of the site



As complementary measures to increase the future uptake in cycling, CMATS proposes that the Cork Bikes and similar bicycle sharing schemes are expanded, where demand is sufficient. The proposed development is expected to increase demand for cycling and justifies the consideration of providing facilities within the development.

In addition, CMATS supports cycle parking to be incorporated in new development schemes. As will be outlined in the next chapter of this report, cycle parking is provided as part of the scheme in accordance with local development plan standards and the parking proposed are in secure locations. Other measures to promote parking is also discussed within this report.

4.4 Available Public Transport

4.4.1 Existing environment

The proposed development is located to the south of Cork city centre. There are no bus services currently directly serving the development site, however there are a number of bus routes in close proximity to the proposed site. They are presented in Table 1 and Figure 12.

Table 1: Bus Routes

Route No.	Route Name	Frequency during AM peak (08:00-09:00)		AM peak Capacity	Frequency during PM peak (17:15-18:15)		PM peak Capacity
213	Patrick Street – Black Ash Park via South Mall	10 mins	7	630	5-10 mins	7	630
203	Lehenaghmore – City Centre – Farranree	20-25 mins	3	270	20 mins	4	360
226	Cork Railway Station – Cork City Bus Station – Cork Airport – Kinsale	60 mins	1	90	60 mins	1	90
206	Grange Dunvale – Grand Parade/South Mall	30 mins	5	450	30 mins	5	450
219	Cork Institute of Technology – Mahon Point/City Gate	60 mins	1	90	60 mins	1	90
209A	St. Patrick Street - Ballyphehane	60 mins	1	90	60 mins	1	90

It takes less than 5 minutes to walk from the Black Ash Park and Ride on Mick Barry Road to the development. There is an existing footpath that connects the bus stop to the development site and at the junction of Mick Barry Road to Kinsale Road traffic signals are available which provides pedestrian phasing in the signal cycle.

It takes less than 10 minutes to walk from the bus stop on Pearse Road and less than 20 minutes from Evergreen Road and South Douglas Road to the proposed development. There are continuous footpaths and cycle lanes to these bus stops on Kinsale Road which seems generally to be in good condition.

Figure 12: Available Bus Routes

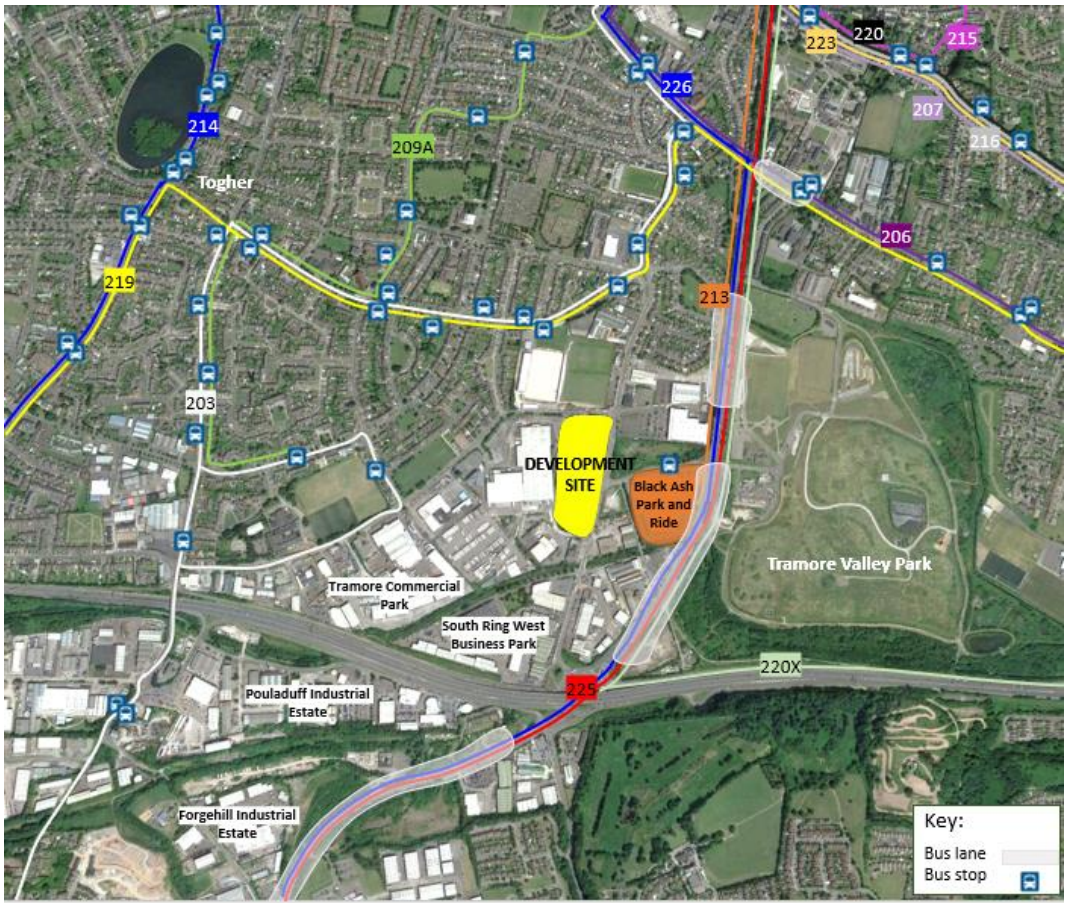
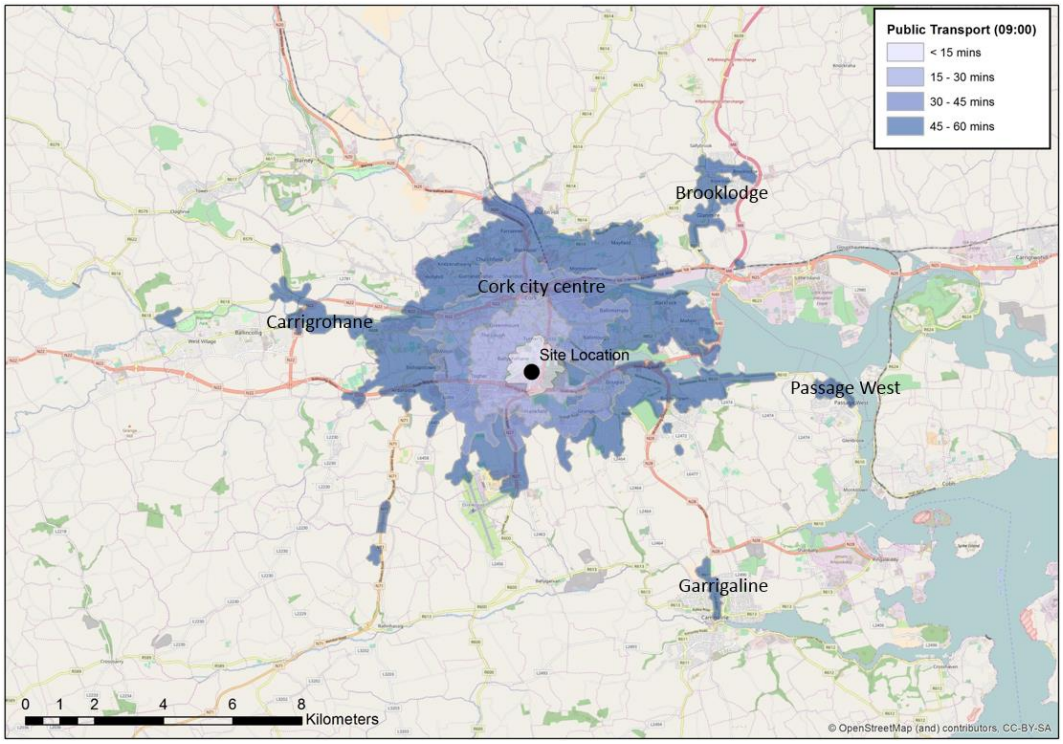


Figure 13 presents the one-hour public transport catchment. The figure shows that it possible to travel by public transport anywhere in Cork City and even to locations beyond like Carrigaline and Brooklodge. However, most of the journeys will include one or two transfers from one bus route to another.

Figure 13: Public Transport Catchment (arrival at 09:00)



4.4.2 Bus Connects Proposals

CMATS proposes to enhance the Cork City Bus network by implementing the Bus Connects Network. The Bus Connects programme will include an increase in cross city, and radial bus routes, more bus priority, the incorporation of new bus vehicles, higher bus frequency and improved interchange between bus routes and interchange with railway services.

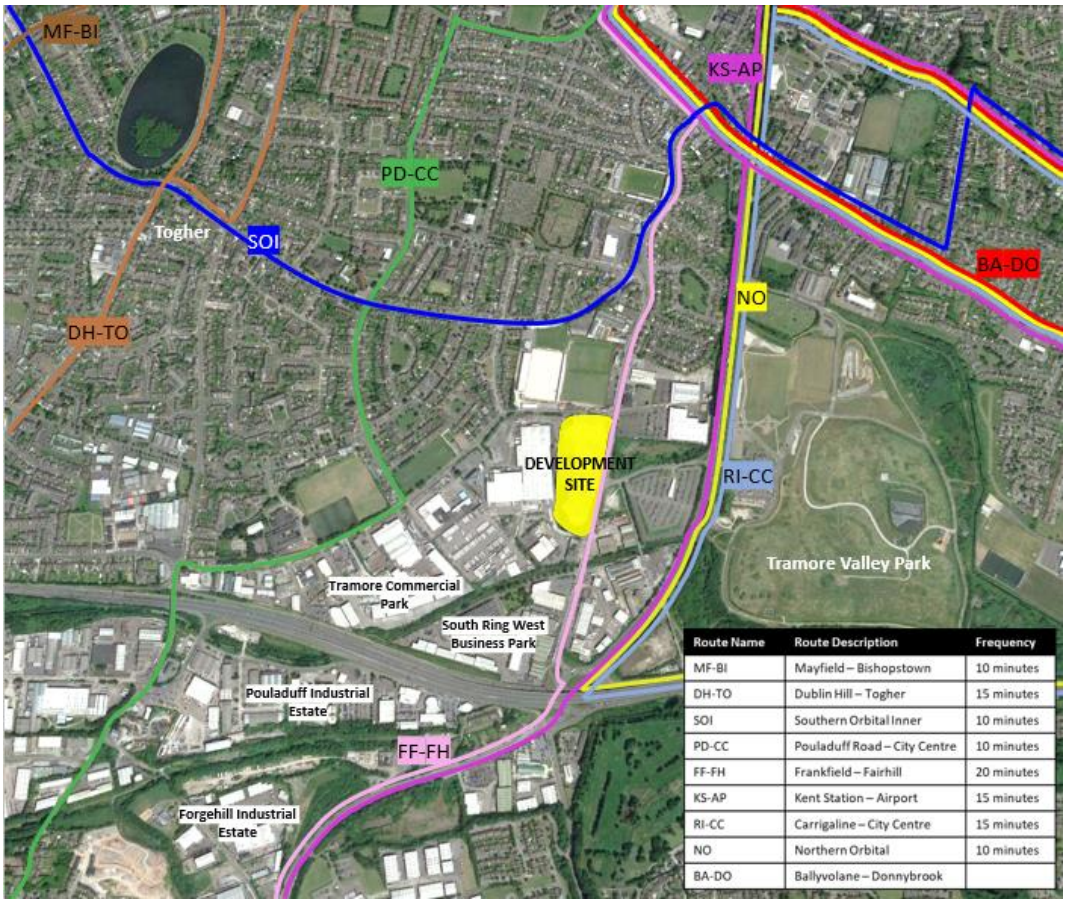
The proposed Bus Connects infrastructure within the vicinity of the development site is shown in Figure 14.

There are three proposed bus routes within close proximity of the development site. The Frankfield to Fairhill Bus Connects route, which is a north south route through the City Centre, following along Kinsale Road and will directly serve the proposed development. Towards the north, this route will run parallel with a variety of other Bus Connects services linking into the City Centre and the opportunity will be created for interchange to other services. Towards the south the route connects to the Kent Station to Airport route and opportunity to interchange is provided.

The Carrigaline and Ringaskiddy to City Centre Bus Connects routes are also close to the development site by following the N27. A pedestrian link was recently provided on the south side of Mick Barry Road linking Kinsale Road junction to the Black Ash Park and Ride. This link is expected to be further improved once a Cork City Council funding approved project to provide enhanced pedestrian facilities along Mick Barry Road to link Tramore Valley Park is provided.

BusConnect routes are indicative, and specialists have been appointed by the NTA to carry out route determination and finalise the routes. At this point in time the location of bus stops along the routes have not been determined as well as how the proposed bus routes within the vicinity will link to the Black Ash Park and Ride. The development of these plans will occur during 2021 and 2022 and stakeholders such as major land owners will be consulted during this process.

Figure 14: Proposed Bus Connects Network by CMATS



Route Name	Route Description	Frequency
MF-BI	Mayfield – Bishopstown	10 minutes
DH-TO	Dublin Hill – Togher	15 minutes
SOI	Southern Orbital Inner	10 minutes
PD-CC	Pouladuff Road – City Centre	10 minutes
FF-FH	Frankfield – Fairhill	20 minutes
KS-AP	Kent Station – Airport	15 minutes
RI-CC	Carrigaline – City Centre	15 minutes
NO	Northern Orbital	10 minutes
BA-DO	Ballyvolane – Donnybrook	

4.5 Road Network

4.5.1 Available Road Network

The road network within the vicinity of the proposed development is shown in Figure 15 below.

The national road network includes the N40 / South Ring Road which is a dual carriageway connecting the N22 from Killarney to the N28 to Carrigaline and the N25 to Waterford. The N40 can be characterised as being a key national road providing a southern by-pass of Cork city. Access and egress from the N40 to the proposed site can be made from the Kinsale Road Interchange (Junction 6), which is a roundabout providing access on and off the N40 via ramps.

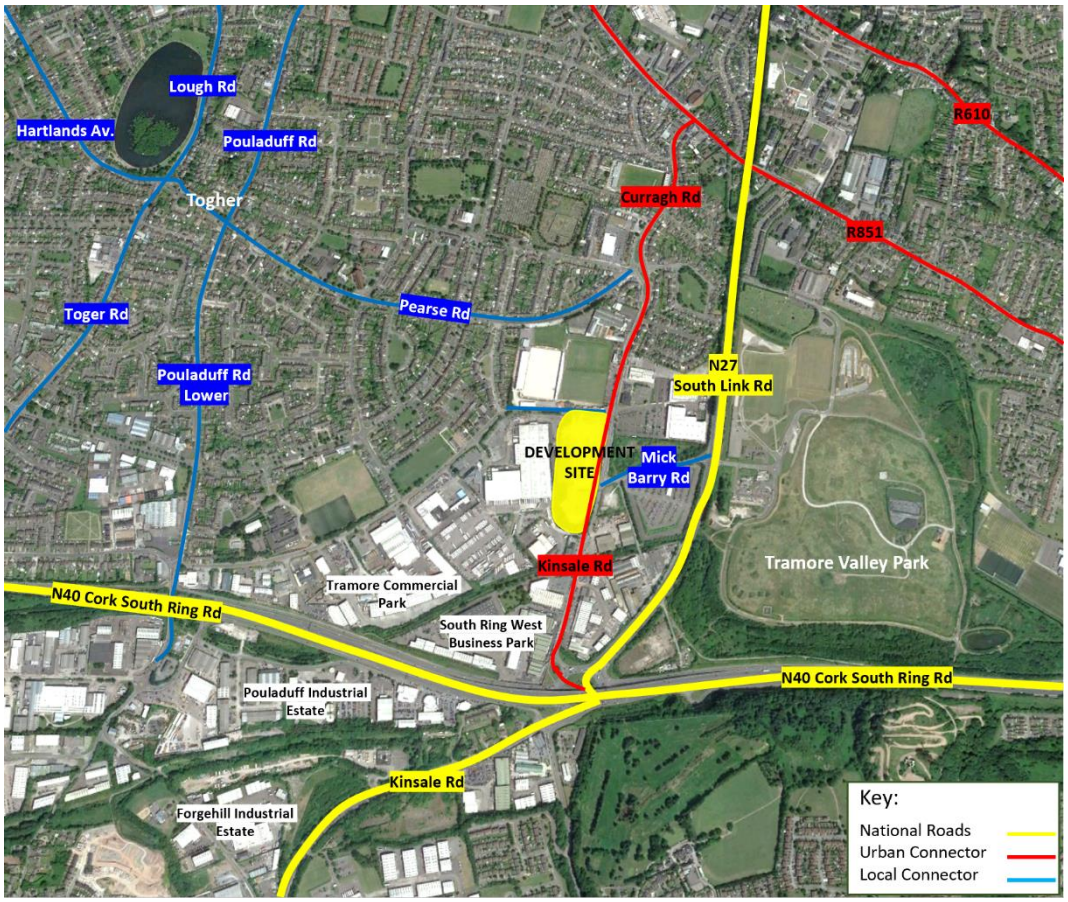
The N27 / South Link Road is a north south dual carriageway which provides access from the N40 to Cork city centre and the N8. Access to this road can also be gained by Junction 6 as well as Mick Barry Road.

The local road network includes a number of urban and local connector roads and residential roads. Kinsale Road is an urban connector road which from a traffic point of view provides access from the south to the city centre. This route therefore has a mobility function but has also adopted the function of providing access to local connector roads and to provide direct access to adjacent developments. The road therefore has also an accessibility function and due to both the high level of access and mobility, there is a lot of activity along this route. The route could therefore also be classified as an activity spine which attracts business to settle next to it and caters for all modes of transport. Adding a high-density residential development next to it will enhance its function as an activity spine by providing more footfall along it which will likely increase business turnover within the vicinity. The improvement of pedestrian, cycle and public transport infrastructure along the route and also providing more priority to these modes of transport is expected to have a positive impact on this road in creating a more vibrant environment.

Tramore Road is a single carriageway local connector that serves the industrial development to the south of it and the residential development to the north of it. This road connects to Kinsale Road and the junction is signal controlled. Right turning lanes are available at the approaches to the junction. This road is quite narrow and does not leave much room for pedestrians and cyclists. A footpath is provided only on its northern boundary and an on-street cycle lane on its southern boundary, which only starts beyond the development site. The Tramore Road also provides access to the South Ring Road via the Togher Interchange (Junction 5) with the Kinsale Road and provides access to residential housing estates.

Mick Barry Road is a single carriageway local connector which connects the Kinsale Road to the N27. This road serves the Black Ash Park and Ride facility serving Cork city centre. There is an existing pedestrian link adjacent to this road which links the Kinsale Road to the Black Ash Park and Ride, however there are no cyclist facilities provided along this road, making it difficult for cyclist to access the Park and Ride facility. It is understood that funding has been improved in principle for improved pedestrian and cyclist infrastructure that will link Kinsale Road to Tramore Valley Park. It is assumed that this infrastructure will further improve pedestrian connectivity with the Park and Ride Facility along its route and also provide a cyclist route to same.

Figure 15: Existing Road Network



4.6 Current Site Access

Access to the development site currently is from Tramore Road as shown in Figure 16. This access is located about 75m from the centre of the Tramore Road/Kinsale Road junction. The access includes only one lane in and one lane out. The access for the Musgrave's site next door is approximately 40m further to the west of the development site access.

Figure 16: Current site access

4.7 Existing Traffic Volumes

4.7.1 Count Locations

Due to Covid 19 travel restrictions, it was not possible to carry out traffic counts within the vicinity of the development. This issue was discussed with the Cork City Council Roads and Transport Department, and it was agreed that 2019 traffic counts, supplemented by 2017 traffic counts can be used to create a baseline and future year traffic scenarios for the proposed development.

The 2017 traffic counts were carried out by Tracsis plc Traffic and Data Services and was carried out on 12 February 2017. The AM peak hour was 08:00 to 09:00 and the PM peak hour 17:15 to 18:15. The traffic counts included all vehicle classes.

The 2019 traffic counts were carried out by NDC on 19 April 2019. The AM and PM peaks were similar to that of the 2017 count.

The location of the traffic counts that was carried out is shown in Figure 17. Traffic counts were carried out at five locations in 2017 and at four locations in 2019. The traffic count sets overlap at four of the locations and therefore the traffic volumes for the two data sets can be compared to one another.

Figure 17: Traffic Count Locations

4.7.2 2017 & 2019 Traffic Count Volume Comparison

Table 2 shows a comparison of the AM peak traffic volumes of the 2017 and 2019 traffic data sets. Considering all traffic on the road network within the vicinity of the proposed development, the 2017 and 2019 traffic volumes only differ with a margin of 2%, which is minor. There are pronounced differences on some of the movements on the roads for instance on the N27 Northbound at Junction 1where traffic volumes reduced by 18% or at the N27 Southbound at Junction 1 where traffic has increased by 14%.

The proposed development is however expected to have the most impact on Kinsale Road. Considering the difference in traffic volumes on this road it is generally below 10% except for the Kinsale Road southbound at Junction 2.

The most pronounced difference in percentage is at Junction 3 on the Mick Barry Westbound approach, where traffic has increased by 83%. However, this change is from a very low base of 18 vehicles and therefore this difference is insignificant considering traffic overall.

It is therefore concluded that the two sets of data are compatible with each other, and that one set can be used to complete the other. To establish a 2021 base year, it is proposed that the 2019 counts are taken as the base and that the 2017 Junction 5 (Kinsale Road / Tramore Road) traffic is added to it to complete the network.

To ensure a robust analysis, it is recommended that a TII growth rate is applied to the 2017 traffic volumes to achieve a more robust baseline.

Table 2: AM peak 2017 & 2019 Traffic Volume Comparison

Junction	Approach	2017	2019	Variation	%
1	N40 Westbound	1,965	1,929	-36	-2%
	N40 Eastbound	1,386	1,388	2	0%
	N27 Northbound	961	784	-177	-18%
	Kinsale Road Southbound	220	239	19	9%
	N27 Southbound	1,779	2,025	246	14%
2	Kinsale Road Southbound	267	235	-32	-12%
	Kinsale Road Northbound	942	893	49	-5%
3	Kinsale Road Southbound	508	529	21	4%
	Kinsale Road Northbound	869	825	-44	-5%
	Mick Barry Road Westbound	18	33	15	83%
4	N27 Southbound	1,627	1,848	221	14%
	N27 Northbound	1,591	1,569	-22	-1%
	Mick Barry Road Eastbound	254	297	43	17%
Total		**12,387**	**12,594**	**207**	**2%**

Table 3 shows a comparison of the PM peak traffic flows. Overall, there is only a difference of -3% on the road network. However, there are significant differences on most of the junction approaches, the most severe on Mick Barry Road, where there is a significant increase in traffic in the 2019 data set. The majority of differences on Kinsale Road where the development will have the most impact is increases in traffic in 2019. Therefore, it is recommended that the 2019 traffic data set is used as the base and supplemented by 2017 traffic.

To establish a 2021 base year, it is proposed that the 2019 counts are taken as the base and that the 2017 Junction 5 (Kinsale Road / Tramore Road) traffic is added to it to complete the network. To ensure a robust analysis, it is recommended that a TII growth rate is applied to the 2017 traffic volumes to achieve a more robust baseline.

Table 3: PM peak 2017 & 2019 Traffic Volume Comparison

Junction	Approach	2017	2019	Variation	%
1	N40 Westbound	1,965	1,407	-558	-28%
	N40 Eastbound	1,386	1,059	-327	-24%

Junction	Approach	2017	2019	Variation	%
	N27 Northbound	961	290	-671	-70%
	Kinsale Road Southbound	220	424	204	93%
	N27 Southbound	1,779	2,659	880	49%
2	Kinsale Road Southbound	267	337	70	26%
	Kinsale Road Northbound	942	592	-350	-37%
3	Kinsale Road Southbound	508	762	254	50%
	Kinsale Road Northbound	869	757	-112	-13%
	Mick Barry Road Westbound	18	47	29	161%
4	N27 Southbound	1,627	1,952	325	20%
	N27 Northbound	1,591	1,010	-581	-37%
	Mick Barry Road Eastbound	254	679	425	167%
Total		**12,387**	**11,975**	**-412**	**-3%**

4.7.3 2021 Base Year

The 2021 base year traffic volumes for the local road network within the vicinity of the proposed development is shown in Figure 18 and Figure 19. To arrive at the 2021 base year annual growth rates provided in *Table 6.1 Link Based Growth Rates: Metropolitan Area Annual Growth Rates of Transport for Ireland (TII)'s Projected Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, May 2019* was used. The growth rates applied were the central growth rates as outlined below:

Metropolitan area 2016 – 2030	Light Vehicles	Heavy Vehicles
Cork	1.0169	1.0294

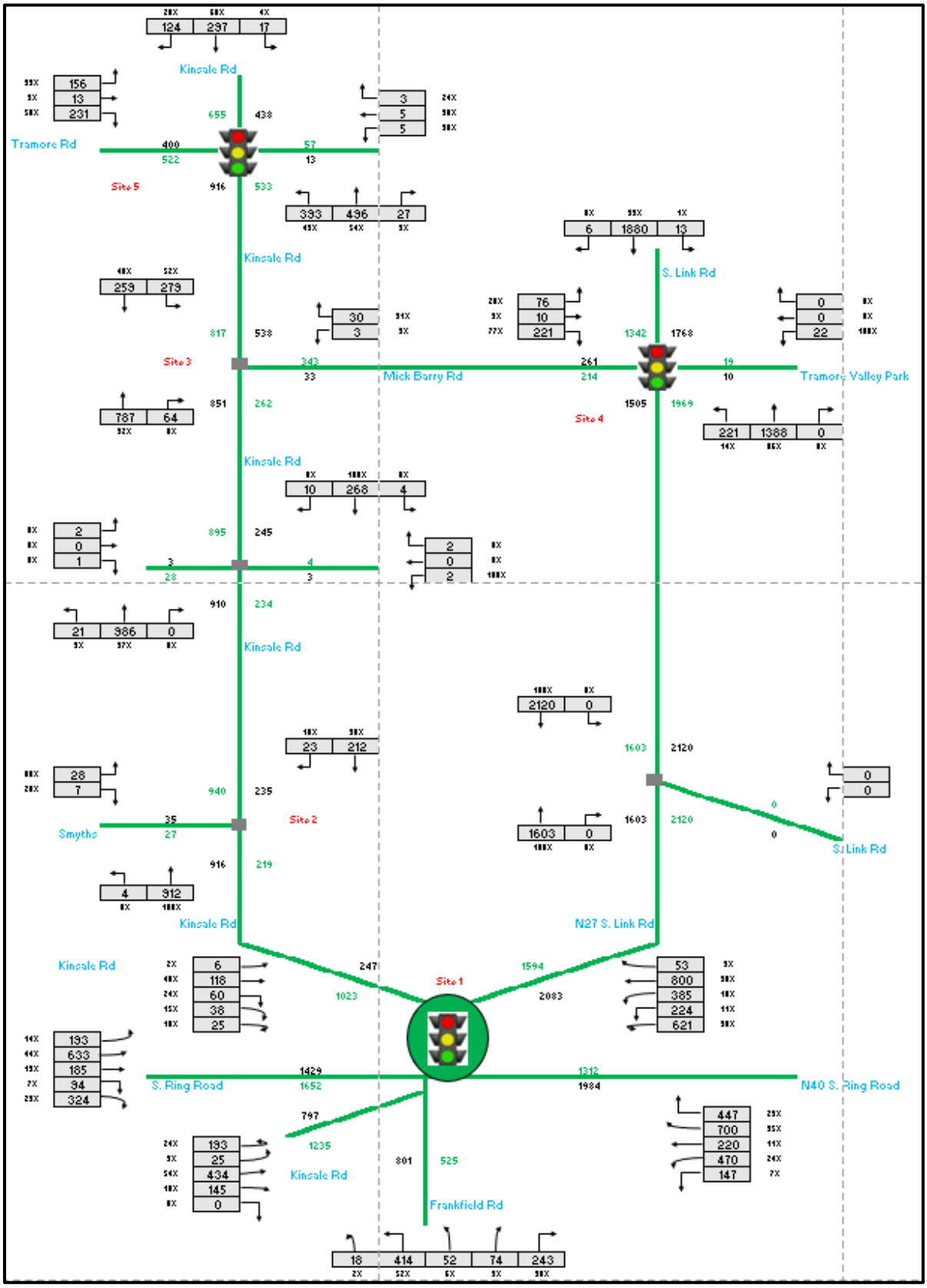
4.7.3.1 2021 AM Peak Hour Traffic

The 2021 AM peak traffic is shown in Figure 18 below.

The national roads within the vicinity (N40 and N27) carries high volumes of traffic between 1,500 and to over 2,000 vehicles per hour. Kinsale Road is also a busy road with 800 to 900 vehicles northbound towards the City Centre during the AM peak and over 500 southbound. The left turning movement onto Mick Barry Road is high, at almost 300 vehicles. Traffic flow on this road is more than 200 vehicles per direction, indicating that there is some road capacity on this road.

Tramore Road is also a busy road with 400 – 500 vehicles an hour in each direction.

Figure 18: 2021 Traffic volumes on Road network during AM Peak



4.7.3.2 2021 PM Peak Hour Traffic

The 2021 PM peak hour traffic is shown in Figure 19.

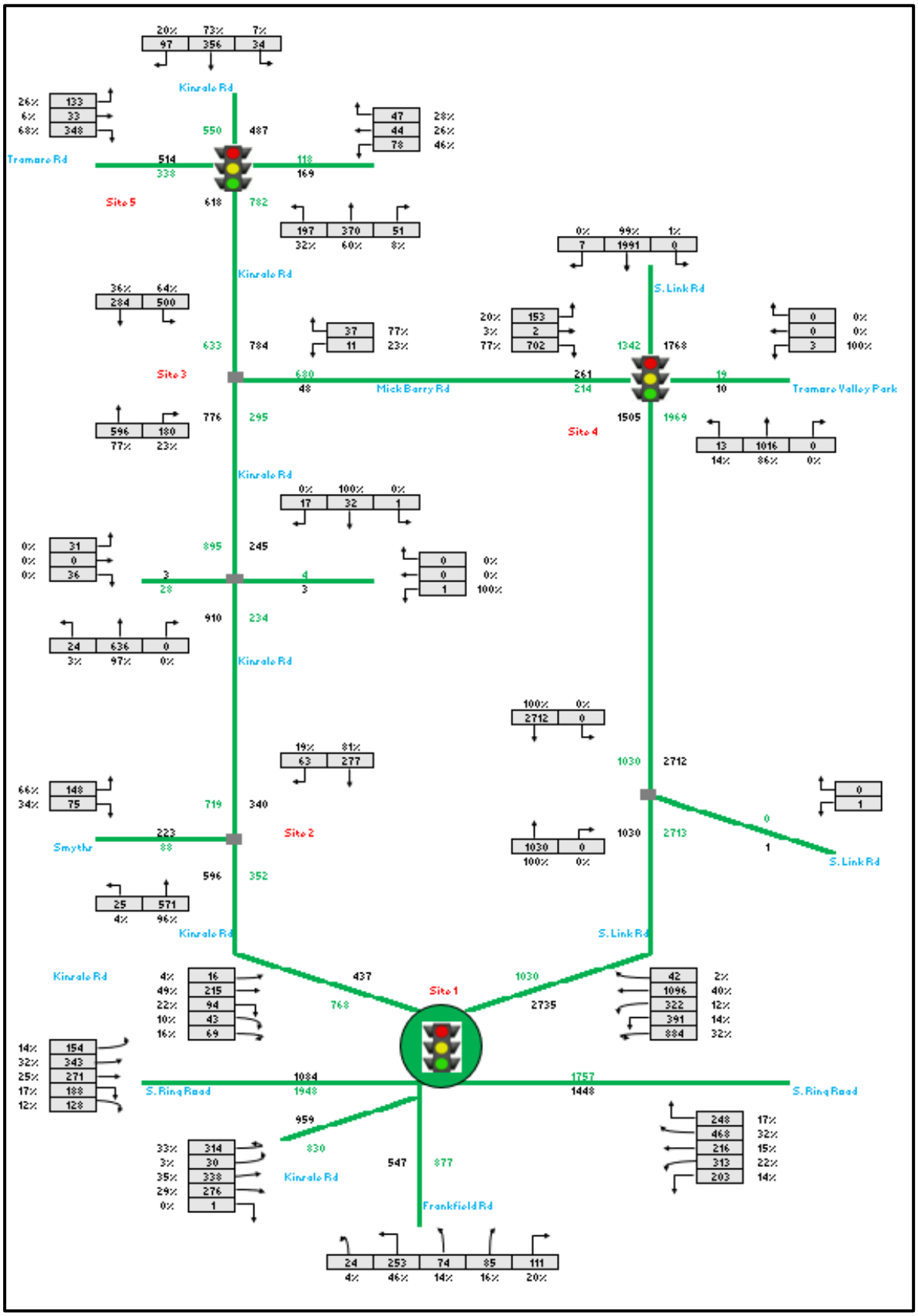
Similar to the AM peak, the national roads including the N40 and the N27 carries the highest traffic volumes in the local road network surrounding the proposed development. Traffic on the N40 is just under 2,000 vehicles per hour in each direction, while traffic on the N27, exceeds 2,000 vehicles per hour in the southbound direction.

Northbound and southbound traffic on Kinsale Road within the vicinity of the development site is around 700 vehicles per hour per direction. Eastbound traffic on Mick Barry Road is high at almost 700 vehicles of which the majority turns right at the junction with the N27.

Tramore Road remains busy during the PM peak period with more than 500 vehicles travelling eastbound and over 300 westbound.

The proposed development is expected to have little impact on the national road network considering the high volumes of existing traffic that currently uses them. Some impact is expected on the local junctions and the accesses to the development.

Figure 19: 2021 Traffic volumes on the road network during PM Peak



5 Proposed Development

5.1 Introduction

Figure 20 shows the proposed development plan of the site. Strategic Housing Development (SHD) is proposed to be located on a 3.39 ha site on the corner of Kinsale Road and Tramore Road.

The proposed development will provide 609 no. residential dwellings including:

- 561no. apartments and
- 48no. townhouse apartments

The residential units will include:

- 189no. 1-bed dwellings;
- 338no. 2-bed dwellings;
- 48no. 3-bed dwellings; and
- 34no. 4-bed dwellings.

The development will be supplemented by ancillary facilities arranged in 12no. buildings (Buildings B, C, E, F, G, H, I, J, L, M, and N plus a standalone kiosk) varying in height from 1 to 15 floors. All of the dwellings proposed in Blocks E and F will consist of Build to Rent apartments, which will also include at ground level the following:

- 289sqm crèche with ancillary outdoor play area;
- 547.5 sqm community hub facility;
- 550sqm gym;
- 218sqm retail unit; and
- 272sqm café.
- A 100sq.m. standalone single storey coffee kiosk will also be provided.

209 no. shared car parking spaces (including EV charging points) will be provided on surface and within an under-croft carpark; and 1,145 no. bicycle parking spaces will be provided within dedicated external and internal cycle stores) and 21 no. motor cycle spaces.

The proposed development will also include the provision of private, communal and public open space (including all balconies and terraces at all levels); internal roads and pathways; pedestrian access points; hard and soft landscaping; signage; new access from Kinsale Road; an upgrade of the Kinsale Road/ Mick Barry Road junction; a cycle lane on Tramore Road; an upgrade to the existing access from Tramore Road.

The applicant will submit a separate planning application for the development of a primary health care centre in due course.

The health care centre does not form part of this application; however, the traffic and transportation assessment does take the impact of this land use into account. The primary health care centre will be located within Block D, which is located in the north-western corner of the development site.

Figure 20: Proposed Development Plan (Level 1)

Figure 21: Proposed Under Croft Car Park (Level 0)

5.2 Proposed Development Breakdown

The proposed development will be a predominant residential development (SHD) complemented by local services. Table 4 provides a breakdown of the proposed land uses in the development. The proposed local services are provided predominantly for the use by residents of the development. The availability of these local services is expected to reduce the number of trips made by residents.

Although these services will be primarily used by residents, these land uses may attract a small number of external trips and this assessment makes some allowance for this.

Table 4: Proposed Development Breakdown

Proposed Land Use	**Area / No of Units**
Coffee Kiosk	100m^2
Gym	550m^2
Cafe	272m^2
Retail	218m^2
Creche (63 child spaces)	289m^2
Community Facilities	547.5m^2
Residential	609 dwellings

The development will consist of 11no. residential buildings including the number of dwellings as outlined in Table 5. The majority (561no. of the dwellings will be apartments while there will also be 48no. townhouses).

Table 5: Residential units per building block

Residential Block	**No. of Dwellings**
B	90
C	116
E	115
F	142
G	10
H	8
I	8
J	69
L	18
M	6
N	27
Total	**609**

The residential breakdown of the 609 units is provided in Table 6. The overall majority of dwellings are one and two-bedroom units.

Table 6: Residential Breakdown

Dwelling Type	**1-bed**	**2-bed**	**3-bed**	**4-bed**	**Total**
No of Units	189	338	48	34	609

5.3 Vehicular Access

Two access points will be provided for the site as shown in Figure 20. The existing access off Tramore Road will be reconfigured to allow a two-way road link following a north south route along the rear (western) boundary of the site. Perpendicular parking spaces will be provided off this route. Two internal junctions are provided off this route. The northern junction links to another internal road that provides the access to the under-croft parking (as shown in Figure 21) and the second junction links the north south route to an east west route through the centre of the site which provides a new direct access off the Kinsale Road / Mick Barry Road junction. The two accesses off the public road are therefore connected with one another. Parallel parking spaces are provided along the central east west internal route.

It is the intention for the Kinsale Road access to primarily serve the residential development and for the Tramore Road access to serve a Primary Care Centre (the subject of a separate planning application). There are however no restrictions for traffic to use either one of these accesses however the road network is designed in such a way where it would be natural for residential traffic to rather use the Kinsale Road access and for the Primary Care Centre facility to use the other.

Provision is also made for the central east west internal route to continue further west and to provide access to the Musgrave site adjacent, should this property ever be redeveloped in the future. This will provide alternative routes for vehicles and especially pedestrians and cyclists.

Various surfacing will be used on the internal routes to reduce the dominance of the vehicular route, to create shared space for various modes of transport and to reduce vehicular speed along these routes.

5.4 Pedestrian Access

One of the major features of the development is the provision of a town centre square located in the northern part of the site. This will be a landscaped area with trees, vegetation, seating and other street furniture providing a local community centre. Within this area the crèche, gym, retail unit, café, coffee kiosk, and residential community facilities will be located. The town centre plaza will be connected to the residential blocks by internal pedestrian routes. These routes further connect to three internal parks situated between the buildings. These parks include multifunctional space with play areas, seating, gardens and planting. These spaces are interconnected and accessible to residents living within the development.

Where the internal pedestrian routes cross the vehicular routes, the surfacing of the vehicular route is altered to alert drivers of pedestrians potentially crossing.

The development will also be highly accessible from the public roads. A wide north south, tree lined boulevard links the town centre to a wide paved area along the northern boundary of Tramore Road. A live building frontage will be provided featuring the café and outside seating adjacent to the building.

The town centre will also be linked directly to Kinsale Road with a wide pedestrian route running between the first two buildings on the northern part of the site.

Footpaths will be provided along all sides of the residential buildings with links into the communal spaces and the spine routes through the site.

As part of the scheme, a linear park is proposed along the eastern boundary of the site adjacent to Kinsale Road as shown in Figure 21). This area will be a green strip with amenity grass and trees providing a soft edge between the residential buildings and Kinsale Road. A 3.0m wide footpath and a meandering 2.0m cycle lane will be provided within the linear park, providing pedestrians and cyclists travelling north south on Kinsale Road a pleasant environment removed from traffic.

Overall, the majority of the open and public space on the site is designed to accommodate pedestrians who will have right of way and priority within the site. Vehicular traffic is limited and is expected to be light since a low number of parking spaces will be provided.

The design of the site is in line with prevailing transportation and planning policy which promotes sustainable travel patterns and limited dependence on private vehicles.

5.5 Proposed Car Parking

5.5.1 National Policy

The Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities published by the Department of the Environment, Community and Local Government, December 2015, states that "as a benchmark guideline for units, one car parking space per unit should generally be required. However, car parking provision should be reduced or avoided in very accessible areas such as central business districts and a confluence of public transport systems. Car parking requirements for apartment schemes should generally be expressed as maximum car parking standards and should exceed 1 space per apartment only in more suburban contexts, to a maximum of 1.5 spaces per apartment dwelling".

The National Planning Framework – 2040 has recognised that many of the urban planning standards are more appropriate to green field developments and that increased flexibility is required in urban infill and brownfield development sites. The National Planning Framework recognises that the application of universal standards for car parking may not be applicable in all circumstances and that a performance-based approach would be more appropriate. National Policy Objective 11 states the following:

"In urban areas, planning and related standards, including in particular building height and car parking will be based on performance criteria enabling alternative solutions that seek to achieve well-designed high quality and safe outcomes in order to achieve targeted growth and that protect the environment."

The Sustainable Urban Housing: Design Standards for New Apartments; Guidelines for Planning Authorities 2018, as amended provide for updated guidance on apartment developments in response to the National Planning Framework.

A key inclusion in the guidelines is the acknowledgement of the importance of strategic brownfield sites in existing urban areas in close proximity to existing public transport facilities. The guidelines identify locations in cities and town that may be suitable for apartment development having regard to the following:

1. Central and / or Accessible Urban Locations

Generally suitable for small to large scale (will vary subject to location) and higher density development (will also vary), that may wholly comprise apartments, and includes:

Sites within walking distance (i.e. up to 15 minutes or 1,000-1,500m of principal city centres, or centrally located employment locations, that may include hospitals and third level institutions.

Sites within reasonable walking distance (i.e. up to 10 minutes or 800-1,000m) to/from high capacity urban public transport stops.

Sites within easy walking distance (i.e. up to 5 minutes or 400-500m) to/from high frequency (i.e. min 10 minute peak hour frequency) urban bus services or where such services can be provided.

The proposed development is located within 1km of a variety of business parks and industrial zones. Cork City is also located 2km to the north of the proposed development and a high-quality transit corridor will link the site to the City Centre. The Black Ash Park and Ride is located within 250m of the development site and this facility and the bus routes serving it have spare capacity to accommodate the development.

The Guidelines also note that in category 1, Central and / or Accessible Urban Locations, car parking provision may be wholly eliminated or substantially reduced. The guidelines state:

“In larger scale and higher density development, comprising wholly of apartments in more central locations that are well served by public transport, the default policy is for car parking provision to be wholly eliminated or substantially reduced. This may apply in very accessible areas such as in or adjoining city cores or at a confluence of public transport systems”.

“These locations are most likely to be in cities, especially in or adjacent to city centres, or centrally located employment locations. This includes 10 minutes walking distance of DART or Luas stops or within 5 minutes walking distance of high frequency (min 10-minute peak hour frequency) bus service”.

All prevailing planning policy, on national, regional and local level targets a significant drop in car dependency in Cities and is in support of developments that are strategically located to take advantage of capacity along public transportation corridors and those that promote walking and cycling.

5.5.2 Car Parking Standards

The Cork City Development Plan 2015 – 2021 provides maximum residential parking to be provided as per Table 7(Table 16.8 Car Parking Standards, Zone 3).

Table 7: Cork City Development Plan 2015 – 2021 Residential Car Parking Requirements

Dwelling Type	**Zone 3**	**No. of Units**	**Maximum Parking Spaces Required**
1-2 Bedroom)	1 plus 0.25 visitors parking	527	659
3-3+ Bedroom	2 plus 0,25 visitors parking	82	185
Total		**609**	**844**

The Draft Cork City Development Plan 2022-2028 requires slightly lower residential car parking rates as per Table 8.

Table 8: Cork City Development Plan 2022 – 2028 Residential Car Parking Requirements

Dwelling Type	**Zone 3**	**No. of Units**	**Maximum Parking Spaces Required**
1-2 Bedroom)	1	527	527
3-3+ Bedroom	2	82	164
Total		609	691

The proposed development includes for a total of 209 parking spaces all of which will be shared by the residents of the scheme. This allocation of parking represents a parking rate of 0.34 spaces per dwelling. This parking ratio is aligned with smarter travel policy and will attract tenants who want to use alternative travel modes particularly as the development site is well located in terms of existing and future (Bus Connects) public transport access and many local facilities (i.e. shops, schools, community facilities, etc.) are located nearby. In addition, the proposed development also provides a range of services on site including retail, a gym, café, health care and community facilities which reduce the need for longer distance travel.

A car sharing company, GoCar or similar will have access to some car parking spaces located within the basement car parks. The number of spaces to be allocated to the car sharing company will be determined at a later stage. The introduction of these spaces enables residents' access to a car without the need for a personal car, and forms part of the measures included for in the Mobility Management Plan for the development.

The provision of a car sharing scheme within the development will meet the needs of the residents and ensures that sustainable transport targets are met, especially the percentage of daily commuting trips carried-out by private car.

There is precedent for parking provision set at the above ratio in the Cork Area and as the Government works through its programme in terms of our climate emergency objectives there will be a growing need to reduce the number and dependency on parking in our urban centres.

The following table presents the parking ratios from a number of Strategic Housing Development applications. The Albert Quay development, with a similar parking ratio to the proposed scheme was granted planning permission by An Board Pleanála in February 2020.

Table 9: Parking Ratios – Strategic Housing Development applications

Scheme	Units	Parking	Ratio
Albert Quay SHD, Cork	201 units	62 spaces	0.30
The Grange, Brewery Road	287 units	100 spaces	0.35
Stillorgan Leisure plex	232 units	95 spaces	0.41
Belgard Gardens, Tallaght	428 units	129 spaces	0.30
Swiss Cottage, Santry	112 units	34 spaces	0.30
Dulux Factory, Davitt Road	265 units	109 spaces	0.41
Cookstown, Tallaght	196 units	67 spaces	0.34

5.5.3 Parking Provision

Table 10 shows the proposed car parking provision for the development. Please note that the Primary Care Centre is not included in this planning application, however, this land use will form an intricate part of the development and the impact of this land use are considered in this planning application. A separate planning application will be submitted for the Primary Care Centre.

In total 307 car parking spaces will be provided for the scheme of which the majority will accommodate the residential component of the development.

A small number of spaces are provided for the local services. Since these facilities will mostly be utilised by local residents there is no need to provide the spaces in line with the Cork City development Plan standards.

Table 10: Car Parking Provision

	Maximum Car Parking Provision [1]	Parking Provided	Comments	Size / Units
Residential	844 spaces	209 (21 spaces will be wheelchair accessible)	Provided at 0.34 spaces per dwelling unit 147 under croft and 62 surface car parking spaces	609

	Maximum Car Parking Provision [1]	Parking Provided	Comments	Size / Units
Creche	10 spaces	(10 of total spaces allocated to creche)	1 per 6 students therefore 10 bays are required [1]	289m^2 63 kids
Café	13 spaces		1 space per 20 m^2	272m^2
Gym	11 spaces		No standards proposed. (Assume 1 per 50m^2	550m^2
Retail	20 spaces		20 spaces minimum The gym, retail and café use will be mostly used by local residents and primary care centre users.	218m^2
Primary Health Care Centre		98	Not part of this planning application 57 under croft and 41 surface car parking spaces	

[1] Maximum Car Parking Provision by Cork City Development Plan, 2015 to 2021

5.5.4 Electric Vehicle Parking

To encourage the use of Electric Vehicles, in line with Council and National Policy, developments shall provide Electric Vehicle Charging spaces as follows:

Residential developments - A minimum of one car parking space per ten residential units should be equipped with one fully functional Electric Vehicle Charging Point.

The proposed scheme will provide, 21 electric charging points within the residential units' basement. This number can increase as the popularity of electric cars increases.

5.5.5 Motorcycle Parking

Cork City Development Plan 2015 – 2021 proposes that 1 motorcycle parking space is provided for every 10 vehicle bays provided. Therefore, in total 21 motorcycle spaces will be provided.

5.6 Proposed Cycle parking

The Cork City Development Plan 2015 to 2021 requires cycle parking to be provided in line minimum standards. The provision of cycle parking is outlined in table 11. The Cork City Development Plan 2015 to 2021 cycle parking standards requires that 729 spaces should be provided. It is however proposed to provide 1,145 cycle spaces for the proposed development.

The proposed cycle parking provision will assist in achieving a greater mode share for active travel and is in support of promoting cycling and the use of cycle lanes as proposed in the CMATS and Cork Metropolitan Cycle Network Strategy.

Table 11: Cycle Parking Provision

	Size / Units	**Cycle Parking Requirement**	**Size / Units**	**Cycle Parking Provision**
Residential	609	0.5 per unit in suburbs: 305 spaces 1 per unit in City Centre / Inner Urban Areas: 609 spaces	609	
Creche	289m^2 63 kids	1 per 25 children	3	
Retail Café Gym/Fitness	218m^2 272m^2 550m^2	1 space per 100m^2 1 space per 200m^2 1 space per 150m^2	2 2 4	
Primary Health Care Centre	0.5 spaces per consultation room	Not part of this planning application		
Total Parking Provided			620	1,145

5.7 Future Road Network

Arup developed an indicative future road design for Kinsale Road to accommodate the proposed Bus Connects route and primary cycle route proposed along this route. The main purpose of this road design is to demonstrate how the future road can be accommodated within the vicinity of the site and that the proposed development does not limit the provision of the planned infrastructure. A full scale drawing of the future road network within the vicinity of the proposed development is shown on drawing 252666-Arup-ZZ-XX-DR-CH-1002. The layout shown on this drawing is for demonstration purposes only and is not submitted for purposes of obtaining planning permission. For purposes of discussion, the future road network was divided into a series of drawing sections.

Overall, provision was made for the following:

- Maintaining existing north and southbound lanes on Kinsale Road;

- Providing right turning lanes on the northbound and southbound approach of the Mick Barry Road / Kinsale Road access;
- Providing bus only lanes on the north and southbound approaches of Kinsale Road;
- Providing pedestrian and cycle routes adjacent to the bus lanes on either side of the road;
- Providing a cycle lane on Tramore Road;
- Providing access to the development at the Mick Barry / Kinsale Road junction by linking a fourth arm (eastern approach) to the junction;
- Maintaining a left and right turning lane on the northbound approach to the Kinsale Road / Tramore Road junction;

Figure 22 shows a possible layout for the Kinsale Road / Tramore Road junction accommodating the Bus Connects bus lanes on Kinsale Road. For purposes of this exercise, a more pedestrian and cycle friendly junction is shown where the radii at the corners were tightened to achieve shorter junction crossing distances for pedestrians and protection have been provided for cyclists by taking the routes off road so that pedestrians and cyclists cross the junction in the same signal phase.

There is limited space on Tramore Road, however the right turning lane is maintained and 2.0m wide cycle lanes were provided for the section of the road adjacent to the site boundary.

It is also proposed to provide yellow boxes opposite both the development access and the Musgraves access on Tramore Road, since both of these accesses are priority controlled and the vehicle queues on Tramore Road eastbound approach stretches past these accesses.

Figure 22 shows the future Kinsale Road and Tramore Road junction. On the southwestern corner of the junction the proposed landscaping on the development site is shown. A small plaza is proposed in the corner of the junction which is a point of arrival for pedestrians (see Figure 22). The plaza is connected by a 3.0m footpath running north south within the proposed linear park along Kinsale Road and a wide footpath along Tramore Road which also connects to the activities on site i.e. the restaurant and the town square via a boulevard.

Figure 23 shows the indicative layout of Kinsale Road between Tramore Road and Mick Barry Road. This section shows how the north and southbound vehicular lanes, the right turning lanes and the bus lanes are accommodated. All of these lanes are 3.0m in width and have been offset from the centre of the road to ensure that land take on either side of the road is fairly balanced between landowners.

On the development side (western side of Kinsale Road) the linear park through which the pedestrian and cycle lane traverses is shown. The central part of the pedestrian lane on this section follows adjacent to the footpath to create as much distance between the cyclists and vehicles, however the cycle lanes meanders back to the junctions to cross cyclists parallel to the traffic lanes. The footpath along this section of the road is a minimum of 3.0m and the cycle lane 2.0m.

Figure 24 shows the fourth leg (Central Street) of the Kinsale Road / Mick Barry Road junction. The indicative layout shows a more condensed junction with tighter radii on corners to shorten crossing distances for pedestrians on junction approaches. The layout also shows how the Mick Barry Road approach might be reconfigured to align better with Central Street. This includes the removal of traffic islands on this approach.

The southern section of Kinsale Road also makes provision for 3.0m vehicle lanes and bus lanes which is offset against the centre line of the existing road to balance land take from adjacent landowners equally.

The footpath in this area is a minimum of 3.0m and the cycle lane 2.0m. The cycle lane is located to follow an alignment as far from the traffic lanes as possible but crosses the junctions parallel and adjacent to the bus lanes.

Figure 22: Kinsale Road / Tramore Road Junction (Future Road Network)

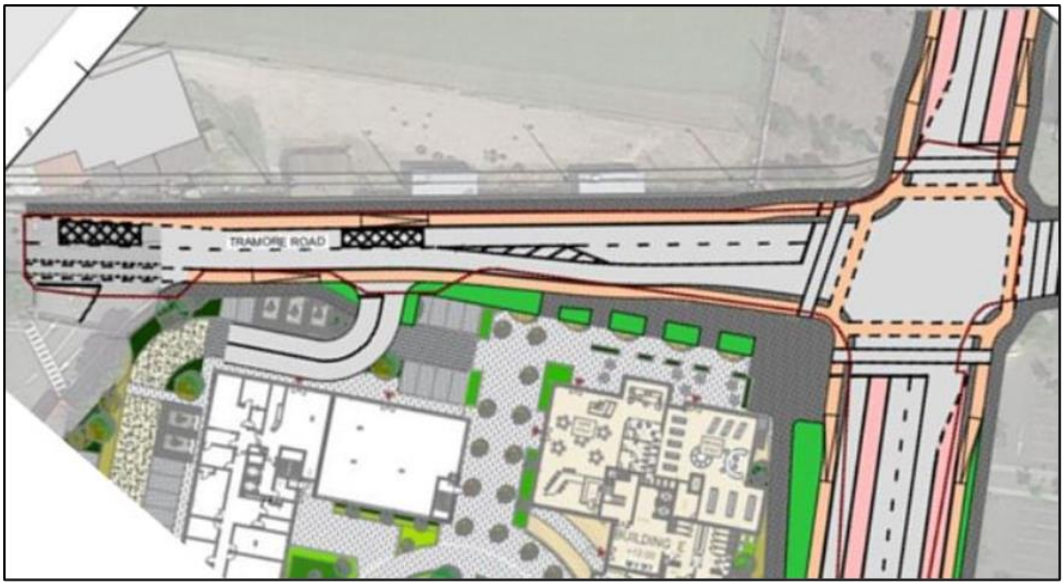


Figure 23: Section of Kinsale Road between Tramore Road and Mick Barry Road (Future Road Network)

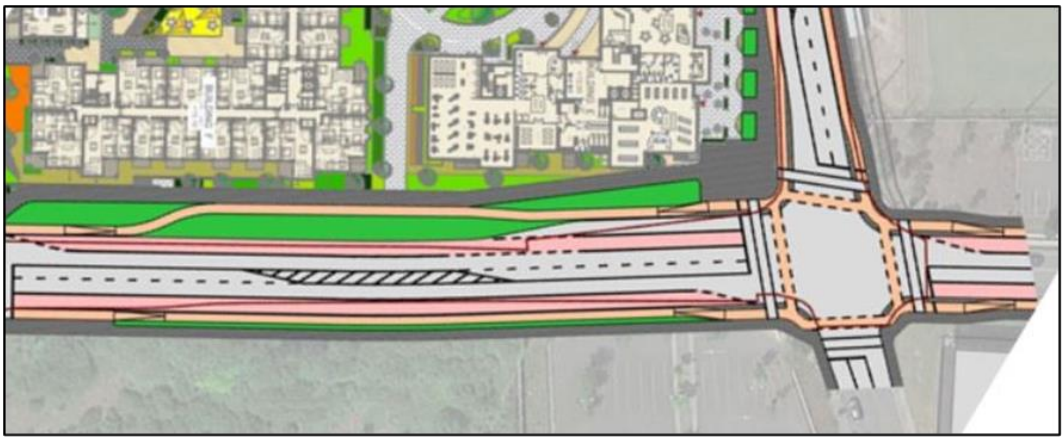


Figure 24: Section of Kinsale Road south of Mick Barry Road and Kinsale Road / Mick Barry Road Junction (Future Road Network)

5.8 The Planning Proposal

The delivery of the future road network as shown in Figure 25- Figure 28 is dependent on the role out of the Bus Connects network implementation, which will most likely only occur in the longer term. A full scale drawing of the future road network within the vicinity of the proposed development is shown on drawing 252666-Arup-ZZ-XX-DR-CH-1001.

Therefore, an interim roads plan is provided to show what the developer can deliver before Bus Connects is in place. This plan ties into the existing road network and with works carried out along the property frontage.

Work will be carried out up to the edge of the existing kerb. This will include property between the red boundary line and the existing kerb, for which planning consent will be sought to carry out construction work.

Figure 25 shows the interim road works within the vicinity of Kinsale Road / Tramore Road junction. The footpaths and cycle lanes along the property boundaries will be provided. The two cycle lanes respectively on Tramore Road and Kinsale Road will not be linked to one another as the space on the corner needs to be shared space in the interim.

A new cycle lane will be provided on the development boundary along Tramore Road. This lane will link to the existing advisory lane across the Musgraves access.

As part of the proposed development, it is proposed to provide yellow boxes opposite the development access and the Musgraves access. Both of these accesses are priority junctions and the vehicle queueing on the Tramore Road eastern approach often stretches past the two accesses. As a measure to assist exiting traffic, the yellow boxes will be provided to keep an area clear for right turning traffic to join the vehicular queue on the Tramore Road eastbound approach.

Figure 25: Kinsale Road and Tramore Junction (Interim)

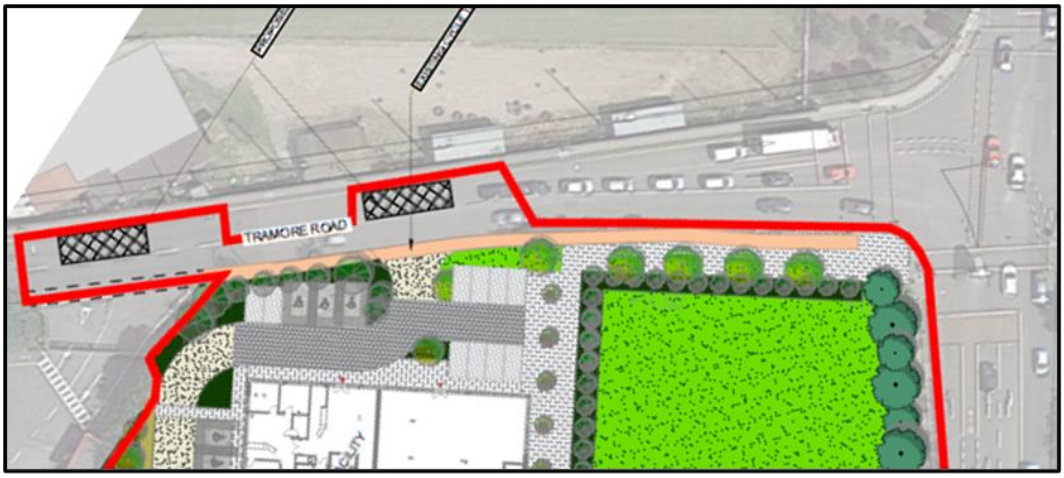


Figure 26 shows the interim roads plan along Kinsale Road between Tramore Road and Mick Barry Road. A link will be provided to connect the existing lane on the road to the new cycle lane. It is proposed that the existing cycle lane and footpath currently provided along the kerb line of the road is removed and replaced with grass which will be removed when Bus Connects reconfigures this area.

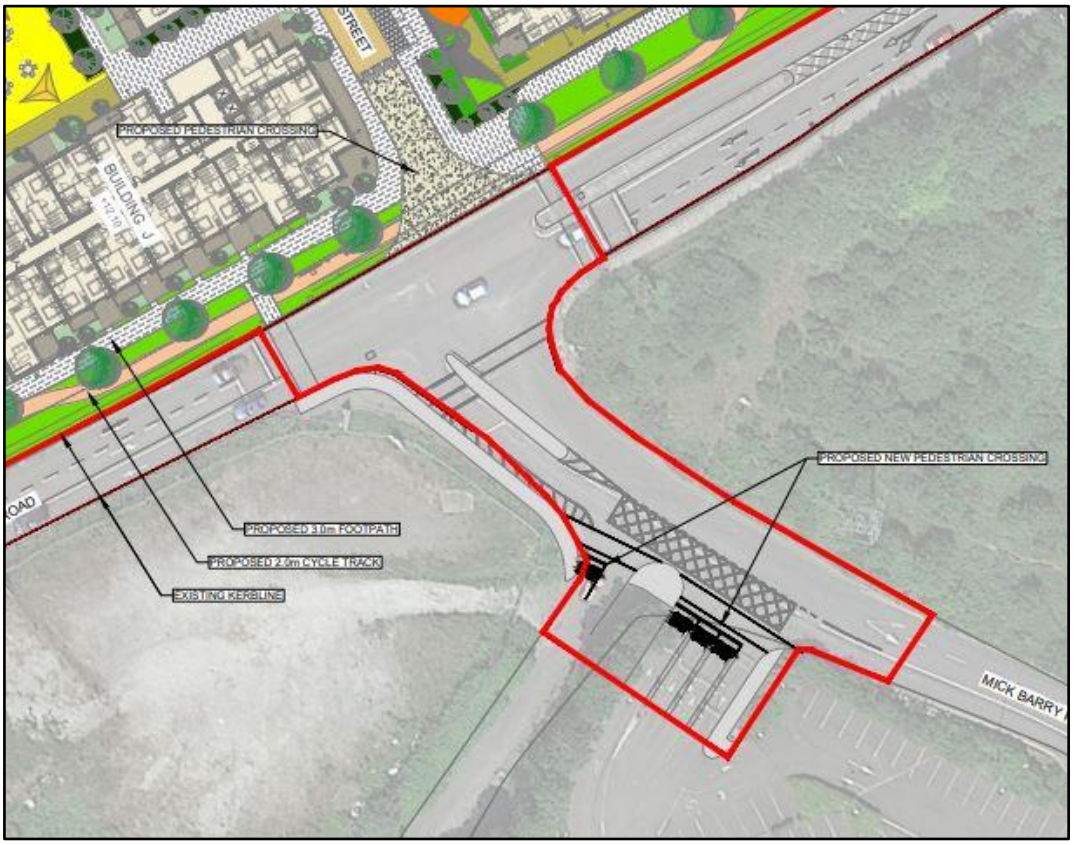
Figure 26: Section of Kinsale Road between Tramore Road and Mick Barry Road (Interim)

Figure 27 shows the interim roads plan along Kinsale Road to the south of Mick Barry Road, including the junction. The footpath is connected to the existing pedestrian crossing points at the junction. The existing footpath and cycle lane will be removed and replaced by a grassed verge until Bus Connects reconfigures the road.

Figure 27: Section of Kinsale Road south of Mick Barry Road and Kinsale Road / Mick Barry Road Junction (Interim)

Figure 28 shows the pedestrian link on Mick Barry Road to the Black Ash Park and Ride which was recently constructed presumably by Cork City Council. A 2.0m wide footpath is available from Kinsale Road up to the commercial property access. There is no pedestrian crossing facility available across both the commercial property access and the Black Ash car park access. It is proposed to provide a formal pedestrian crossing to provide pedestrian priority and to continue the route up to the pedestrian access which is located to the east of the vehicular access.

Figure 28: Pedestrian Link on Mick Barry Road, between Kinsale Road and Black Ash Park and Ride



5.9 Development Assessment Scenarios

5.9.1 Introduction

The development scenarios considered in the assessment is in line with the TII Traffic and Transport Assessment Guidelines. These guidelines requires that developments should be assessed at the opening year and then 5 years and 15 years after the opening year of the development.

Based on best indications to date, the assumed construction phasing for the development is outlined in Table 12. The development phases are spatially shown in Figure 29.

Four construction phases are envisaged for the proposed development after enabling works, which is expected to take 4 months. For purposes of this analysis, the worst-case scenario is assumed i.e. the longest time frame is assumed in order to provide a robust analysis.

Construction Phase 1 includes the northern portion of the site, located on the corner of Tramore Road and Kinsale Road. It includes two residential blocks (Blocks E and F) and all of the local services to be provided for the development. These services will therefore be available for the first residents to move in and from the start reduce the need to travel to other locations to avail of these services. Based on a worst-case scenario, this development phase is expected to be completed in 2025 which will be the opening year for Phase 1. Figure 29 shows that it is proposed for Phase 1 that both the Tramore Road and the Kinsale Road accesses are opened. Having both accesses operational provides more flexibility in accommodating both the development and construction traffic.

Construction phase 2 includes two blocks C and G and another 113 units expected to be completed in 2027. Construction phase 3 includes three blocks J, B and H which represents another 180 units expected to be completed in 2029.

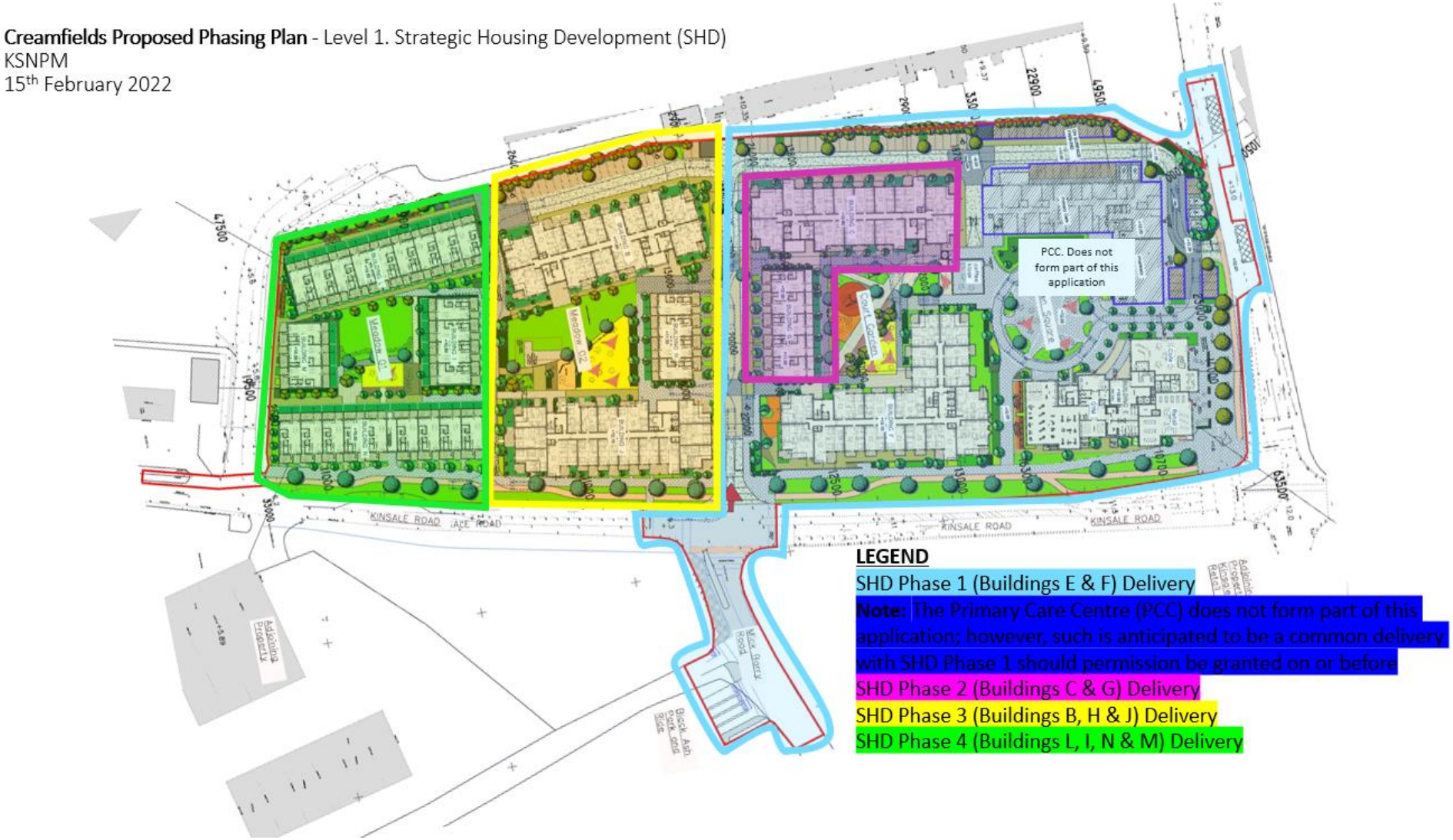
The final construction phase (phase 4) will include residential blocks L, I, N and M, which is expected to be completed in 2031.

Table 12: Assumed Construction Phasing Plan

	Duration	**Development**	**Size / units**	**Future Horizon Year**
Site Enabling Works	2 - 4 months			2022
Phase 1	2.5 – 3.5 years	Primary Care Centre (part of a separate application) Gym Café Retail Creche Town Square Court Garden	7,767m^2 550m^2 272m^2 218m^2 289m^2	2025 Opening Year of Development

	Duration	Development	Size / units	Future Horizon Year
		Coffee Kiosk Residential Blocks E & F	100m^2 257 units	
Phase 2	2 – 2.5 years	Residential Blocks G & C Ancillary Site Works	126 units	2027
Phase 3	2.5 – 3.5 years	Residential Blocks J, H, B Ancillary Site Works	167 units	2029
Phase 4	1.5 – 2.5 years	Residential Blocks I, L, N & M Ancillary Works	59 units	2031

Figure 29: Assumed Construction Phases



5.9.2 Opening Year

It is assumed that Development Phase 1 will open in 2025. Both development accesses will be available. Construction will be ongoing for Phase 2 when Phase 1 opens, therefore there will be additional construction traffic travelling to and from the site in 2025 that will be accounted for in the analysis. To facilitate traffic flow during this construction phase, it is proposed that traffic operates as follow:

Construction traffic

Available traffic counts and site observations show that the Tramore Road approach to the Tramore Road /Kinsale Road junction is operating under stress with long vehicular queues waiting to enter the junction during peak hour periods. Eastbound traffic on Tramore Road is moving freely and seem to operate well during peak hours.

Therefore, to limit potential further traffic impact on this junction, it is proposed that the Tramore Road access will only facilitate inbound construction traffic while the Kinsale Road access will accommodate outbound construction traffic. In this way, no additional demand will be put on the Tramore Road eastbound approach which is currently under stress. The one way system is also expected to minimise conflicting movements and to simplify the operation of junctions.

Development Traffic

Development traffic will be able to use both accesses once development phase 1 is operational. It is expected that generally access to the primary care centre will be from Tramore Road while the residential development will mainly use the Kinsale Road junction.

5.9.3 Opening Year + 5 Years

The opening year plus 5 years is 2030. At this point in time the second and third development phase will be in place adding the traffic of more residential blocks. Both accesses will be operational and the proposed construction traffic one way system will still be in place.

Construction will be ongoing for Phase 4 when Phases 1 to 3 is open, therefore there will be additional construction traffic travelling to and from the site in 2030 that will be accounted for in the analysis.

5.9.4 Opening Year +15 Years

The opening year plus 15 years is 2040. At this point in time development phase 4 will also be open and therefore all 609 dwelling units will be active. Since the entire development would be in place, no construction traffic is assumed in this scenario.

At this stage it is assumed that the role out of the CMATS proposals will be well in advance and that the walking and cycling modal share would have increased in Cork City. In addition, an integrated public transportation service based on Bus Connects and suburban rail services would also be available.

5.9.5 Traffic Growth

Background traffic growth for each future assessment year has been based on the TII Project Appraisal Guidelines for National Roads, Unit 5.3 – Travel Demand Projections (Transport Infrastructure Ireland 2019. Calculated growth rates for light vehicles and heavy vehicles have been applied to AM, PM and daily traffic volumes. These factors correspond to the Cork Metropolitan area medium growth scenario. The growth rates applied to the background traffic for this assessment is shown in Table 13.

Table 13: Traffic Growth Rates

Cork Metropolitan area 2016 – 2030	**Light Vehicles**	**Heavy Vehicles**
2016 - 2030	1.0169	1.0294
3030 - 2040	1.0090	1.0149
2040 - 2050	1.0083	1.0182

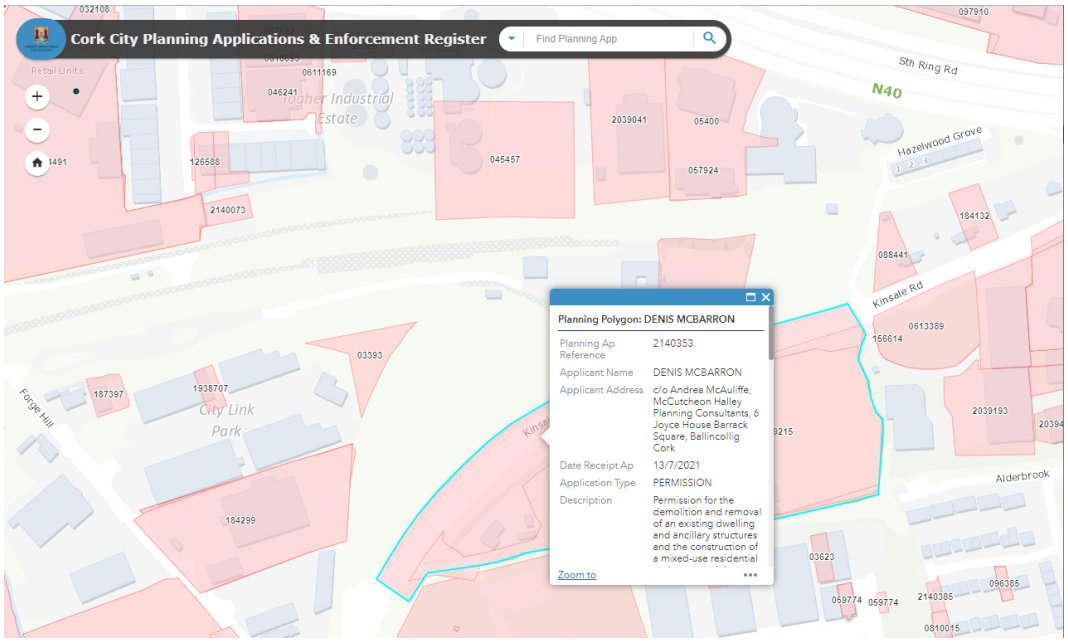
Source: TII Project Appraisal Guidelines for National Roads, Unit 5.3, Table 6.1

5.9.6 Latent Development

During discussions with Cork City Council, it was agreed that this TTA will consider planning application 2140353, by applicant Denis McBarron. The development is for 134 no. residential units, various retail and a 158 no. bed hotel.

Latent development also takes the trip generation of the proposed Primary Care Centre (PCC) adjacent to the SHD development into account and is added to the background traffic in the assessment years.

Figure 30: Planning Application within vicinity



6 Trip Generation

6.1 Methodology

The potential traffic generated by the proposed development has been determined by using a multi-step methodology.

Firstly, the potential trip rate is calculated by examining the TRICS online database. The TRICS database contains trip-generation rates relating to a variety of land uses from sites in the UK and Ireland. Through careful selection of input parameters relating to a variety of criteria such as land use, location, and public transport provision, the TRICS database allows an estimate to be made of trip generation rates for a proposed development.

Total traffic expected to be generated by the development is then calculated based on the trip rates identified in TRICS, the proposed floor areas/number of units for different uses and the modal split of the local area, based on Census 2016 data.

For the purpose of developing a robust trip generation and distribution profile for this scheme, the following methodology was adopted:

1. The TRICS online database was interrogated for multi-modal site surveys, in order to allow a trip rate for ‘person trips’ to be derived for the scheme (as opposed to a trip rate for vehicles only) – this allows for a more representative trip rate to be developed for the scheme;

2. The ‘person’ trip rate is then applied to the number of units and the other proposed uses to derive a total number of ‘person trips’ that the scheme is expected to generate; and

3. Trip generation rates are only provided for the residential component of the development and for the primary health care facility as background traffic. The remainder of the land uses serving the development, are not expected to generate significant additional trips as these facilities are primarily expected to serve the local residents on site.

   The Central Statistics Office (CSO) Small Area Population (SAP) statistics were reviewed for the local area. For the residential component of the development, a total of 6 relevant zones were identified and reviewed as shown in Figure 31.

   Figure 31: CSO SAP zones selected for residential land use evaluation

   The SAP information for these zones is based on Census 2016 data, and provides data on existing travel habits from the site, including mode share, departure times and distances to work, etc.

4. The modal split information for the zones was then applied to the total ‘person trips’ that the scheme is expected generate, with the vehicle mode share used to determine the total number of vehicular trips to and from the site at peak periods; and

5. The CSO SAP statistics for the Electoral District containing the development site and a number of adjoining sites were reviewed to determine the origins and destinations for traffic travelling to and from the site, in order to apply this traffic distribution to traffic leaving and returning to the site at peak times.

6.2 Trip Generation by TRICS 7.4.4

Firstly, as outlined above the potential traffic generated by the proposed development has been calculated by examining the TRICS 7.4.4 online database. The trip rates calculated for the proposed residential development at peak hours are presented in Table 14 below. Note that the trips presented below are for the development peak hours of 08:00-09:00 and 17:00-18:00, as per TRICS.

Table 14: Person Trip Generation Rates – Residential Units

Residential	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Trip Rate	0.095	0.339	0.339	0.232
Two Way	0.434		0.631	

All trips are expressed in 'Person Trips' per unit
Source: TRICS

The person trip generation for the residential component of the development based on TRICS is shown in Table 15 to Table 17 below:

Table 15: Person Trip Generation for Residential Component Opening Year

Residential 609 units	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Vehicle Trips	23	81	81	55
Two Way	103		136	

Table 16: Person Trip Generation for Residential Component Opening Year +5 Years

Residential 609 units	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Vehicle Trips	50	180	180	123
Two Way	230		303	

Table 17: Person Trip Generation for Residential Component Opening Year +15 Years

Residential 609 units	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Vehicle Trips	67	239	239	164
Two Way	306		403	

The person trip generation rates for the proposed primary health care centre development at peak hours for all the assessment scenarios are shown below. This land use component is not part of the planning application but are considered as background or latent traffic. It is the client's aspiration to apply for this part of the development concurrently and therefore the trips generated by this development is included in the traffic assessment carried out in the remainder of the report.

Table 18: Persons Trip Generation Rates – Primary Health Care Centre

Primary Health Care Centre	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Trip Rate	0.725	0.122	0.415	0.518
Two Way	0.847		0.933	

All trips are expressed in trips per 100m^2

Source: TRICS

The trip generation for the primary health care centre is shown below in Table 18. Since the entire primary health care centre is constructed in the opening year, the trip generation for the following assessment scenario years stay the same.

Table 19: Person Trip Generation – Primary Health Care Centre

Primary Health Care Centre (6,776m^2)	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Trip Rate	49	8	28	35
Two Way	57		63	

Although the ancillary land uses including the creche, gym, retail, coffee kiosk and community centre will primarily be utilised by the residents occupying the development, there wouldn't be any restriction for visitors to use these facilities. Therefore, it must be recognised that there might be an element of external trip generation involved in the use of this facilities. This element is expected to be small, and it not expected to be similar to a singular land use elsewhere. The trips assumed for these land uses is mostly expected to be trips on foot or bicycle. Very limited parking is provided for these facilities, so car trips will be limited.

6.3 Mode Split

The mode split for the small area population zones selected for reviewing the residential travel characteristics within the environment is provided in Figure 32.

Currently 35.5% of residents living within the selected zones are car drivers and an additional 2.4% are van drivers, bringing the total car trips to 37.9%. 19.7% are car passengers which most probably represents educational trips i.e., students being dropped off at school. This is probably an over representation of this mode of transport as all school trips are recorded in the Census and therefore this mode makes up a disproportionate size of the total trips. To remediate the possible over representation and to ensure a robust assessment, it is proposed to assume a higher car driver base of 50% for purposes of analysis.

More than a quarter (26.5%) of trips are made on foot which already indicates the willingness of people to walk to destinations and just over 4% of the population cycle. Current public transport uptake is 7%. The provision of the Bus Connects network in Cork City is expected to increase the public transportation use within the area, especially with the proposed Bus Connect route following along Kinsale Road.

In 2016, 0.7% of residents indicated that they mainly work from home. However, it is expected that the long term impact of Covid 19 would be an increase of this number as working from home has become the norm for a lot of people which is expected to last. In support of this transport trend, the recently published *National Remote Work Strategy* acknowledges that a long-term shift has occurred in Ireland and that this shift that was planned to be implemented in decades, happened in days. One of the key actions of this plan is to mandate that home and remote working should be the norm for 20% of the public sector. Recently, the Right to Request Remote Work Bill 2021, by the Department of Enterprise, Trade and Employment. This bill is part of the government's vision to make remote working a permanent feature of Ireland's workforce. This is an arrangement where work is fully or partly carried out at an alternative worksite other than the default place of work and underpins the employees right to request remote work.

TII also published a document "Alternative Future Demand Scenario" July 2021. This document states that it is estimated that up to 20% of the workforce could potentially work from home in an effective and efficient manner if they had the opportunity to do so and that it was estimated that travel demand on a typical workday across all travel modes could potentially be reduced by 8% if a blended model of home/office work was adopted for the cohort of people who could potentially work from home.

For purposes of analysis of the proposed development, the following assumptions are made:

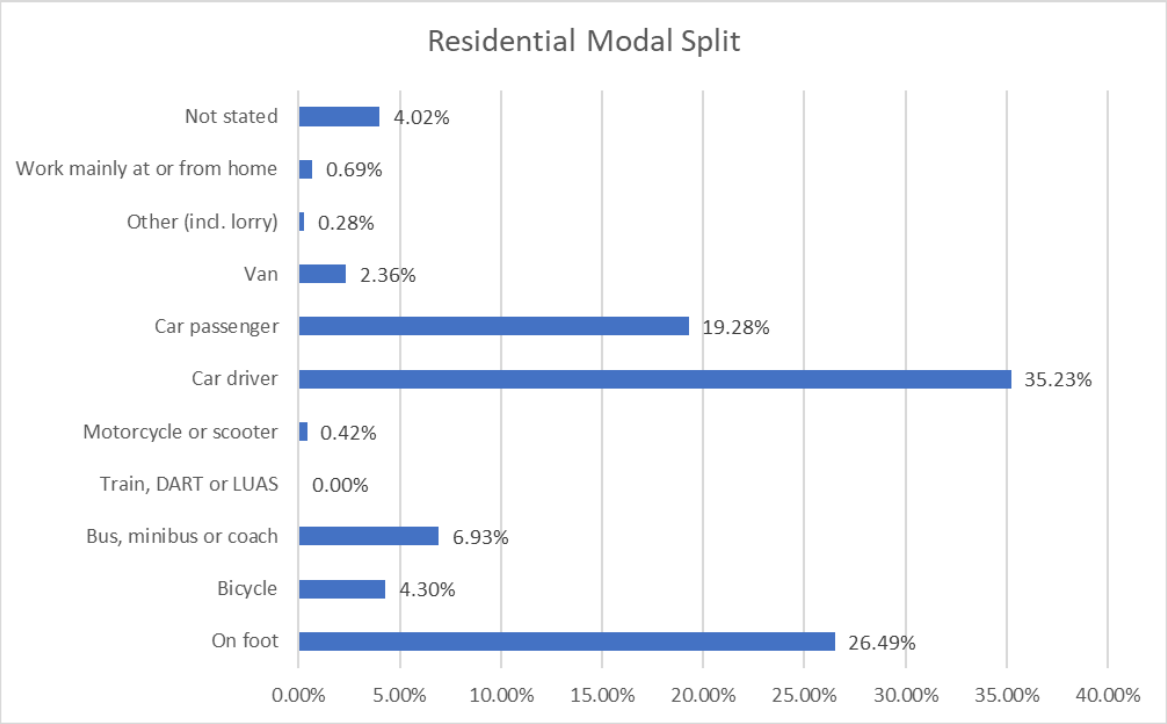
- Walking will remain at the existing level of 26.5% until the new footpath next to Kinsale Road is provided. It is assumed that this facility will only be available in 2030. From this point onwards it is assumed that walking will conservatively increase to 30%, although in reality this percentage could be higher;
- Cycling will also remain at existing levels of 4.3%. However, the substantial cycle route network and the cycle facility adjacent to Kinsale Road is expected to increase the cycling modal share in 2030, where it is assumed that cycling will increase to at least 7%;
- Public transport will remain at the existing level of 6.9% until 2030, where it is assumed that Bus Connects and the bus corridor adjacent to Kinsale Road will be available. Due to the huge investment in Bus Connects to increase the bus mode of transport, it is assumed that the bus mode share will double to 14% in 2040, and in 2030 that half of this mode share increase is achieved;
- It is assumed that remote working will have a long-term impact on modal share based on the governments drive to encourage working from home and the TII's publication on this matter.

For purposes of this assessment, it is assumed that remote working will have an impact on mode share. Although the TII publication estimates a possible 8% modal share for remote working, for purposes of this analysis it is conservatively assumed that up to 2030 this mode share would only be 4% but as technology in this regard improves 7% is assumed for 2040;

- The increase in all of the above modes of transport will therefore reduce car driver mode share as follows:
  - 2025 Opening Year 50.0%
  - 2030 Opening + 5 Years 39.8%
  - 2040 Opening + 15 Years 29.8%
- The assumed decrease in the car driver mode split is conservative to ensure a robust assessment and in reality, if CMATS and other initiatives are successfully implemented, the reduction in car-based traffic could potentially be much higher.

Applying the mode share assumptions outlined above to the person trip generation provided by TRICS for the residential development component results in the vehicle trip volumes displayed in Table 20 to Table 22.

Figure 32: Mode share for Residential use in the vicinity of the development



Source: 2016 Census Small Area Population Data

Table 20: Vehicle Trip Generation for Residential Component Opening Year

Residential 609 units	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Vehicle Trips	11	40	40	28
Two Way	51		68	

Table 21: Vehicle Trip Generation for Residential Component Opening Year +5 Years

Residential 609 units	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Vehicle Trips	20	72	72	49
Two Way	92		121	

Table 22: Vehicle Trip Generation for Residential Component Opening Year +15 Years

Residential 609 units	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Vehicle Trips	20	71	71	49
Two Way	91		120	

Applying the mode share assumptions outlined above to the person trip generation provided by TRICS for the primary health care development component results in the vehicle trip volumes displayed in Table 23 to Table 25.

Table 23: Vehicle Trip Generation – Primary Health Care Centre Opening Year

Primary Health Care Centre	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Trip Rate	25	4	14	18
Two Way	29		32	

Table 24: Vehicle Trip Generation – Primary Health Care Centre Opening Year plus 5 Years

Primary Health Care Centre	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Trip Rate	20	3	11	14
Two Way	23		25	

Table 25: Vehicle Trip Generation – Primary Health Care Centre Opening Year plus 15 Years

Primary Health Care Centre	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Trip Rate	15	2	8	10
Two Way	17		19	

The tables below show the vehicle trips generated by the ancillary land uses including the creche, retail, gym and coffee kiosk. 18 parking spaces are allocated to serve these land uses. Based on a parking trip generation rate of 1 trip per parking space it is estimated that these land uses will generate 18 vehicles in and 18 out. To ensure a robust assessment, it is assumed that this trip generation will be maintained during all the assessment years.

Table 26: Vehicle Trip Generation – Ancillary Land Uses Generation Opening Year

Creche, gym, retail (pharmacy) and coffee kiosk	**AM Peak**		**PM Peak**	
	Arrival	Departure	Arrival	Departure
Trip Rate	18	18	18	18
Two Way	36		36	

The total vehicle trip generation for the development for the various assessment scenarios are displayed in Table 27 to Table 29.

Table 27: Vehicle Trip Generation – Total Trip Generation Opening Year

Total Trip Generation	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Trip Rate	54	62	72	64
Two Way	116		136	

Table 28: Vehicle Trip Generation Opening Year plus 5 Years

Total Trip Generation	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Trip Rate	58	93	101	80
Two Way	151		181	

Table 29: Vehicle Trip Generation –Opening Year plus 15 Years

Total Trip Generation	**AM Peak**		**PM Peak**	
	Arrival	*Departure*	*Arrival*	*Departure*
Trip Rate	53	91	97	77
Two Way	144		174	

6.4 Construction Traffic

6.4.1 Introduction

The level of construction traffic associated with the proposed development will vary over the course of the construction programme.

As outlined earlier in this report, it is envisaged that construction will take place in four phases, starting at the northern part of the site with phase 1 and gradually moving towards the south as the remaining construction phases commences.

The construction phasing is the best guess now and may change subject to internal and external factors that may develop. The current estimation suggests that Phase 1 will take 2.5 years to complete and each of the subsequent phases 2 years to complete.

An opening year of 2025 is assumed for Phase 1 of the development. Following this, construction will commence at Phase 2, and so forth. In 2025 therefore there will be traffic associated with first residential blocks occupied by residents and the functional primary health care facility and construction traffic associated with Phase 2

By 2030, which corresponds to the Opening Year +5 it has been assumed that both development phases 1 and 2 will be completed and occupied and that phase 3 will be under construction. Traffic associated with the construction of this phase will need to be considered in the trip generation for the 2030 assessment scenario. In 2040, the entire development will be in place and therefore no construction traffic associated with the development will be on the road network.

6.4.2 Heavy and Light Goods Vehicles

The movements of HGV's and LGV's to and from the site is expected to generate traffic from the following activities:

- Enabling works (piling, substructure, etc.);
- Superstructure works;
- Façade;
- Fit-Out; and
- Landscaping.

The fit-out and landscaping works are expected to be the most intensive from a construction vehicle perspective. During this time, it is estimated that approximately 250 HGV and LGV vehicles will travel to the site per week (i.e. a total of 500 two-way vehicle movements).

Assuming a 5.5 day working week, this would equate to a daily total of 46 HGV/LGV vehicles travelling to the site (a total of 92 two-way movements). Allowing for an increase to account for any miscellaneous deliveries, it is proposed to increase this figure to a total of 50 vehicles per day (i.e. 100 two-way movements). Based on experience on previous construction projects it is estimated that 33 of the 50 vehicles will be HGV's, with the remaining 17 expected to be LGV's.

Heavy vehicles are expected to have an evenly spread distribution profile starting early in the morning throughout the day towards the evening.

Assuming HGVs is not arriving early or late in the day, and only within an 8-hour period of the day, it is estimated that on average a total of 4 HGV's and 2 LGV's arrive and depart the site (a total of 6 vehicles) in the peak periods on the local road network. This represents 8 HGV and 4 LGV trips per hour.

To ensure that a robust assessment is carried out a stress test scenario will be carried out for construction traffic by assuming that there are 50% more HGVs and LGVs arriving and departing during peak hours. This therefore represent 6 HGVs and 3 LGVs arriving and departing (a total of 9 vehicles) in the peak periods on the local road network. This represents 12 HGV and 6 LGV trips per hour.

6.4.3 Workforce

The most intensive phase of construction for workforce numbers is also the fit-out and landscaping phases, when a total of 250 construction personnel are expected to be on site per day.

Due to the site benefiting from bus services in the vicinity and cycle connectivity, it is therefore envisaged that a proportion of the construction staff will travel to and from the site by public transport and other alternative modes. It is anticipated that approximately 25% of staff will travel by bus, by bike or on foot.

To support this, only a limited amount of parking is proposed for construction staff (to be located within the applicant's landholding). Those workers that do travel to the site by car will be encouraged to car-pool, and it is assumed that there will be an average occupancy of 1.2 persons per car.

Therefore, by assuming 75% of staff will arrive by car and a car occupancy of 1.2 it is calculated that a total of 175 vehicles travelling to the site on a daily basis for construction workers. Allowing a 10% increase to account for miscellaneous trips increases this to 193 vehicles per day at the site.

Construction hours are expected to be from 08:00-18:00; however, the arriving and departure of personnel on site will be managed not to coincide with peak hour traffic. This can be done by agreeing with Cork City Council that site personnel should arrive before or after peak hour traffic. The prevailing peak hours should be determined closer to the time of construction by carrying out new link counts or by reviewing traffic data collected by permanent counting stations on the N40 and the N27. Based on the above it has been assumed that between 20 and 25% (assume 22.5%) of the construction personnel trips (39 vehicles) arrive on site during the morning peak and depart the site during the evening peak on the local road network, respectively. Allowance is also made for the off-peak direction during each peak hour period to account for instance for a contractor leaving the site during the AM peak due to unforeseen circumstances.

6.4.4 Conclusion

Based on the envisaged construction programme, construction traffic needs to be considered in the 2025 Opening Year and 2030 Opening Year +5 Years scenarios.

The construction traffic includes both light & heavy vehicle traffic as well as contractors with their workforce. The construction traffic that will therefore be taken into account by this assessment is summarised in Table 30.

To ensure a robust analysis, 50% more construction traffic is added to reflect a stress test analysis.

Table 30: Estimated Construction Traffic during peak hours

Assessment Scenario	**HGV Trips**		**LGV Trips**		**Contractor / Workforce Trips**	
	Arrival	*Departure*	*Arrival*	*Departure*	*Arrival*	*Departure*
2025 Opening Year	6	6	3	3	57	7
2025 Opening Year + 5 Years	6	6	3	3	7	57
2025 Opening Year + 15 Years	-	-	-	-	-	-

6.5 Traffic Distribution

6.5.1 Development Traffic

The CSO 2016 travel data can also be used to determine the traffic patterns within a local area by determining the trip destinations from selected Electoral Districts. Knowing the most likely destinations that local residents within the vicinity of the site currently travels to, the development trips can be assigned to the local road network according to this distribution.

According to the analysis of the data, the majority of traffic is expected to travel north on Kinsale Road towards Cork City and destinations to the north of it. 30% of traffic has destinations towards the west, using Tramore Road. The majority of these trips are short trips to the local employment centres in Ballyphehane and Bishopstown.

The trips going south, using the N40 and N27 includes a range of destinations such as the Airport, Carrigaline, Kinsale but it also includes destinations due to the strategic nature and attractiveness of the N40 including locations such as Mahon, Midleton, and Ballincollig.

Table 31: Trip Distribution Patterns as per CSO 2016 Data

Route	
N40 / N27 south	23%
Kinsale Road north	37%
Mick Barry / N27 north	10%
Tramore Road	30%

Source: 2016 Census Electoral District Data

Traffic generated by the proposed development were assigned to the road network according to the above trip generation outlined above in Table 31.

Development traffic will be able to use both of the two proposed accesses to the development site from the opening of the first development phase. Traffic therefore have been assigned across both accesses.

6.5.2 Construction Traffic

It is expected that LGV and HGV traffic will approach the development site from either the east via N27 and Mick Barry Road or the south via N40 and Kinsale Road.

Construction traffic will enter the site at the Tramore Road access and exit the site at the Kinsale Road junction. This arrangement will be in place from the start of the construction phase until all construction is completed.

7 Impact on the Local Network

7.1 Introduction

The impact of the local road network has been assessed by examining the projected traffic flows on links in the vicinity of the proposed development and at the following five junctions and site access, both without and with the proposed development:

1. N40 / Kinsale Road / N27
2. Kinsale Road (south) / local access
3. Kinsale Road / Mick Barry Road
4. Mick Barry Road / N27
5. Kinsale Road / Tramore Road
6. Tramore Road Site Access

The morning peak period (07.30-08.30) and evening peak period (17.15-18.15) have been examined to assess the busiest case in terms of local traffic on the road network and traffic generated by the proposed development.

As outlined above, for assessment purposes it has been assumed that Phase 1 of the proposed development will be constructed and fully occupied during the year 2025 and this also includes the opening of the primary health care centre. The impact on the local road network has been assessed for the opening year (2025) the interim year of five years after opening (2030), and the opening year +15 years (2040) by which time it is envisaged that the development will be fully constructed.

The traffic analysis is based on the traffic counts to which annual growth rates were applied to arrive at 2021 as a base year and also to arrive at the future assessment years of 2025, 2030 and 2040. These growth rates are in accordance with the Transport Infrastructure Ireland Project Appraisal Guidelines for Link-Based Traffic Growth Forecasting, published in 2019 as outlined earlier in this report.

The trips expected to be generated by the development according to TRICS, to which the existing and future mode share was applied were assigned to the local network in line with the trip distribution observed in the vicinity according to CSO Census travel data and the availability of access to the development.

7.2 Link Flow Assessment

Table 32 shows the link flows on the road network in the opening year. The analysis shows that the development will have an insignificant impact on the national roads including the N40 and the N27. The development is expected to have a minor impact on Kinsale Road by adding between a 1 and 4% traffic increase on this road.

The most significant impact is on Tramore road, where the interim access of the development will be, where a 6% traffic flow will occur during the AM peak and an 8% increase during the PM peak periods. This increase however represents approximately 60 additional vehicles in both directions.

Table 32: 2025 Opening Year – Two Way Link Flows

Link	**AM Peak**		**PM Peak**	
	Base	**Base + Dev**	**Base**	**Base + Dev**
N27 south of N40	2214	2214 (+0.00%)	1950	1950 (+0.00%)
N27 north of N40, south of Mick Barry Road	4008	4011 (+0.07%)	4098	4101 (+0.08%)
N27 North of Mick Barry Road	3667	3676 (+0.22%)	3455	3465 (+0.29%)
N40 east of N27	3590	3605 (+0.44%)	3489	3508 (+0.53%)
N40 west of N27	3358	3370 (+0.35%)	3301	3311 (+0.30%)
Kinsale Road south of Mick Barry Road	1215	1241 (+2.12%)	1167	1198 (+2.60%)
Kinsale Road south of Tramore Road	1579	1630 (+3.23%)	1523	1590 (+4.38%)
Tramore road, west of Kinsale Road	1006	1060 (+5.44%)	927	992 (+7.03%)
Kinsale Road, north of Tramore Road	1190	1231 (+3.48%)	1128	1177 (+4.33%)

For the 2030 Opening Year + 5 Years, the traffic impact on the national road network will also be insignificant while a 2-5% increase in traffic is expected on the Kinsale Road and an 11% increase is expected on Tramore Road during the PM peak period.

Table 33: 2030 Opening Year + 5 Years – Two Way Link Flows

Link	AM Peak		PM Peak	
	Base	Base + Dev	Base	Base + Dev
N27 south of N40	2393	2393 (+0.00%)	2106	2106 (+0.00%)
N27 north of N40, south of Mick Barry Road	4333	4337 (+0.11%)	4425	4429 (+0.09%)
N27 North of Mick Barry Road	3967	3977 (+0.26%)	3733	3747 (+0.37%)
N40 east of N27	3880	3901 (+0.54%)	3770	3794 (+0.66%)
N40 west of N27	3630	3647 (+0.48%)	3564	3584 (+0.57%)
Kinsale Road south of Mick Barry Road	1314	1348 (+2.57%)	1261	1302 (+3.25%)
Kinsale Road south of Tramore Road	1708	1787 (+4.67%)	1644	1744 (+6.07%)
Tramore road, west of Kinsale Road	1088	1154 (+6.07%)	1001	1077 (+7.61%)
Kinsale Road, north of Tramore Road	1285	1340 (+4.23%)	1217	1283 (+5.41%)

In the 2040 Opening Year plus 15 Years scenario, the background traffic increases on the road network and the use of sustainable transport modes increases. These trends are expected to even have a less significant impact on the road network. This will result in a less than 5% impact on Kinsale Road and less than 6% impact on Tramore Road.

Table 34: 2040 Opening Year +15 Years – Two Way Link Flows

Link	AM Peak		PM Peak	
	Base	Base + Dev	Base	Base + Dev
N27 south of N40	2620	2620 (+0.00%)	2305	2305 (+0.00%)
N27 north of N40, south of Mick Barry Road	4746	4751 (+0.09%)	4842	4846 (+0.07%)
N27 North of Mick Barry Road	4350	4359 (+0.22%)	4086	4100 (+0.32%)
N40 east of N27	4250	4270 (+0.47%)	4127	4150 (+0.57%)
N40 west of N27	3977	3993 (+0.42%)	3899	3918 (+0.49%)
Kinsale Road south of Mick Barry Road	1440	1472 (+2.24%)	1379	1418 (+2.83%)
Kinsale Road south of Tramore Road	1871	1948 (+4.12%)	1798	1895 (+5.39%)
Tramore road, west of Kinsale Road	1194	1256 (+5.16%)	1095	1166 (+6.48%)
Kinsale Road, north of Tramore Road	1407	1459 (+3.68%)	1331	1394 (+4.73%)

7.3 Junction Assessment

7.3.1 Introduction

The impact of the development at each junction has been assessed using Linsig, which is a computer software package for the assessment and design of traffic signal junctions, or Junctions 9, which is a software package for the assessment and design of priority junctions and roundabout junctions. Therefore, junction analysis is only carried out on key junctions on the local road network.

The impact on the following five key junctions presented below:

- Kinsale Road / Mick Barry Road
- Kinsale Road / Tramore Road
- Tramore Road Access
- N40 / N27 junction and
- N27 / Mick Barry junction

Results are presented in terms of Ratio of Flow to Capacity (RFC), measured as a percentage, and Mean Max Queue Length, measured in PCUs.

7.3.2 Kinsale Road / Mick Barry Road

This is a traffic signal operated junction and currently has three approaches. For purposes of analysis, it was assumed that the junction will operate as a four legged junction for all development phases. The assessment was also based on the existing junction capacity i.e. the alteration of the junction to accommodate the BusConnect route on Kinsale Road was not included.

Junction analysis is provided below for the 2021 base year and the three future year assessment scenarios.

This junction currently (2021) operates well within capacity. This junction will operate as a three-legged junction and then as a four legged junction from 2025 onwards. The junction continues to operate within capacity during all the future year scenarios.

Table 35: Kinsale Road /Mick Barry Road – 2021 Base Year Traffic Analysis Results

Approach Arm	**AM Peak**		**PM Peak**	
	RFC (%)	**Queue (PCU)**	**RFC (%)**	**Queue (PCU)**
Kinsale Rd (N)	21%	4.7	32%	6.5
Mick Barry Rd	31%	1.2	43%	1.7
Kinsale Rd (S)	62%	18.9	72%	13.9

Table 36: Kinsale Road / Mick Barry Road – 2025 Opening Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Kinsale Rd (N)	23%	5.2	24%	5.4	36%	7.1	40%	8.2
Mick Barry Rd	34%	1.3	39%	1.6	47%	1.9	52%	2.2
Kinsale Rd (S)	68%	22.4	69%	23.0	75%	16.4	76%	17.3
Site Access	N/A	N/A	32%	1.6	N/A	N/A	22%	1.1

Table 37: Kinsale Road / Mick Barry Road – 2030 Opening Year + 5 Years Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Kinsale Rd (N)	25%	5.7	27%	6.0	40%	8.1	47%	9.7
Mick Barry Rd	37%	1.4	42%	1.9	52%	2.2	57%	1.5
Kinsale Rd (S)	73%	26.4	74%	27.1	78%	19.2	79%	20.7
Site Access	N/A	N/A	57%	3.0	N/A	N/A	39%	2.0

Table 38: Kinsale Road / Mick Barry Road – 2040 Opening Year +15 Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Kinsale Rd (N)	28%	6.3	29%	6.8	45%	9.2	54%	12.2
Mick Barry Rd	41%	1.9	45%	2.1	56%	2.5	55%	2.5
Kinsale Rd (S)	81%	32.9	81%	33.7	82%	23.8	80%	24.6
Site Access	N/A	N/A	57%	3.0	N/A	N/A	39%	2.1

7.3.3 Kinsale Road / Tramore Road

This is a signalised junction with turning lanes. The proposed Bus Connects route will also follow through this junction on the north- and southbound approaches, but for purposes of analysis the existing capacity of the junction was assumed. This junction will accommodate construction traffic from the start of the project and will also accommodate development and construction traffic during the 2025 Opening and the 2030 Opening plus 5 years.

The results, by comparing the base scenario to the base plus development scenario, show that in 2025 the development and construction traffic will have a minor impact on the operation of this junction.

Less development traffic will use this junction once the second access on Kinsale Road at the junction with Mick Barry Road is in place.

Junction analysis is provided below for the 2021 base year and the three future year assessment scenarios.

This junction currently (2021) operates within capacity on all of its approaches. In 2025, the junction is expected to operate at or close to capacity in the 'without development traffic' scenario. The proposed development traffic will have a minor impact on the operation of the junction by increasing the RFCs by a few percentage points and increasing the vehicle queuing very slightly (less than one vehicle).

Background traffic growth is expected to deteriorate the operation of the junction further in the 2030 and 2040 scenarios. The impact of the development traffic remains minor at this junction for these traffic scenarios.

Table 39: Kinsale Road / Tramore Road – 2021 Base Year Traffic Analysis Results

Approach Arm	**AM Peak**		**PM Peak**	
	RFC (%)	**Queue (PCU)**	**RFC (%)**	**Queue (PCU)**
Tramore Rd (W)	39%	2.1	81%	15.1
Kinsale Rd (S)	87%	10.5	81%	15.9
Retail Park (E)	9%	0.4	78%	5.9
Kinsale Rd (S)	91%	31.2	81%	17.7

Table 40: Kinsale Road / Tramore Road – 2025 Opening Year Traffic Analysis Results

Approach Arm	**AM Peak**		**AM Peak + DEV**		**PM Peak**		**PM Peak + DEV**	
	RFC (%)	**Queue (PCU)**	**RFC (%)**	**Queue (PCU)**	**RFC (%)**	**Queue (PCU)**	**RFC (%)**	**Queue (PCU)**
Tramore Rd (W)	99%	22.0	103%	30.4	88%	18.4	92%	22.3
Kinsale Rd (S)	95%	14.7	100%	19.7	88%	19.2	92%	21.2
Retail Park (E)	11%	0.5	11%	0.5	85%	7.1	89%	8.0

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Kinsale Rd (S)	99%	45.9	103%	63.2	88%	21.2	93%	24.9

Table 41: Kinsale Road / Tramore Road – 2030 Opening Year + 5 Years Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Tramore Rd (W)	107%	38.5	112%	51.5	95%	25.4	100%	35.3
Kinsale Rd (S)	102%	25.5	112%	51.9	95%	23.4	97%	25.7
Retail Park (E)	13%	0.6	13%	0.5	92%	9.2	101%	13.3
Kinsale Rd (S)	107%	84.7	113%	122.1	96%	28.1	101%	39.2

Table 42: Kinsale Road / Tramore Road – 2040 Opening Year +15 Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Tramore Rd (W)	118%	70.4	123%	84.2	104%	44.4	110%	65.1
Kinsale Rd (S)	112%	54.2	120%	77.2	104%	35.8	105%	39.0
Retail Park (E)	15%	0.7	15%	0.7	100%	13.3	105%	17.1
Kinsale Rd (S)	117%	151.7	123%	189.1	104%	48.8	110%	72

7.3.4 Tramore Road Site Access

The Tramore Road site access will be a priority junction allowing one lane to enter and exit the proposed development. The Tramore Road approach to the junction with Kinsale Road is busy with traffic queuing occurring along the road. Therefore, to allow site traffic exiting the site to join the traffic on Tramore Road, it is recommended that a yellow box is provided on Tramore Road at the access junction.

Junction analysis is provided below for the three future year assessment scenarios. The junction is currently not operational (there is currently no activity on the site) and therefore no junction analysis could be carried out for 2021.

The junction analysis for the future year assessment scenarios shows that the junction is expected to operate well during peak periods including the 2015 opening year scenario where this junction will be the only junction serving the proposed development.

Table 43: Tramore Road Site Access – 2025 Opening Year Traffic Analysis Results

Approach Arm	**AM Peak + DEV**		**PM Peak + DEV**	
	RFC (%)	**Queue (PCU)**	**RFC (%)**	**Queue (PCU)**
Site Access	8%	0.1	12%	0.1
Tramore Rd (W)	4%	0.1	3%	0

Table 44: Tramore Road Site Access – 2030 Opening Year + 5 Years Traffic Analysis Results

Approach Arm	**AM Peak + DEV**		**PM Peak + DEV**	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Site Access	8%	0.1	11%	0.1
Tramore Rd (W)	4%	0.1	3%	0

Table 45: Tramore Road Site Access – 2040 Opening Year +15 Year Traffic Analysis Results

Approach Arm	**AM Peak + DEV**		**PM Peak + DEV**	
	RFC (%)	**Queue (PCU)**	**RFC (%)**	**Queue (PCU)**
Site Access	8%	0.1	10%	0.1
Tramore Rd (W)	4%	0.1	3%	0

7.3.5 Mick Barry Road / N27 South Link Road

This junction operates as a signal operated junction and the traffic analysis shows that currently the junction is operating within capacity. Background and development traffic will cause the junction to operate at a higher RFC percentage and slightly increases vehicle queue length. However even with the increase of traffic, the junction is still expected to operate within capacity. The change in operation between the with and without development traffic scenarios is very marginal and therefore considered to be insignificant.

Table 46: Mick Barry Road / N27 South Link Road – 2021 Base Year Traffic Analysis Results

Approach Arm	**AM Peak**		**PM Peak**	
	RFC (%)	**Queue (PCU)**	**RFC (%)**	**Queue (PCU)**
Mick Barry Rd	57%	3.2	74%	8.6
N27 N	47%	7.8	64%	12.1
Tramore Valley Park	28%	1.1	4%	0.1
N27 S	56%	10.1	54%	8.9

Table 47: Mick Barry Road / N27 South Link Road – 2025 Opening Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Mick Barry Rd	59%	3.4	60%	3.5	72%	8.9	73%	8.9
N27 N	51%	8.9	51%	8.9	74%	14.3	74%	14.9
Tramore Valley	32%	1.3	32%	1.3	4%	0.1	4%	0.1
N27 S	62%	11.9	62%	11.9	63%	11.3	63%	10.8

Table 48: Mick Barry Road / N27 South Link Road – 2030 Opening Year + 5 Years Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Mick Barry Rd	64%	3.7	65%	3.9	78%	10.3	79%	10.3
N27 N	54%	10	56%	10.1	80%	17.1	80%	16.5
Tramore Valley	35%	1.4	35%	1.4	5%	0.2	5%	0.2
N27 S	66%	13.6	67%	13.7	68%	12.2	68%	12.6

Table 49: Mick Barry Road / N27 South Link Road – 2040 Opening Year +15 Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
Mick Barry Rd	70%	4.4	71%	4.6	86%	12.3	86%	12.7
N27 N	61%	11.6	61%	11.6	87%	21.1	87%	21.1
Tramore Valley	40%	1.7	40%	1.7	5%	0.2	5%	0.2
N27 S	73%	16.3	73%	16.3	74%	14.1	74%	14.1

7.3.6 N40 South Ring Road / N27 South Link Road

This junction is a major gyratory providing access on and off two national roads and also provides access to Kinsale Road.

The base traffic scenario shows that except for the Kinsale Road approach, all other approaches are operating at or close to capacity.

The future year scenarios show that this junction is expected to continue to operate over capacity as background traffic grows. Adding the development traffic to the junction virtually makes no difference to the operation of the junction.

Table 50: N40 South Ring Road / N27 South Link Road – 2021 Base Year Traffic Analysis Results

Approach Arm	AM Peak		PM Peak	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
N27 South Link	99%	21.6	101%	29.8
N40 South Ring WB	103%	50.9	101%	29.2
N40 South Ring EB	96%	17.5	89%	11.7
N27 Kinsale Road	53%	3.8	73%	5.4

Table 51: N40 South Ring Road / N27 South Link Road – 2025 Opening Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
N27 South Link	108%	39.4	108%	39.4	111%	54.1	111%	54.1
N40 South Ring WB	112%	107.1	113%	109.5	110%	64.5	110%	64.9
N40 South Ring EB	104%	29.4	104%	30.4	97%	15.9	97%	16.2
N27 Kinsale Road	59%	4.4	62%	4.7	82%	10.9	84%	11.9

Table 52: N40 South Ring Road / N27 South Link Road – 2030 Opening Year + 5 Years Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
N27 South Link	117%	61.5	117%	60.4	119%	81.5	119%	82.0
N40 South Ring WB	122%	171.9	123%	175.6	118%	107.8	118%	95.5
N40 South Ring EB	117%	58.6	113%	49.6	104%	25.2	105%	26.7

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
N27 Kinsale Road	63%	5.0	68%	5.5	89%	13.9	93%	16.3

Table 53: N40 South Ring Road / N27 South Link Road – 2040 Opening Year +15 Year Traffic Analysis Results

Approach Arm	AM Peak		AM Peak + DEV		PM Peak		PM Peak + DEV	
	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)	RFC (%)	Queue (PCU)
N27 South Link	128%	90.6	128%	90.1	131%	119.5	131%	118.4
N40 South Ring WB	139%	266.9	139%	268.4	130%	168.8	130%	119.4
N40 South Ring EB	123%	75.9	124%	76.7	114%	43.3	112%	40.3
N27 Kinsale Road	69%	5.8	73%	6.5	97%	20.4	100%	42.8

7.4 Impact on Bus Services

Due to the scale of the proposed development, an assessment was carried out to determine the potential impact of the development on the bus network within the vicinity. This study is included as Appendix C of this report.

The assessment has identified four future scenarios. The scenarios identified were based on future two identified horizon years namely 2025 and 2031. These horizon years represents the opening of the first development phase of the development and the opening of the full development. The scenarios were further developed to consider two infrastructure scenarios i.e. whether the proposed BusConnect infrastructure is in place or not. Stress testing were also carried out by assuming higher than expected bus use uptake from the development.

The assessment has shown that for Scenario 1 which was the 2025 horizon without BusConnect and development phase 1 in place, the development will have less than 2.5% increase in passenger numbers on Route 226 and less than 1% increase on the other routes.

For Scenario 2 which was the 2031 horizon without Bus Connects and the full development in place the development will have less than 6.0% increase in passenger numbers on Route 226 and less than 3% increase on the other routes.

Scenario 3 is similar to Scenario 2 however the BusConnect infrastructure is in place.

For this scenario the Route No. 7 PM bus arrivals might increase the passenger numbers by 6% while the remaining bus routes could experience an increase of between 2-3% due to the development.

Finally Scenario 4 is similar to Scenario 3, but a stress test is carried out by assuming bus use will increase to double the existing bus use currently in the vicinity of the site. This increase may then increase the bus passenger numbers by just over 8%, while it may increase the remaining bus routes by between 2 – 4%.

Generally, the percentage increase in bus passengers due to the proposed development is minor. Route No. 226 might increase by 3% on the existing network or when Cork BusConnects is implemented Route No. 14 may increase by 6 – 8% depending on the popularity of the new bus service. These potential increases are minor and in reality terms the increase in the number of bus passengers on Route No. 14 PM peak arrival is only 7 people. This is a small impact and the future bus capacity of the Cork BusConnects network should easily be able to absorb this additional demand.

8 Mobility Management Plan Statement

Cork City Development Plan 2015-2021 Objective 5.3: Travel Plans states that planning applications for new developments shall include a Travel Plan or a Travel Plan Statement. Although this requirement is normally for employment-based developments, a Travel Plan or Travel Plan Statement may also be required in association for any proposed development that Cork City Council considers may have significant travel implications, this includes non-employment uses such as significant educational and residential development.

During meetings with Cork City Council, the Council requested that a traffic plan statement is provided for the development, due to the size of the proposed development.

Following the occupation of the residential dwelling units, a detailed Mobility Management Plan (MMP) will be prepared. At this stage, it is not possible to prepare a full MMP as there is no management body for the operation of the development available yet. It is however important to set out the aims and potential contents of such a Plan. This section outlines therefore the framework on which an MMP for the development will be based upon once the development is operational.

8.1 MMP Manager/ Co-ordinator

A mobility Manager / Travel Co-ordinator will be appointed at the development by the management company. It is envisaged that the management company will oversee the implementation of the Mobility Management Plan including the Mobility Manager and can update the plan regularly following feedback from staff and residents of the development once occupied.

The duties of the Mobility Manager will include inter alia:

- Conducting travel surveys at regular intervals once the development is completed and operational. These surveys will provide detailed and up-to-date information on travel habits which can be used to develop new strategies that encourage travel by alternate modes;
- Implementation of various schemes / plans aimed at encouraging the uptake od more sustainable means of travel;
- Acting as an information point;
- Negotiating with public transport companies and other service providers;
- Setting up and administering registers for particular measures such as taxis if the need arises;
- Branding of the plan; and
- Ongoing promotion and marketing of the plan through various mediums.

8.2 Travel Surveys

Six months after the first phase of the development is fully operational, a travel survey will be carried out to establish travel trends within the complex and to identify measures to further promote access by alternative means. This will allow baseline travel patterns to be established, targets to be set and be a forum for staff to comment on any issues relating to their commute.

8.3 Transport Information

Information on sustainable travel options for residents will be provided to the following locations, amongst others:

- Cork City Centre;
- University College Cork;
- Cork Airport;
- Tramore Commercial Park;
- Pouladuff Industrial Estate;
- Lehenaghmore Industrial Estate;
- Ballycurreen Industrial Estate;
- Cork Airport Business Park;
- Douglas Shopping Centre; and
- Ringaskiddy.

A transport pack will be provided to each resident and will include the following information:

- Bus routes operating in Cork;

- Nearly bus stops;
- Buses operating from Black Ash Park and Ride;
- Intercity and regional bus and train services;
- GoCar locations and information;
- Taxi services;
- Travel time to certain destinations around the city via bus, bike, walk, taxi and general cost, and health benefits; and
- Public Transport TaxSaver Scheme and Cycle-to-Work Scheme for employees, etc.

8.4 Cycle and Pedestrian Facilities

The development site has good pedestrian and cycle connectivity to existing and the future networks proposed within the vicinity of the development. It is possible to gain access from the development to Kinsale Road at five locations along the site boundary ensuring that residents can choose the shortest route to connect to the broader network. Along Tramore road the site is virtually fully permeable and public realm spaces are proposed to make the use of spaces on site inviting and attractive.

The Mobility Manager will continue to promote cycling through various schemes and promotions which may include:

- Bike to Work Week;
- Cycle safety training;
- Site visits from trained mechanics to check / repair bikes;
- Discounts on bikes and accessories from various stores;
- On-site pool bike scheme; and
- Provision of high visibility vests.

The Mobility Manager will also investigate the possibility of setting up a ‘buddy cycle database’ where people choosing to begin cycling to and from work can get in touch and travel with more experienced cyclists with the aim of increasing confidence and safety. Further schemes such as the Cycle to Work Scheme will also be continually promoted at the development.

Similarly walking will also be promoted through various schemes such as the Pedometer Challenge, as part of the Smarter Travel to Workplace programme.

8.5 Bicycle Parking

The proposed development includes a large number of bicycle parking bays (1,145 spaces) and these spaces will be actively managed by the facility management team to ensure any abandoned bikes are removed and recirculated.

The MMP coordinator will also facility feedback from the cycle community to identify any improvements which can be implemented on site to improve cycle usage.

8.6 Car Parking Management

Restricting access to car parking has the greatest impact on reducing travel by private car and encouraging use of alternative travel means.

The current proposal includes the provision of 209 car park spaces. The car parking spaces included in the development will be actively managed by the facility management team. Spaces available will be offered as an option with the purchase of an apartment / townhouse. The number of spaces available for purchase will be limited. Spaces for purchase will be proportionately available to the number of residential units available in each development phase. Parking will include wheelchair accessible spaces and car sharing spaces.

8.7 Car Sharing

The Mobility Manager will ensure that car sharing would be promoted via schemes such as encouraging the use of existing car sharing services, an action which forms part of the Smarter Travel Workplaces programme. Residents will be able to avail of this service in order to get in contact with other people who are travelling to and from similar destinations with the aim of sharing the costs and increasing the number of people travelling as passengers.

The car sharing company GoCar, or similar will have access to some car parking spaces located within the basement car parks. The number of spaces to be allocated to the car sharing company will be determined at a later stage. The introduction of these spaces enables residents' access to a car without the need for a personal car. The Mobility Manager will liaise regularly with the car sharing service provided to ensure the needs of the residents are being met in this regard.

Taxis also provide an opportunity for people who require the flexibility of car travel while also removing the requirement to commute by car. Information on local taxi services will be provided and the possibility of negotiating deals/discounts with providers will also be investigated by the Mobility Manager.

8.8 Bus Use

The Mobility Manager will encourage and facilitate the use of the numerous existing bus facilities operating in the local area and any future services that may come on-stream, particularly Bus Connects. Timetables and information on routes, ticket prices etc. will be kept on hand at all times and made available.

The Mobility Manager will also promote and distribute information on any special tickets available such as tax-saver tickets, integrated ticket systems etc. on an ongoing basis. All information will be updated on a regular basis, with workers/residents being informed of any changes/disruptions to services.

The Mobility Manager will also keep in contact with all bus service providers working in the area with the aim of improving/creating new services locally where possible. Furthermore, the possibility of having local service providers set up onsite at various times in order to promote their services and any special offers available will also be investigated.

8.9 Use of Technology

Recent advancements in technology present a number of additional opportunities in relation to encouraging positive modal shift. As part of this MMP residents will be informed of a variety of potentially useful tools including the following:

The NTA / TII Journey Planner – Available on the NTA website and as a downloadable app, the journey planner provides a comprehensive list of travel options available from any origin/destination point in the country. Most notably, this is not limited to a single mode of travel and includes routes which consider multiple modes and multiple public transport services while also providing details such as journey times and distances for each option.

Public Transport Providers – Each of the major public transport providers, including Dublin Bus, Bus Éireann and Irish Rail, now have their own dedicated app that can be downloaded to a smartphone and/or tablet. These contain detailed information on all services offered including timetables and also allow for real time up-dates on changes or disruptions to services.

RealTime Ireland – An application available for download to smartphones and tablets, this app provides real time arrival and departure listings for a range of public transport options from major rail stations to individual bus stops. This app also links with the aforementioned NTA Journey Planner to provide a compressive travel planning tool.

The above are just a few examples of the services available which would be of significant use in promoting more sustainable means of transport. The availability of such services will be promoted amongst residents and employees on a regular basis and information on any new services that become available will also be provided.

8.10 Phasing and Monitoring

A critical part of any MMP is ongoing monitoring by the management company. It is proposed that an initial evaluation of the operation of the plan will take place 6 months into its operation. The plan will be appropriately adjusted at that stage based on the results.

The MMP will be monitored and regularly reviewed on a minimum yearly basis with regular travel surveys being carried out. The plan will be refined based on experience, new data and consultations with respective stakeholders.

9 Compliance to DMURS

9.1 DMURS Compliance Statement

The internal street network of the proposed development has been designed in accordance with the Design Manual for Urban Roads and Streets (DMURS), 2019. This Chapter presents a series of principles, approaches and standards that are necessary to achieve balanced, best practice design outcomes with regard to networks and individual streets. It seeks to prioritise design around sustainable modes of travel, with pedestrians at the top of the hierarchy, followed by cycling, public transport, and private vehicles at the lowest level of priority.

This section presents the compliance of the proposed development with the fundamental principles of DMURS, in particular the creation of a sense of place and the four key design principles.

9.2 Creating a Sense of Place

DMURS states that designers should seek to create a sense of place through good design, and not merely focus on the movement of traffic. Four interlinked tangible characteristics that influence a sense of place are identified in DMURS, and their application within the proposed development is presented in this section.

9.2.1 Connectivity

The creation of vibrant and active places requires pedestrian activity. This in turn requires walkable street networks that can be easily navigated and are well connected.

An elaborate pedestrian network is provided for the proposed development which connects public spaces created within the development with one another and also to the pedestrian networks on the public streets surrounding the development.

It will be possible to freely walk from one space to the other on pedestrian links which mostly does not interact or conflict with any vehicle routes. Where the pedestrian links crosses internal vehicle routes, the surfacing of the pedestrian route carries through the vehicular route, providing movement priority to pedestrians.

Pedestrian routes link to the external pedestrian routes on public roads at a number of locations. Along Kinsale Road, pedestrians will be able to access Kinsale Road at five locations following routes placed between buildings. In addition, a linear park is proposed which includes a pedestrian and cycle route meandering through a green strip, segregated from the vehicular traffic by a row of trees.

The northern boundary of the site is virtually open to the public road providing direct access to activities on site. A wide paved boulevard links the Tramore Road to a town square located between the first two residential blocks.

9.2.2 Enclosure

A sense of enclosure spatially defines streets and creates a more intimate and supervised environment.

A sense of enclosure is achieved by orientating buildings toward the street and placing them along its edge. The use of street trees can also enhance the feeling of enclosure.

The proposed plan includes at least four defined enclosed areas within the development. The first is a multifunctional town centre space on the northern part of the site between blocks D and E. This area is shielded from any road noise by the surrounding buildings. The area will comprise of a combination of hard surfacing and planting areas supplemented by a variety of trees. This will be an all-weather amenity area and include tables and chairs covered by shading.

The second space to the south of the first is an internal courtyard located between Block C and F. This is a play or recreational area for residents comprising different surfacing including paving, grass and decking.

Two meadow areas are provided within the southern part of the site. These areas will be acting as semi private gardens for the residents although these areas will be accessible from public roads via the pedestrian links connecting to them.

9.2.3 Active Edge

An active frontage enlivens the edge of the street creating a more interesting and engaging environment. An active frontage is achieved with frequent entrances and openings that ensure the street is overlooked and generate pedestrian activity as people come and go from buildings.

Access to the ground floor of all the buildings is available. Along Tramore Road, a retail unit and a café front the ground floor in Block E. The entrances to these uses are fronting onto Tramore Road and space for tables and chairs are provided in front of the buildings.

The café is also accessible from the boulevard connecting Tramore Road to the Town Centre and the proposed pharmacy (as part of a separate planning application for a Primary Care Centre) on the opposite side of the boulevard also fronts onto this space.

The gym, the pharmacy, the primary care centre entrance, the coffee kiosk and the entrances to the residential blocks will gain access directly to the town centre ensuring that there is a variety of pedestrian flows through this space. A direct pedestrian route is also available from Kinsale Road directly to this space.

Along the linear park and also along the edges of the courtyard and two meadow spaces, the patios of the residential units on ground floor and also higher floors faces directly onto these spaces to provide passive surveillance.

9.2.4 Pedestrian Activity/Facilities

The sense of intimacy, interest and overlooking that is created by a street that is enclosed and lined with active frontages enhances a pedestrian's feeling of security and well-being. Good pedestrian facilities (such as wide footpaths and well-designed crossings) also make walking a more convenient and pleasurable experience that will further encourage pedestrian activity.

As noted in the items above, the design of the proposed development has created a high-quality environment for pedestrians through excellent connectivity and active edges throughout. The latter will ensure passive surveillance throughout the proposed development and thus enhance the sense of safety and security for pedestrians. Wide footpaths have been provided throughout, and quiet semi private space with a variety of soft and hard spaces have been incorporated in the proposed development.

Measures to lower vehicular speeds, thus improving pedestrian safety and comfort, have also been adopted. The majority of internal roads have a reduced cross-sectional width of 5.5m. Additionally, there are no long lengths of straight road, reducing the ability of vehicles to move at speed through the development. Furthermore, kerb radii at internal junctions have been designed to be in the range of 4.5m – 6m to slow vehicles while negotiating the junction.

Shared surfaces are proposed for quieter streets within the development, which will further calm traffic.

9.3 Key Design Principles

DMURS promotes and encourages four key design principles for roads and streets. These principles, and how they have been incorporated into the design of the proposed development, are laid out in this section.

9.3.1 Connected networks

To support the creation of integrated street networks which promote higher levels of permeability and legibility for all users, and in particular more sustainable forms of transport.

The proposed development incorporates dense and permeable pedestrian and cyclist networks that align as closely as possible with the various desire lines, both within the development and to and from key external destinations. Provision is made to connect the development to future development i.e. the Musgraves development to the west of the site. Pedestrians to and from the development has a variety of routes to choose from ensuring that they can take the shortest route to their destination.

9.3.2 Multi-functions streets

The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment.

The internal street and road network and access junction are designed to ensure safe and comfortable co-existence of different street users. Where necessary priorities have been established and assigned with respective design solutions such as wide footpaths, dedicated cycle lanes, various surface treatments, pedestrian and cyclist crossings, raised tables at junctions, tight radii, traffic lights, road markings, shared and segregated space areas.

Kinsale Road includes a variety of land uses and is developing into an activity street. The placement of a high-density residential development along this route will encourage a larger variety of development to occur along this street and is also expected to have a positive impact on the turnover of business next to the route. Adding a residential development therefore creates a richer development strip where local demand is created promoting shorter trips which are more sustainable over the long term

9.3.3 Pedestrian focus

The quality of the street is measured by the quality of the pedestrian environment.

The internal street and road network has been designed to ensure convenient, safe, and comfortable movements for pedestrians in first instance. This has been enhanced and ensured with the help of such design features as continuous and integrated network of dedicated and wide footpaths, along with signalised pedestrian crossings at the western access junction.

9.3.4 Multidisciplinary approach

Greater communication and co-operation between design professionals through the promotion of a plan-led, multidisciplinary approach to design.

All design elements of the internal street and road network were developed in line with requirements and limitations associated with other design elements of the development such as drainage, structures, utilities and landscape.

9.4 Summary

With the above features in place, the proposed development delivers an environment that will promote sustainable transport modes by prioritising pedestrians and cyclists over private vehicles on its streets as prescribed by DMURS. At the same time, the design also facilitates convenient and safe vehicular movements and manoeuvres necessary for the operation of the development.

10 Conclusion

This report represents the traffic and transportation assessment, the mobility management plan statement and the DMURS compliance note for the proposed Strategic Housing Development at the former "CMP Dairies" site at Kinsale Road / Tramore Road, Cork.

The proposed development will consist of a strategic housing development of 609 no. residential dwellings (561no. apartments and 48no. townhouse apartments, to include 189no. 1-bed dwellings; 338no. 2-bed dwellings; 48no. 3-bed dwellings; and 34no. 4-bed dwellings) and ancillary facilities arranged in 12no. buildings (Buildings B, C, E, F, G, H, I, J, L, M, and N, and a standalone 100sq.m. coffee kiosk) varying in height from 1 to 15 floors over ground.

The proposed development will consist of a Strategic Housing Development of 609no. dwellings (561no. apartments (of which 257no. are Build To Rent) and 48no. townhouses) in 12no. buildings of between 1-15 storeys in height over ground, to include a coffee kiosk; gym; café; retail use; creche and community hub; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

Both national and local transportation policy promotes more sustainable transport and a significant reduction in car use. These policies support developments located along existing of future public transport and strategic cycle routes. New developments should also be in line with key principles presented in DMURS which includes connected networks, multi-function streets, pedestrian focus and taking a multidisciplinary approach. The proposed development complies to these DMURS principles.

CMATS supports high density development adjacent to strategic transportation routes and has identified Kinsale Road as such a route where not only a Bus Connects route will be provided, but also a strategic cycle route. The proposed development is in support of this initiative and every effort has been made to integrate the proposed development site to the strategic transport route. The proposed development will partially facilitate the corridor by providing a wide linear park adjacent to Kinsale Road within which a wide footpath and a cycle lane is provided. The full role out of CMATS ensures that future residents living with this location will have a variety of transport options to choose from.

All of the transportation and planning policy supports investment in sustainable transport to encourage public transport, walking and cycling. The proposed development resonates with this principle and the design clearly shows how the proposed development links to the existing and future sustainable transportation infrastructure at various points on the edges of the development.

Kinsale Road is developing into an activity spine where there is a mix of activities adjacent to the road which attracts people from neighbouring residential areas and places of work. Currently there are limited high density housing within the vicinity which may have limited the full potential of this area.

Adding the proposed development as a new ingredient on this corridor is expected to have a positive impact on the surrounding land uses helping businesses to have an increased and steadier turnover.

From a transportation point of view, the proposed development is well located within Cork City to avail of existing public transport and active modes and to take advantage of short trips to work, education and shopping. This report has demonstrated that the proposed development is in close proximity to the City Centre, the Airport, local shopping and convenience stores and also close to a variety of business and industrial parks that offers massive employment opportunities to future residents. There are also nearby schools, and the University College Cork is located within 2.0km walking distance.

Existing pedestrian and cycle infrastructure within the vicinity of the site needs to be upgraded as it is dated at the moment. The CMATS and Cork City Development Plan initiatives are therefore welcomed and is expected to have a positive impact on the development by improving the connectivity of the site to other destinations within Cork City. Cork City Council is therefore urged to put priority on the delivery of this infrastructure so that Cork City can grow sustainably, and that life of its citizens can improve.

From recent observation (empty car parking spaces) there is ample spare capacity in the Black Ash Park and Ride facility. A high-quality pedestrian connection between the development and the Park and Ride will promote the use of this facility as it is within easy walking distance from the development. The Bus Connects route which is also expected to link to this facility is expected to have a further positive impact on sustainable travel within the wider vicinity and specifically for the development.

The proposed development fronts on both Kinsale Road and Tramore Road. These routes are busy but currently operates at levels of capacity where there is spare capacity. The development is linked to major national roads within the near vicinity via Kinsale Road and Mick Barry Road, travelling respectively south and westwards. These routes however also link the site to the City Centre within near vicinity and therefore ensures that the development site is highly connected.

The proposed development includes several amenity facilities which reduces the need to travel for services elsewhere. This includes a café, retail, a gym, a creche, a coffee kiosk and a community centre. The developer is expected to provide a second planning application which makes provision for a primary health care centre on the northern part of the site. This land use is also an amenity service for residents but also the wider community.

The site design is very sympathetic to permeability, connection to the surrounding environment, providing functional spaces and providing a safe environment for residents, pedestrians, and cyclists to enjoy these spaces. A town centre is proposed on the northern side of the development which will have a plaza with landscaping and seating onto which active frontages of buildings faces. This town square will connect to surrounding streets and other enclosed spaces within the development to provide a stimulating environment for people living there and visiting.

Limited parking will be provided for the development to discourage private car usage and to create a low traffic flow environment where little space is dedicated to cars. This means that internal roads can be narrow, footpaths can be wide and traffic calming can be introduced to create a landscaped, quiet environment.

Some parking is required for the development, but it is proposed that parking is provided to the residential component of the development at a ratio of 0.34 spaces per unit. The provision of limited spaces is in line with national policy: The Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities, and the National Planning Framework. Wheelchair accessible, motorcycle and EV spaces are proposed within the development.

The buildings on the development site have been set back to ensure that there is sufficient space available along Kinsale Road to provide the Bus Connects bus lanes, a 3.0m+ footpath and a 2.0m cycle lane on the western side of Kinsale Road. The footpath and cycle lane will be provided within a linear park protecting the pedestrians and cyclists from vehicular traffic and noise by providing greenspace, planters, and trees.

The traffic analysis carried out for the development have shown that the trip generation of the development will be low, and that future year modal share change will further decrease the trip generation. Traffic analysis have been carried out by allocating the expected trip generation on the road network based on a trip distribution pattern derived from the 2016 CSO Census data. The analysis shows that the development traffic contributes insignificant increases in traffic volumes on the national road network and only minor increases in traffic on the local network which includes Kinsale Road and Tramore Road.

A mobility management plan statement has been developed for the development to serve as a framework for a long-term strategy to reduce car-based mode share over time. The initiatives undertaken includes the appointment of a mobility manager, making travel information available to residents, negotiating with transport service providers, continued improvement of pedestrian and cycle facilities both on site and surrounding the development, making use of transport technology where available and continued monitoring of the progress made in this regard.

Appendix A

Cork City Council Opinion to
An Bord Pleanala

File Note

ARUP

One Albert Quay
Cork
T12 X8N6
Ireland
www.arup.com

t +353 21 422 3200

Project title	Creamfields Residential Development	Job number	252666-00
cc	Gillian O'Sullivan, Valerie Fenton, Gary Smith (Cork City Council) Niall Sheehan (Watfore Ltd.) Paul O'Dowd, Sean Kearns, Paul Mulligan, Tony Reddy, Aiden O'Neill, James Duggan (Design Team)	File reference	
Prepared by	Stephen Ginn/ Simon Van Jaarsveld	Date	21 October 2021
Subject	Arup Review of CCC Opinion to ABP (Rev 1)		

This file note documents the review of Cork City Council's opinions on Tripartite meeting content which was submitted by Arup. The review was held subsequent to the Tripartite meeting to discuss the Cork City Council opinions and Arup's responses to same in more detail on 18th October 2021. The attendees were:

Gillian O'Sullivan, Valerie Fenton & Gary Smith - Cork City Council (CCC)
Stephen Ginn & Simon Van Jaarsveld - Arup

Item Ref: 2.13 Transportation and Mobility Issues and **Section 5 Infrastructure (Appendix B)**

CCC Opinion: "The proposal mentions the nearby community facilities such as Tramore Valley Park, and Douglas Village etc., however the current connectivity of the site with the nearby village and facilities is problematic and highly vehicular based while currently hostile to pedestrians and cyclists. It is to be noted that proposed road works (medium and longer term) include new access from Kinsale Road, upgrade of Kinsale Road / Mick Barry Junction and existing access from Tramore Road which would certainly create more appropriate pedestrian and cycling linkages. The Tramore Valley Park (due east of site) currently has very limited accessibility (with only one access (non-egress) from Mick Barry Road) and challenging active travel access having to cross the busy Kinsale Road and South Link Road.

A key issue with therefore that until such time that the upgrades are in situ, the site itself must function on its own in terms of amenity and services, particularly given the extent of units proposed and the resulting increase in population numbers (approx. 1,700 at a conservative estimation) that will require such facilities in the short term. The attached transport report has further details which we would bring to the attention of the Board."

Arup Review: Having reviewed the CCC reports submitted we note that the Infrastructure Development Directorate's opinion is that the provision of the necessary infrastructure outlined

above may not be feasible due to land ownership issues - which is the case here and this is why these improvements are not included on the drawings for the development. We are in agreement that the special contribution to Cork City Council towards planned infrastructure as a means of fast-tracking the development of a pedestrian link to Black Ash Park and Ride and potentially the pedestrian link between Mick Barry Road to Tramore Valley Park is an appropriate solution.

Agreement reached/ conclusion of review:

- Link to Tramore Valley Park – No special contribution would be sought as funding has already been approved in principle for the project which has a 3-5 year timeline for completion. CCC advised that they felt the development was premature until a crossing was in place and would be requesting a condition that would control the no. of units to be occupied until such infrastructure was in place.

  Arup outlined that the development had sufficient recreational space internally and did not rely on Tramore Valley Park to provide such amenity. CCC advised that they remained concerned that residents of the development would be tempted to cross the N27 regardless and this represented a safety risk.

- Link to Black Ash Park & Ride – CCC advised that they would prefer that the development provide an interim pedestrian link to the Black Ash Park & Ride rather than them seeking a special contribution for same. They indicated that they would be recommending a condition that a link was in place prior to any occupation.
  It was agreed that the development would try to provide this link through discussions with 3rd party landowners or by providing the footpath in the public road and narrowing the lanes to 3.5m. CCC advised they would provide a letter of consent for proposed works in the public road. Gillian O'Sullivan took it as an action to investigate who owned the plot of land to the south of Mick Barry Road.

  Post Meeting Note: Having discussed with our client – the option of acquiring 3rd party land is not feasible given the project timelines. It is preferred to provide the pedestrian link in the public road. A further onsite review has found that a high quality pedestrian link has been recently installed (presumably by CCC) between the site of proposed development and Black Ash Park and Ride. CCC requested that this link be included in the Road Safety Audit and any measures recommended form part of the SHD application.

Item Ref: 1 Transport Section – Traffic & Transport Assessment – item 1 (Appendix B)

CCC Opinion: "There is a serious concern, from both a road safety and a traffic operations perspective, in relation to the phasing of the development in which the initial phase will utilise the vehicular access on to the Tramore Road only for approximately half the residential units (plus the primary health care unit) as the proposed new junction onto Kinsale Rd will not be constructed until the final phase. The applicant should consider the provision of the full signalised junction at the junction of Kinsale Road and Mick Barry Road and the development prior to first occupation of the development as there are significant concerns with the use of the Tramore Rd entrance as outlined in the remainder of this report."

"Recommendations:

i) Applicant to provide further detailed analysis on the suitability of the Tramore Rd entrance as the sole entrance to the site in the medium to long-term and how this will work in the scenario that Phase 2/3 does not take place and the proposed new entrance onto Kinsale Rd is not constructed.

ii) The trip generation from the construction traffic should be increased significantly to provide a more robust assessment of the impact on the functionality of the Tramore Rd including the effect on frequent vehicle/HGV movements through the Musgrave's main entrance to the west and proposals to ensure that this entrance remains operational.

iii) The approach taken in the assessment appears to try and combine various scenarios to try and reflect the various construction phases, traffic flows, access locations etc. which can be difficult to interpret. Applicant should consider 2 separate analyses which may provide a more concise assessment of the impact of traffic from the Development on the local road networks and the nearby N27, N40 major infrastructure routes, as follows:

- Assessment 1: Phase 1 complete (residential blocks C, E, F and G plus Primary health care unit) and only Tramore Rd entrance in operation.
- Assessment 2: All phases complete and both Tramore Rd and Kinsale Rd junctions upgraded and in use."

Arup Review:

i) As part of the final submitted TTA, we will review the suitability of the Tramore Rd entrance as the sole entrance to the site in the medium to long term and we will also review if it is necessary to include the access to Kinsale Road as part of phase 1. It should be noted that the trip generation of the estimated proposed primary health care development (phase 1) is quite low i.e. less than 30 trips in and out during the peak hour periods. The impact of adding this traffic to the Kinsale Road access is therefore very little and therefore in all probability adding this traffic will make little difference in the operation of the Tramore Link and the Tramore Road / Kinsale Road junction.

ii) The trip generation of the construction traffic is based on our knowledge on expected construction deliveries and workforce and the typical travel patterns during construction. The assessment was carried out for AM and PM peak hour periods while the construction activity and associated traffic is more uniformly spaced throughout the day. More information on the construction programme will become available before the submission of the final TTA and additional analysis can be carried out to update the assessment and also to carry out sensitivity analysis.

It should be noted that the Musgraves access is located 50m to the west of the development site access and therefore their access is not directly affected by the construction traffic of the development.

iii) The development scenarios considered is in line with the requirements of the TII Traffic and Transport Assessment Guidelines. These guidelines requires that developments should be assessed at the opening year and then 5 years and 15 years after the opening year of the development. It was attempted to align the realistic development phases with the assessment years required by the guidelines. Reconfiguring the analysis to the two assessment scenarios will deviate from the TII guidelines and there will be no additional insight gained from redoing the study as suggested. The development is complex in terms of the development phasing and a lot of effort has been put into the report to

accurately reflect the expected future scenarios. We preferred to maintain the existing approach as it is technically correct and accurate and in line with Guidelines.

Agreement reached/ conclusion of review:

i. Arup committed to considering the early opening of the 2nd entrance onto Kinsale road.
ii. Arup committed to providing yellow boxes at the Tramore Road entrance and outlined that they would consider implementing a one-way system for construction traffic as part of an outline CTMP to alleviate current queuing issues on Tramore Road. The construction traffic volumes will also be stress tested. CCC indicated that they may request a review of traffic signal sequencing on Tramore Road/ Kinsale Road Junction, but that this would be in the form of a planning condition as the sequencing is currently undergoing a review and is likely to change.
iii. CCC accepted that Arup would maintain their assessment in line with the requirements of the TII Traffic and Transport Assessment Guidelines.

Item Ref: 1 Transport Section – Traffic & Transport Assessment – item 2 (Appendix B)

CCC Opinion: "The report makes certain assumptions in relation to the mode split of local residents; these assumptions are used to calculate the trip generation rates from the development which in turn effect the outcome of the traffic analysis on the existing road network.

Clarification/further information is required from the Applicant on the following items:

i) Confirm exact 'small area population zone' which was used for reviewing travel characteristics within the environment i.e. a map/drawing, quantity of people surveyed.
ii) The report mentions an expected increase in residents working from home based on the continuation of current trends due to the Covid-19 pandemic and cites the 'National Remote Work Strategy' and Arup's own medium-term policies, although these are likely to change in the near future. Given the uncertainty of how the Public and Private sectors will implement remote working policy as the country moves out of current pandemic restrictions it is not reasonable to assume that a significant number of residents will work from home in the medium-long term. Therefore, the reductions in car drivers of 4% in 2030 and 7% in 2040 outlined should not be used.
iii) Additional increases in cycling, walking and bus use are also assumed and when combined with the above lead to an assumption of only 50% car driver mode share in the opening year 2025 reducing to 30% in design year 2040. Further justification of these significant reductions and how the increase in sustainable transport will be achieved should be provided by the Applicant by expanding on the Mobility Management Policy statement provided."

Arup Review:

i) A map of the small area population is included within the submitted TTA on page 53, Figure 29. Further review can be carried out in the final report to report on how many people the CSO surveyed in the selected small area zones.
ii) We believe that Covid restrictions showed that employees can successfully work at home and that the technology in virtual communication will improve over time, so much

that a legacy of working from home will be embedded in society. Therefore it is reasonable to assume that there would be a conservative permanent mode share of people working at home.

iii) The mode share assumptions show a reduction of 14% in car traffic from 2016 to 2025 and then a further reduction in 2040. The reductions assumed for the future years is in line with national and regional planning and transportation policy and sustainable transportation infrastructure plans such as CMATS and the current and Draft Cork City Development Plans. The 2022 – 2028 Draft Development Plan noted that the targeted future mode share of CMATS is 49.3% This target considers the entire County which includes a combination of city and rural areas. However in Chapter 4 Section 4.5 the Draft Development Plan acknowledges that it is the ambition of Cork City Council to exceed these targets set with the objective to promote sustainable transportation modes. Section 4.7 notes that the transportation strategy should also focus new residential development in areas with good access to planned public transport and in places close to work opportunities, which this site clearly adheres to. Our transportation strategy is also aligned with the number of car parking spaces that is provided for the development, which limits the possible car-based traffic that can occur.

Agreement reached/ conclusion of review:

i. Small area population zone was reviewed. CCC accepted this.
ii. CCC requested that a reference document/ white paper be referred to, to provide robustness to Arup's statement. Gillian O'Sullivan advised she would share some TII guidance regarding same.
iii. CCC accepted Arup's mode share figures.

Item Ref: 1 Transport Section – Traffic & Transport Assessment – item 3: Impact on the Local Network. (Appendix B)

CCC Opinion: "The TTA focuses on the following junctions in the vicinity of the development:

- N40 / Kinsale Road / N27
- Kinsale Road (south) / local access
- Kinsale Road / Mick Barry Road
- Mick Barry Road / N27
- Kinsale Road / Tramore Road
- Tramore Road Site Access

Clarification/further information is required from the Applicant on the following items:

i) The trip generation calculations are based on the mode split and construction traffic assumptions discussed previously. The applicant should review these assumptions as outlined above and adjust the trip generation figures accordingly to give a more robust link flow assessment.
ii) Applicant to confirm whether the opening year is 2025 or 2026 as both are used in different assessments throughout the report which is misleading.

iii) It is unclear from the report if the Applicant has taken into account any/all future committed developments in the vicinity which must be included in the traffic analysis.

iv) In all 3 scenarios (opening year, opening year +5 and opening year +15) it is assumed that there is a 0% increase in traffic on the N27 south of the N40 due to the new development. This does not seem reasonable given the area south of the N40 is heavily industrial and may provide employment to residents, the residential/amenity areas of Frankfield and Grange are here and the N27 southbound is the main road to the airport.

v) Applicant to clearly demonstrate if the traffic generated from the Primary Care unit is included in all assessments. It is stated that it is included as 'background traffic' only but given it is located within the same site boundaries and customers will be using the same entrances as the residential components, this should be included fully in the link assessments and junctions' analyses."

Arup Review:

i) As outlined above, the assumed mode share was based on the prevailing ambitions of Cork City Council to promote sustainable transport.

ii) The opening year is 2025. The final report will be reviewed to remove any discrepancies in the opening year.

iii) Coakley O Neill Town Planners were consulted in relation to any new significant planning applications within the vicinity and it was concluded that there are no significant planning applications within the vicinity that would impact on the local road network;

iv) The traffic assigned to the N40/N27 roundabout is at most 20 vehicles in a peak hour for any of the assessment years considered. At this junction there are five major approaches to this junction and we have assigned the traffic according to the trip distribution patterns of the selected CSO SAP zones. The result of this exercise, which is based on factual data, is that there is no traffic assigned to the N27 approach to the junction. We can readjust this to allow some traffic to use this road in the final report, however the amount of traffic assigned will be insignificantly small i.e. no more than 3-4 vehicles and therefore this exercise will not change the outcome of the analysis in any way.;

v) It can be confirmed that the traffic generated by the Primary Care Centre has been fully included in the traffic assessment. It was considered as background traffic only from a planning application point of view i.e. that this planning application does not include the primary care centre and that a separate planning application will be submitted for the primary care centre.

Agreement reached/ conclusion of review:

i. CCC accepted Arup's mode share figures as per previous section.

ii. Arup to update dates in report.

iii. Arup to consider proposed development South of N40 adjacent to Ferrero Rocher factory which is currently being submitted to ABP as part of an SHD application.

iv. CCC accepted Arup's response.

v. Arup to clarify within the report that the PCC traffic is accounted for and clarify what figures have been used.

File Note

252666-00 21 October 2021

Item Ref: 1 Transport Section – Traffic & Transport Assessment – item 4: Junction Assessment (Appendix B)

CCC Opinion: "The TTA states that the 'development will have an insignificant impact on the… N40 and N27' based on the link flow assessment data and therefore no analysis of these junctions was undertaken. Given the close proximity of both these major national roads and that, as previously stated in the report, the Mick Barry Rd (leading onto N27) and the Kinsale Rd (leading onto the roundabout N40) are 'very busy roads' and are likely to be used as a main commuter route for vehicles and public transport users from the development it does not seem reasonable to exclude these junctions from the assessment. The impact on the Kinsale Rd in the vicinity of the Kinsale Rd Roundabout on the N40 is of particular importance given the heavy traffic congestion issues currently experienced here and significant queuing issues on the eastbound N40 slip road and onto the roundabout itself.

The report also assumes that additional lanes will be provided on Kinsale Rd on approach to the Mick Barry Rd signalised junction as part of the Bus Connects project meaning the current traffic capacity of the junction will not be altered. As there are no detailed plans available at present it is not reasonable to assume any changes to the current carriageway on Kinsale Rd.

Clarification/further information is required from the Applicant on the following items:

i) Additional junction analysis required for the following junctions:
   - Kinsale Rd / N40 including roundabout/ N40 interchange, eastbound N40 slip road and T-junction of Kinsale Rd and retail centre entrance just north of the roundabout.
   - Mick Barry Rd / N27 left-in, left-out junction including black ash park & ride entrances.

ii) Revised analysis of the Kinsale Rd/Mick Barry Rd to exclude any assumptions made in relation to potential additional lanes as part of Bus Connects. This should include RFC and queue lengths/delays data from the additional junction analysis of the Mick Barry Rd/N27 junction and how this will effect waiting times on the Kinsale Rd due to new signalised junction proposed and additional pedestrian movement at crossing points etc. Also, it is not clear from the analysis if/when the junction is assessed as a 3-legged (current layout) or 4-legged (proposed new layout) in the 3 design scenarios. The applicant should clarify this.

iii) The analysis of the Kinsale Rd/Tramore Rd junction shows that the 3 main arms of this junction (with the exception of the arm leading to the Retail park) are well over capacity in all 3 design scenarios along with a very significant increase in queue length/delays. This is of concern given the already congested nature of both the Tramore Rd eastbound and the Kinsale Rd and the potential negative impact on the Kinsale rd as a Core Bus Corridor for Bus Connects. The report offers no suggestions as to ways to minimise these delays/ congestion. The applicant should provide further information to justify the use of the existing entrance onto Tramore Rd given the forecasted traffic implications and proposals as to how this congestion can be minimised up to the design year of 2040.

iv) The report states that the Tramore Rd site access junction is currently not in operation and therefore no junction analysis could be carried out for the base year (2021). However, it goes on to provide a future analysis starting at opening year 2026. Clarification is required on what data was used and what the analysis results represent."

Arup Review:

File Note

252666-00 21 October 2021

The report can be amended to exclude the Bus Connects proposal on Kinsale Road, since the provision of this infrastructure is uncertain.

i) Due to the limited development traffic expected to use this junction i.e. 20 vehicles, the proposed assessment of this junction will show almost no change in its operation since it carries currently more than 4,000 vehicles. This exercise will not provide any additional insight on the impact of the development. The impact on this junction in the future will be as a result of background traffic growth, over which the client has no control.

   In relation to the assessment of the access junctions to the Black Ash car park, it is reasonable to assume that very little vehicular traffic from the proposed development will enter the Black Ash park and ride, since it is within comfortable walking distance. Arup is not in possession of any traffic counts at the entrances as this was not considered to be critical junctions on the network.

ii) The analysis that was carried out used the existing road layout on Kinsale Road and not the future Bus Connect layout. The Bus Connect layout was added to the report to show Cork City Council that sufficient room was left in the design of the development plan to accommodate the Bus Connect infrastructure as well as the planned pedestrian and cycle infrastructure.

   As outlined in the TTA report, it was clearly stated under Section 5.9.2 Opening year, that only the Kinsale Road access was assumed to be open in the 2025 assessment year and that both entrances will be operational as outlined in Section 5.9.3 and 5.9.4 for 2030 and 2040. Therefore, it is clear when the junction will operate as a three or four legged junction.

iii) The impact of the development traffic on this junction is insignificant compared to the background traffic growth

iv) The poor performance of the junction is not caused by the proposed development but by background traffic growth. The applicant can offer suggestions on how to improve the operation of the junction by adding additional lanes. However, there is little road space available to provide more lanes and therefore the upgrade of this junction will most probably include third party land take over which the applicant does not have any control.
   No traffic counts are available at the access junction. However, traffic counts are available on the Tramore Road link which was derived from the Tramore Road / Kinsale Road junction counts. Therefore, at the access location the Tramore Road link counts were used as traffic flow on Tramore Road and in 2026 the access flow was assumed to be the development trip generation.

Agreement reached/ conclusion of review:

i. Arup to assess impact on N40 and also the N27 access junction from Mick Barry Rd
ii. Arup will clarify if 3-legged and 4-legged junctions were included in analysis. Arup outlined that the analysis assumed no turning movements from development traffic into P&R, which CCC accepted.
iii. Earlier opening of the 2nd access to Kinsale Road/ Mick Barry Road will help to further minimise the development traffic impact on this junction.
iv. Not discussed

File Note

252666-00 21 October 2021

Item Ref: 1 Transport Section – Road Safety (Appendix B)

CCC Opinion: Despite the development including the introduction of an additional arm onto the signalised junction at Kinsale Rd/Mick Barry Rd junction, near a major interchange (N40 and N27), no road safety audit has been submitted with the application. A road safety audit is to be carried out to identify and resolve any road safety issues. The road safety audit is to be submitted as part of the response to the request for further information and the design is to incorporate all recommendations from the road safety audit.
The Applicant has suggested 'Yellow box' be introduced at the junction on the Tramore Rd to aid in vehicle access/egress into the development considering the forecasted significant increase in traffic queuing on the eastbound approach to the Kinsale Rd. Any measures proposed by the Applicant to aid in the functionality of the proposed junction are welcome, however as mentioned previously, further detailed design proposals are required outlining how this junction will operate within capacity if the Development is granted.

The site layout drawings appear to indicate a new pedestrian access on the west boundary leading into the neighbouring Musgraves site. It is unclear why this is necessary and whether it is feasible to guide pedestrians from a residential setting directly into a private industrial estate. The applicant should clarify the reasoning behind this and details of how the proposed entrance complies with DMURS.

The Applicant should be made aware of the current road safety issues at the junction of the Musgrave's access road to the south of the development (north of Centra). A significant volume of HGV traffic uses this access road which exits directly onto the Kinsale Road at the southern boundary of the development site. This should be considered as part of any Road Safety Audit undertaken by the Applicant.

Arup Review:

- A road safety audit will be included with the final application documents.
- The analysis shows that the Tramore Road access junction operates within capacity. As outlined before, the poor operation of the Tramore Road / Kinsale Road junction is not caused by the proposed development but rather background traffic over which the applicant has no control. Similarly, although the applicant can make suggestions on how to improve the Tramore Road / Kinsale Road Junction, the client does not have any control over the land adjacent to it apart from the development site. Suggested improvements are likely to include third party land take in which the applicant does not have any say.
- There is no access proposed on the Western boundary to the Musgrave site. There is provision here for access to the Musgrave site in the future should it ever be developed into a residential area.
- We are aware of the current road safety issues at the Musgraves entrance to the South of the development. The setback of the development at this location will improve sightlines and should alleviate the issue. It will be included in the road safety audit.

Agreement reached/ conclusion of review:

- Arup to submit road safety audit with final application

- CCC accepted that any access to the West was a future provision, should the Musgrave site be developed into a residential area.
- CCC accepted that the development was seeking to improve the sightlines at the Musgraves South entrance and it was agreed that this would form part of the road safety audit.
- CCC outlined that the proposed footpath to the West of the proposed Tramore road entrance should be removed to encourage pedestrians to cross at the existing crossings. And use the footpath on the North side of Tramore Road.

Item Ref: 1 Transport Section – Construction Traffic Management Plans (CTMP) (Appendix B)

CCC Opinion: "No preliminary CTMP was submitted.

It is stated in the TTA that all construction traffic will use the existing Tramore Rd entrance to access the site but it is not clear what local roads are intended to be used to and from the site and whether they are suitable for regular HGV use.

Given that the development includes works directly adjoining a busy local connector route (Kinsale Road) which is near a major national interchange (N40) and the N27 city centre link road, an outline construction traffic management plan, including maps/drawings, needs to be submitted specifically dealing with the impact of construction traffic on the local roads and adjoining major junctions. Any submission should also include details of construction parking space location and quantity proposed."

Arup Review: Currently not part of Arup scope – will query with client/Coakley O'Neill.

Agreement reached/ conclusion of review: Arup committed to recommend the inclusion of this report to their client and planning consultant

Item Ref: 1 Transport Section – Car Parking (Appendix B)

CCC Opinion: "No breakdown of parking space type provided.
This represents a significant reduction in the parking ratio recommended in the City Development Plan which is the prevailing development plan for this site. A Mobility Management Plan (MMP) policy statement has been submitted to support and justify the reduction in parking.
A detailed breakdown of the type and quantum of parking for the residential, mixed use and creche elements of the site is to be provided and a comparison to the recommended development plan rates provided."

Arup Review: A breakdown and comparison of parking to the recommended development plan rates will be included in the final MMP policy statement submitted with the application.

Agreement reached/ conclusion of review: CCC accepted this

File Note

252666-00 21 October 2021

Item Ref: 1 Transport Section – Cycle Parking (Appendix B)

CCC Opinion: "The number of bicycle parking spaces proposed far exceeds the current recommendations in the City Development Plan (1 per residential unit) and the proposal relies heavily on proposed upgrades to existing cycle lanes adjacent to the site and implementation of new cycling infrastructure in the vicinity to link the site to surrounding amenities. In this regard, further information is required outlining these improvements especially on Kinsale Rd and Mick Barry Rd (currently has no cycle lanes or footpaths) as addressed in other CCC internal reports."

Arup Review: Cycle lane and footpath upgrades where feasible are being undertaken as part of the development. The provision of the Cycle lane and footpaths outside of the site boundary are not feasible due to land ownership issues.

Agreement reached/ conclusion of review:
The interim cycle lane upgrades proposed were reviewed by CCC and accepted. CCC also requested that the cycle lanes heading West along Tramore Road are extended beyond the entrance into the development to tie into the existing cycle lane.

Item Ref: 1 Transport Section – Public Transport (Appendix B)

CCC Opinion: The development is relying heavily on sustainable transport modes based on the TTA analysis and the Mobility Management Plan combined with the reduction in car parking provisions.
However, the development is not located near many bus stops with the nearest bus stop located in the Black ash park and ride facility which is accessed via Mick Barry Rd and as previously stated, this road does not have any pedestrian or cycling facilities so residents will be discouraged from using this. The next closest bus stop is over a 15-minute walking distance (Connolly Road) west along Tramore Rd; there are no bus stops on Kinsale Rd.

The applicant should address this issue and present further information justifying the strong reliance on public transport outlined throughout the TTA and MMP given the lack of current bus stops in the vicinity of the development.

Arup Review: The nearest bus stop is the Black Ash Park and Ride and the applicant is willing to consider a special contribution to Cork City Council to provide a pedestrian link. However, this might require third party land take which will need to be dealt with by Cork City Council. The high reliance on bus transport is based on the planned Bus Connects being in place which is part of the Cork City Council transportation strategy. If this infrastructure is not provided, the applicant is willing to consider a special contribution to Cork City Council for the provision of bus stops within the space allocated on our Kinsale Road plans that is currently allocated to the provision of the Bus Connect bus lane on the development side of the road.

Agreement reached/ conclusion of review:
Pedestrian link will be provided to Black Ash Park & Ride bus stop as per item 2.13 above.

Appendix B

Road Safety Audit Stage 1

Arup

Creamfields Development, Kinsale Road, Cork

Stage 1 Road Safety Audit

December 2021

BARRY & PARTNERS
consulting engineers
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Document Control Sheet

Client:	Arup
Project Title:	Creamfields Development, Kinsale Road, Cork
Document Title:	Stage 1 Road Safety Audit
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Table of Contents *(incl. Y/N)*	**List of Tables** *(incl. Y/N)*	**List of Figures** *(incl. Y/N)*	**Pages of Text** *(No.)*	**Appendices** *(No.)*
Y	N	N	11	2

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SECTION 1: Introduction

1.1 Background

This report results from a Stage 1 Road Safety Audit (RSA) of a proposed development comprising predominantly of 609 residential dwellings along with other mixed uses such as community facilities, 63-child creche, retail, café, gym, primary care centre and coffee kiosk on a site off the Kinsale Road, Cork. Arup on behalf of their client, commissioned this RSA and prepared the Proposed Site Layout Plans provided for this audit.

The audit has been prepared in accordance with TII GE-STY-01024 (December 2017) - Road Safety Audit. The Audit Team has examined and reported on only the road safety implications of the design submitted by the Design Team and has not examined or verified the compliance of the design to any other criteria. The members of the Road Safety Audit Team are independent of the Design Team, and include:

Road Safety Audit Team Leader:
Mr. Adrian O'Neill
BEng MSc CEng MIEI RSA Cert
J.B. Barry & Partners

Road Safety Audit Team Member:
Mr. Tim Delaney
BEng CEng MIEI
J.B. Barry & Partners

Road Safety Audit Trainee:
Mr. Diarmuid O'Brien
BEng MIEI
J.B. Barry & Partners

The Documents/Drawings audited are as detailed on the drawing issue schedule contained in **Appendix A**. A copy of the RSA Feedback Form is contained in **Appendix B**.

1.2 Road Collision History

No historical road collision data for the study area was made available to the Audit Team. An online check on the Road Safety Authority website shows that there were several recorded collisions between 2005 and 2016 in the vicinity of the site. Refer to Figure 1.1.

At the Tramore Road / Kinsale Road junction, there were 2 minor collisions recorded. One of these minor collisions involved a cyclist and the other was a rear-end shunt type collision with a car.

At the access to Musgrave Depot off the Kinsale Road to the south of the development site, there were 1 minor collision recording involving single motorcyclist only.

On the Kinsale Road, midway between the above two referenced junctions, there were one minor collision which was a rear-end shunt type collision with a car.

The majority of the other collisions in the general area were either single car collisions or involved a vehicle turning. These type of collisions would suggest that speeding may be an issue along the Kinsale Road.

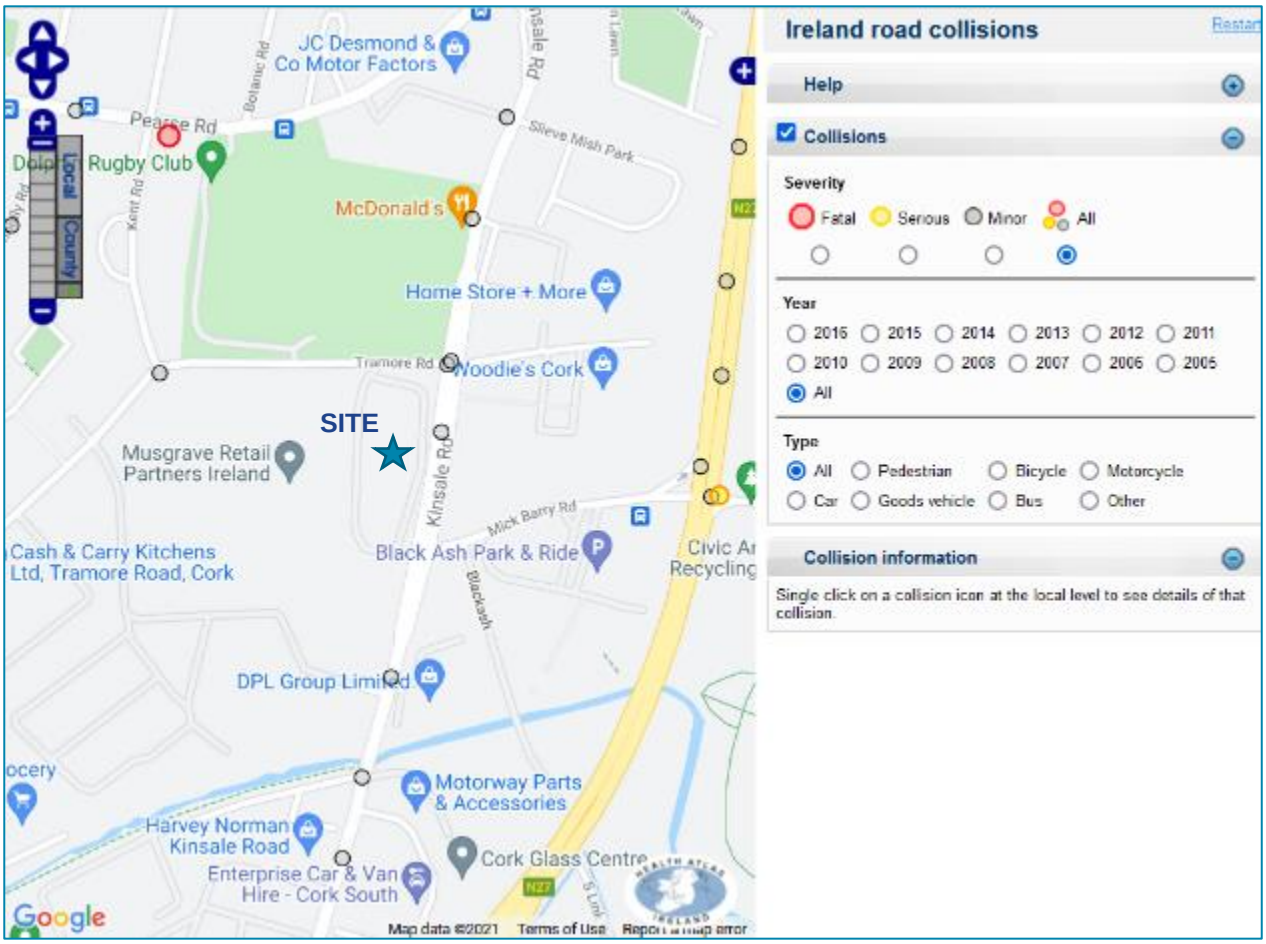


Figure 1.1: RSA collision history (2005 to 2016)

1.3 Site Visit

The audit was carried out between Thursday 4 Nov 2021 and Monday 22 Nov 2021. The Road Safety Audit site visit was carried out on Wednesday 10 Nov 2021 during daylight hours. It rained on the day of the site visit and the road surfaces were wet with some ponding at junctions.

High volumes of traffic were observed in the immediate vicinity of the site during the site visit and moderate levels of pedestrians and cyclists as would be expected in a bult-up commercial area.

SECTION 2: Audit Issues Identified

2.1 Problem: End Parking Bays

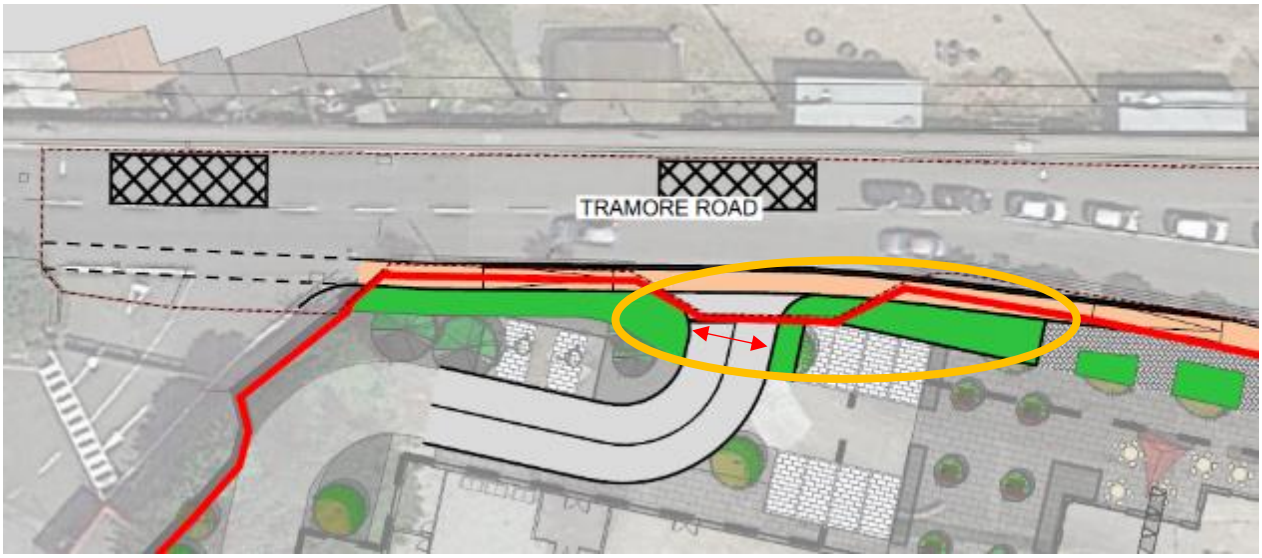
It may be difficult for motorists to use some of the end parking bays when all adjacent spaces are occupied resulting in increased reversing movements to enter or exit these spaces. This would increase the risk of a collision with another vehicle or a pedestrian.

Recommendation

A swept path analysis should be carried out to ensure all spaces are accessible. A small turning area should also be provided such as extending the end of the road a little more to the south as shown above.

2.2 Problem: Pedestrian Facilities (Northern Proposed Access)

There are no safe means for a pedestrian to cross the proposed northern access. Currently there is poor provision for pedestrians along the southern side of Tramore Road resulting in pedestrians walking on the carriageway with increased risk of being stuck by a vehicle.

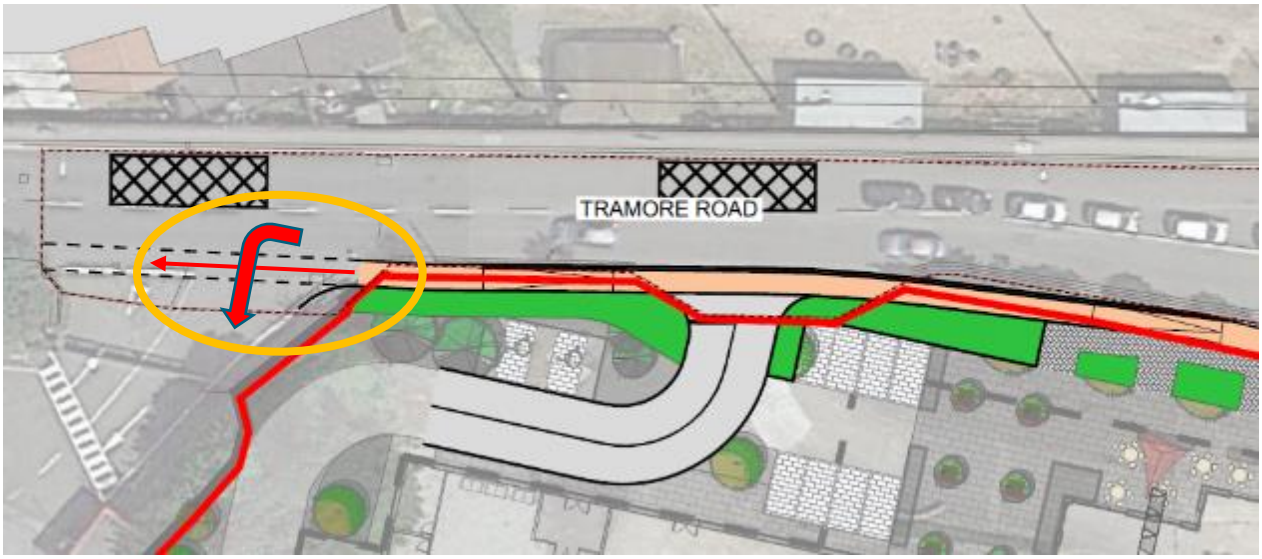


Recommendation

A public footpath should be provided along the entire site frontage along Tramore Road. Ensure that this footpath safely terminates with a uncontrolled crossing either at the access to Musgraves northern entrance or across Tramore Road to the existing footpath on the opposite side of Tramore Road.

2.3 Problem: End of Cycle Track (Northern Musgrave Access)

It is proposed to end the cycle track abruptly at the northern Musgrave access. Cyclists are required to exit the cycle track at a location where vehicles turn left into the proposed development increasing the risk of a collision between a cyclist and a left turning vehicle.

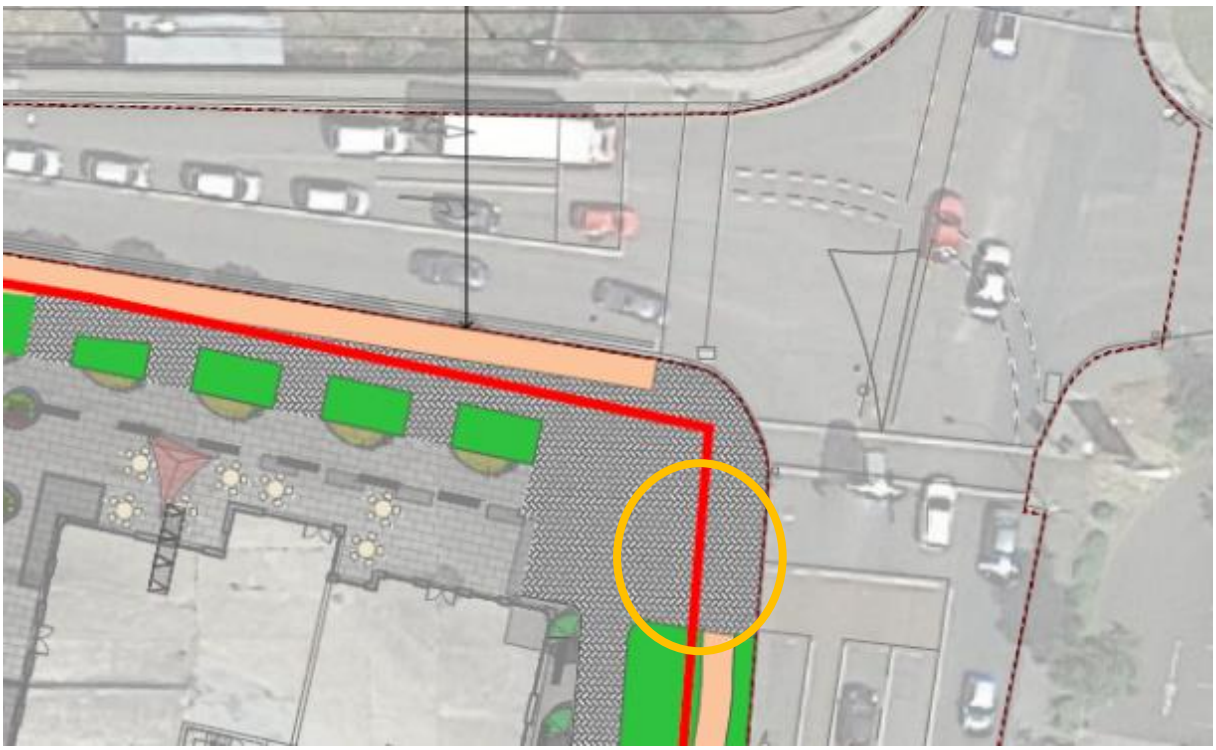


Recommendation

A red colour surface of the cycle track should extend across the Musgrave Access.

2.4 Problem: Large Shared Surface Area

It is proposed to make a large area of footpath as a shared surface where cyclists are permitted to mix with pedestrians increasing the rick of a collision between cyclists and pedestrians.

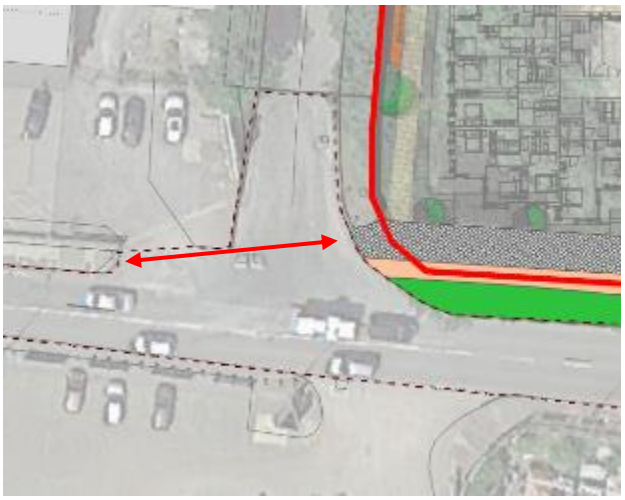


Recommendation

Reduce the shared surface area to a minimum to allow pedestrians and cyclist enough area to access the pedestrian crossings.

2.5 Problem: Long Pedestrian/Cycle Crossing (Musgrave Entrance)

The uncontrolled crossing across the existing Musgrave entrance and Centra exit on Kinsale Road is very long and offers little protection for pedestrians/cyclists trying to cross especially pedestrians with a mobility impairment. As well as a very wide access road, the corner radii are very large to accommodate articulated lorries accessing the facility This increases the time a pedestrian/cyclist is exposed to general traffic increasing the risk of getting struck by a turning/exiting vehicle.

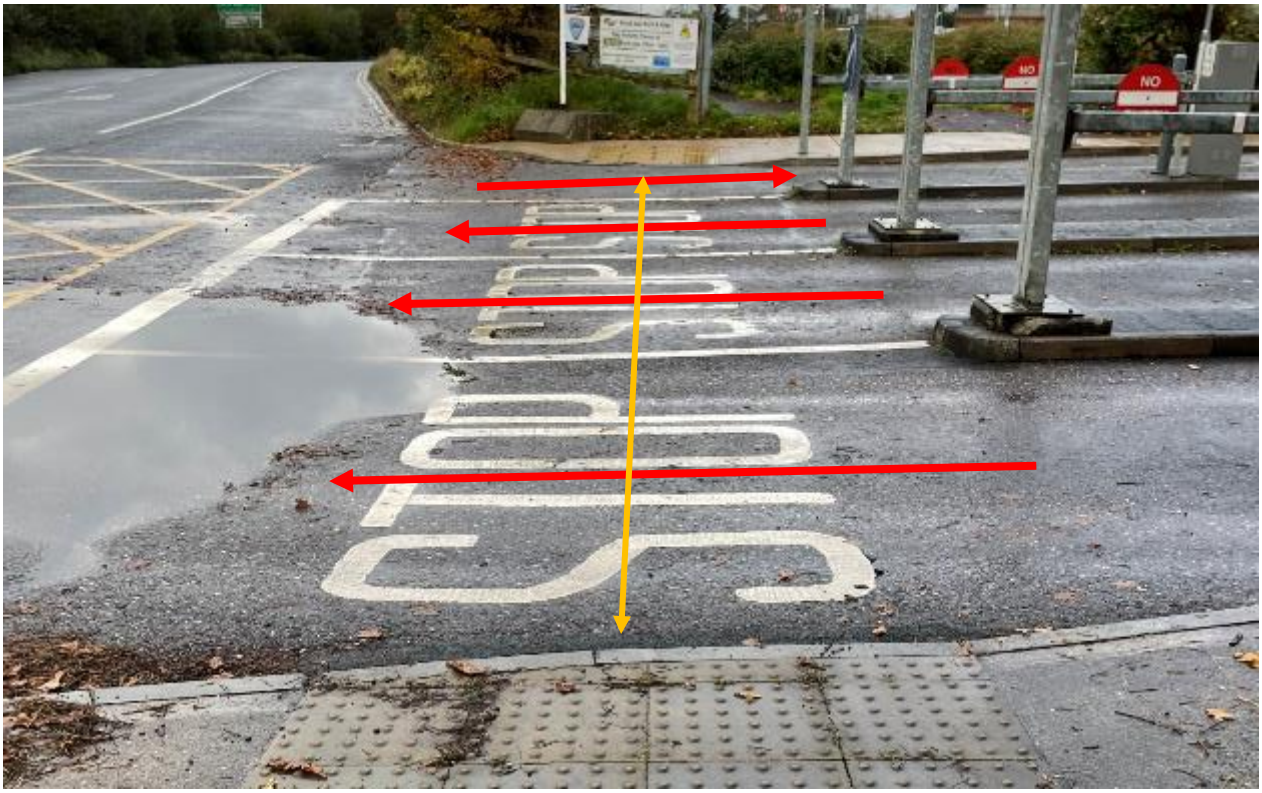


Recommendation

Appropriate measures should be implemented to reduce the crossing distance prior to the development becoming operational. Appropriate measure could include narrowing the access width at the crossing and reduce the corner radii if possible.

2.6 Problem: Pedestrian Facilities (Park and Ride Access)

The existing pedestrian crossing at the Park and Ride entrance is very long across 4 traffic lanes with no central refuge. The Stop lining and road markings suggest vehicles would wait in the desire line of crossing pedestrians. All four lanes can be busy during peak hour periods especially during the evening peak with three lanes allocated to exiting traffic, which could be disconcerting for some pedestrians. There is a risk of a pedestrian, especially those with a mobility impairment being struck by a vehicle who may want to clear the car park barrier.



Recommendation

A raised crossing should be provided to give priority to pedestrians at this crossing point. Alternatively, a footpath should be installed on the western side of the access road as far as the existing footpath enabling pedestrians to cross the access road where in is narrower and with improved visibility. See image below.

2.7 Problem: Water Ponding

Water ponding was observed at many locations which would impede the movement of pedestrians and cyclists. Ponding can lead to cyclists swerving suddenly into traffic or result in pedestrians walking into the carriageway to avoid the water increasing the risk of a collision with a passing cyclist or vehicle. Pounding presents a trip/slip hazard during winter months when freezing can occur resulting in pedestrians or cyclists falling or motorists losing control of their vehicle.

Recommendation

Appropriate drainage should be provided on all routes and at all crossing points to ensure no water ponding.

2.8 Problem: Faded Road Markings

Many of the existing road markings relating to pedestrian crossings and the cycle lane are faded and difficult to distinguish. This could lead to motorists not observing these facilities or the warnings they offer and increases the risk of a collision.

Recommendation

Ensure that all road markings are refreshed with the proposed improvement works as part of the scheme.

2.9 Problem: Pedestrian Crossing (Irish Pioneer Works access)

There are signs of vehicles driving over the tactile paving surface and striking the vertical bollards. There is a danger of an incident between a waiting pedestrian and a turning HGV at the crossing/access.

Recommendation

The access should be amended using Vehicle Path Sweep Assessment software (AutoTrack™) to ensure that a HGV can egress without mounting the footpath. Also, consider indenting the crossing slightly away from the public road.

2.10 Problem: Pedestrian Crossing At Mick Barry Road (N27 Slip Road)

There is no pedestrian push-button control located in the central pedestrian refuge island to cater for a pedestrian with a mobility impairment who might not have sufficient time to cross this long crossing during

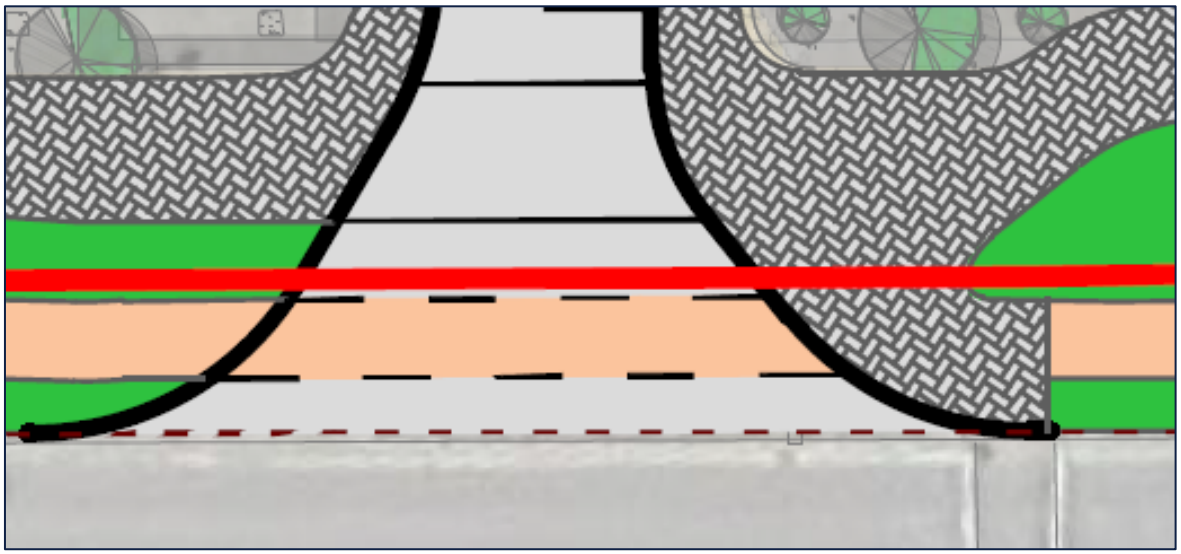
one green pedestrian stage of the traffic signals. This increases the risk of a vulnerable road user trying to cross the remaining of the carriage during the red signal stage and getting struck by a vehicle.

Recommendation

An additional pedestrian push-button should be installed to call a pedestrian phase when a pedestrian is waiting on the pedestrian crossing.

2.11 Problem: Wide Corner Radii

It is not clear who has priority at the proposed access off the Kinsale Road. It appears that vehicles have priority over pedestrians and cyclists as the cycle track and footpath material and level do not appear to be maintained through the junction. It is not clear if cyclists and pedestrians will be provided with appropriate signals at the junction. Also, the corner radii at the proposed access off the Kinsale Road is wide which would enable motorists to take the turn at higher speeds. Wide corner radii also reduce intervisibility between crossing peds/cyclists and approaching left turning traffic. Wide corner radii increase the risk of collisions.

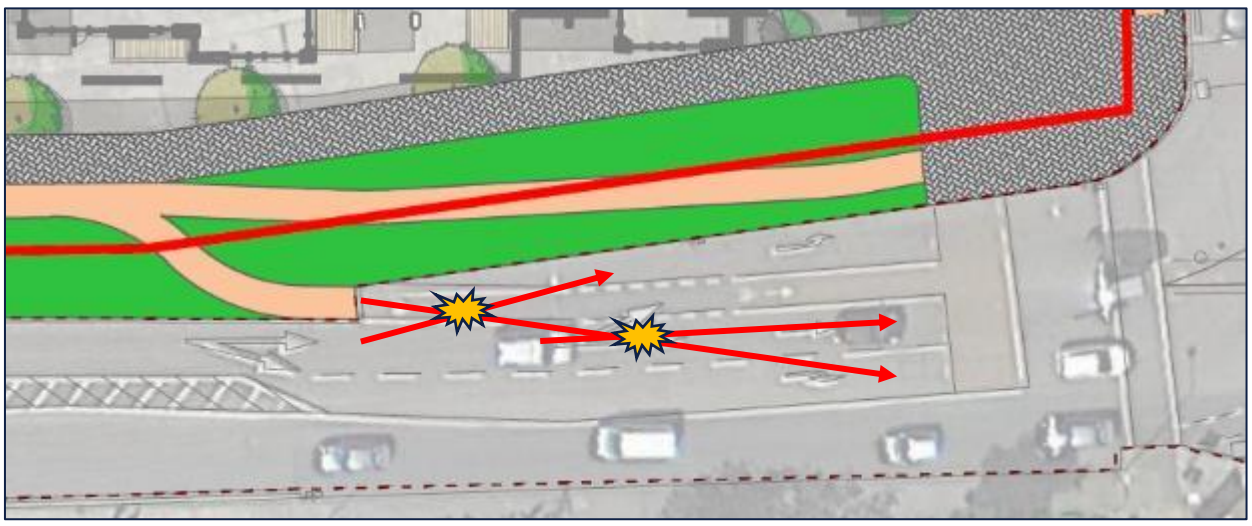


Recommendation

The level and material of the footpath and cycle track should be maintained across the proposed access to give crossing pedestrians priority over vehicles. The corner radii should be reduced to reduce the crossing distance for pedestrians and cyclists and to reduce speeds

2.12 Problem: Merging Cyclists and Left Turning Traffic

The proposed link from the cycle track to the carriageway on Kinsale Road creates a significant risk for cyclists due to left turning vehicles crossing the cycle track at this point. During the site visit, vehicles were observed crossing the cycle lane where it merges with the carriageway. Given that cyclists and motorists are travelling in the same direction, there is poor intervisibility between users at this point, increasing the risk of a side swipe type collision. When traffic is moving at the junction, it is difficult for cyclists to turn right into Turners Cross Retail Park as they would need to cross a lane of straight-ahead traffic to use the right turn lane.



Recommendation

The link should be removed, and cyclists should continue their journey to the shared area where the existing pedestrian crossings should be changed to Toucan Crossings to allow cyclists to continue their journeys in all directions.

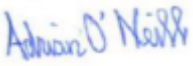
SECTION 3: Audit Team Statement

We certify that we have examined the drawings and documents listed in the appendices to this report.

The examination and subsequent report were made with the sole purpose of identifying any features of the scheme that could be removed or modified in order to improve the safety of the proposals.

The problems identified have been noted in this report together with associated safety improvement suggestions, which we recommend should be studied for implementation.

No one on the Audit Team has been involved in the initial scheme design.

Assessment Team Leader		
Name:	A.O'Neill BEng MSc CEng MIEI RSACert	Signed: 
Position:	Senior Engineer	Date: 17.12.21
Organisation:	J.B. Barry & Partners Ltd.	
Address:	3 Eastgate Road Eastgate Little Island Co. Cork	

Assessment Team Member		
Name:	Tim Delaney BEng CEng MIEI	Signed: 
Position:	Associate	Date: 17.12.21
Organisation:	J.B. Barry & Partners Ltd.	
Address:	3 Eastgate Road Eastgate Little Island Co. Cork	

Appendix 1: Drawings Provided

Table A: List of drawings/document provided for audit

Drawing Title	Drawing No.	Revision
Kinsale Access [Kinsale Road with Bus Connects]	V07-01	Issued by email on 03/11/2021
Kinsale Access [Tramore Road with Bus Connects]	V07-02	Issued by email on 03/11/2021
Kinsale Access [Kinsale Road with no Bus Connects]	V07-03	Issued by email on 03/11/2021
Kinsale Access [Tramore Road with no Bus Connects]	V07-04	Issued by email on 03/11/2021

Appendix 2: Feedback Form

Road Safety Audit Feedback Form

Scheme: **Creamfields Development, Kinsale Road, Cork**

Audit Stage: **Road Safety Audit Stage 1**

Date Audit Completed: **22 November 2021**

Paragraph No. in Report	To Be Completed by the Design Team			To Be Completed by the Audit Team
	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Alternative measure (describe)	Alternative measure accepted by Auditors (yes/no)
2.1	Y	Y	Preliminary design drawings will be updated to show a turn around area at the end of the lane.	
2.2	Y	N	Cork City Council (CCC) prefers that, in the interim, the proposed footpath on the southern side of Tramore Road should be removed as this will encourage pedestrians to use this route and leave them stranded. Pedestrians should rather be encouraged to cross Tramore Road at the junction with Kinsale Road and the crossing facility provided. A pedestrian crossing this close to Tramore Road will not be acceptable to CCC. To avoid encouraging pedestrians to walk on the southern side of Tramore Road and to cross the northern access and beyond, the proposed footpath along Tramore Road will be realigned to follow a desire line into the development site. The strategic placement of landscaping features will be used to direct pedestrian movement into the site rather than following Tramore Road. There is however space allowed to provide a footpath in the longer term on the southern side of Tramore Road across the development site. This route will be actioned by Cork City Council, whenever a larger scheme is rolled out.	Yes, but please monitor the situation after the works are complete and if the problem remains than take appropriate action such as expediting the long-term proposal earlier.
2.3	Y	Y	Preliminary design drawings to be updated to show the proposed red coloured surfacing extended across the Musgraves access.	Yes

2.4	Y	Y	The cycle lane along Kinsale Road will be extended northwards up to the footpath crossing.	Yes
2.5	Y	N	The turning radius to the north of the access will be reviewed to identify any opportunity for reducing it. However, this is subject to plotting the swept path of large articulated vehicles exiting the site. It should be noted that the development of the site will involve the removal of the existing fence and vegetation and thereby improve sightlines. The developer has no control over the Musgraves and the Centra accesses and to propose measures to reduce the size and functionality of them. Any amendments to these accesses will have to be dealt with by Cork City Council.	Yes
2.6	Y	Y	We agree with the recommendation to provide a raised pedestrian crossing. The client however has no control to amend the infrastructure within the Park and Ride Facility.	Yes
2.7	Y	Y	Appropriate drainage will be provided.	Yes
2.8	Y	Y	Road markings will be refreshed	Yes
2.9	Y	Y	The point is noted and will be discussed with Cork City Council. The works is outside of scope of the developer.	Yes
2.10	Y	Y	The point is noted and will be discussed with Cork City Council.	Yes
2.11	Y	Y	The proposed access will be reviewed to ensure that the levels of routes through the junction is maintained through the junction. Tying in the new access to the junction appropriately will be discussed with Cork City Council.	Yes
2.12	Y	Y	Removal of the existing link across the left turn lane will be discussed with Cork City Council.	Yes

			The provision of a Toucan Crossing will be investigated.	

Signed: ……. Designer Date: ……17/12/2021….

Signed: …….. Audit Team Leader Date: **17 / 12 / 2021**

Signed: …….. Client Date: 17/12/2021

Appendix C

Bus Capacity Assessment

Watfore Limited

Creamfields Strategic Housing Development

Bus Network Capacity Assessment

252666-00-RPT-TTAMMP-BCA

Issue 1 | 16 February 2022

Job number 252666-00

Ove Arup & Partners Ireland Ltd

Arup
50 Ringsend Road
Dublin 4
D04 T6X0
Ireland
www.arup.com

CREAMFIELDS

ARUP

Document verification

ARUP

Job title		Creamfields Strategic Housing Development		**Job number** 252666-00
Document title		Bus Network Capacity Assessment		**File reference**
Document ref		252666-00-RPT-TTAMMP-BCA		
Revision	**Date**	**Filename**	Report.docx	
Draft 1	1 Feb 2022	Description	First draft	
			Prepared by	Checked by	Approved by
		Name	Michelle Gaughan	Simon van Jaarsveld	Stephen Ginn
		Signature			
Issue 1	16 Feb 2022	Filename	Appendix C.docx	
		Description	Issue 1	
			Prepared by	Checked by	Approved by
		Name	Michelle Gaughan	Simon van Jaarsveld	Stephen Ginn
		Signature	pp 		
		Filename		
		Description		
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename		
		Description		
			Prepared by	Checked by	Approved by
		Name			
		Signature			

Issue Document verification with document ☐

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2.2 Proposed Bus services 4

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Appendices

1 Introduction

Arup were appointed by Watfore Limited to carry out Traffic and Transportation Assessments (TTA) for a Strategic Housing Development (SHD) and a Primary Care Centre (PCC) on the Creamfields Site, Kinsale Road, Cork. The PCC will be the subject of the application which will be submitted directly to Cork City Council.

The SHD included 609 residential units and ancillary land uses and the PCC includes a proposed area of 7,767 m^2 GFA.

The purpose of this report was to review the potential impact of the proposed development on existing and future bus services within the vicinity of the site.

The analysis of the existing and future bus services was based on a four-step traffic impact assessment methodology which includes, trip generation, modal split, trip distribution and trip assignment.

The first step in the assessment was to review the existing and planned future bus services. Bus routes and stops within 15-minute walking distance of the development site were identified and considered attractive for use by residents and visitors of the proposed development. The frequency of services along each route within peak hour periods were also obtained. Cork BusConnects is expected to be implemented within the next decade. This initiative will reconfigure the bus network of Cork completely. This bus capacity study therefore considers both the existing bus network and the proposed BusConnects network.

The TTA report used the Central Statistics Office (CSO) 2016 small area data within the vicinity to determine the current mode split within the vicinity of the proposed development. It was determined that the mode split within the vicinity of the development is 6.9%. This was adopted as a starting point for the study to determine the number of residents and visitors likely to use the bus.

Based on derived TRICS trip generation rates the TTA determined person trip generation for the development. By applying the mode split to the person trip generation it was possible to determine the number of bus users that the proposed development could potentially generate.

A number of future bus use scenarios were developed by considering different future horizon years, stress test analysis and the existing versus BusConnect network into account. These scenarios were developed to ensure that all critical eventualities are assessed.

The bus trip generated by the development were distributed and assigned over the bus network. The distribution of bus trips on the network was based on the walking distance to bus stops, the destinations that the bus routes serve and the frequency of the bus services.

To determine the impact of the development on each route, the number of additional development trips at each bus stop was considered in terms of the percentage capacity increase on a specific route during AM and PM peak periods.

2 Existing Bus Services

2.1 Bus stop locations and services

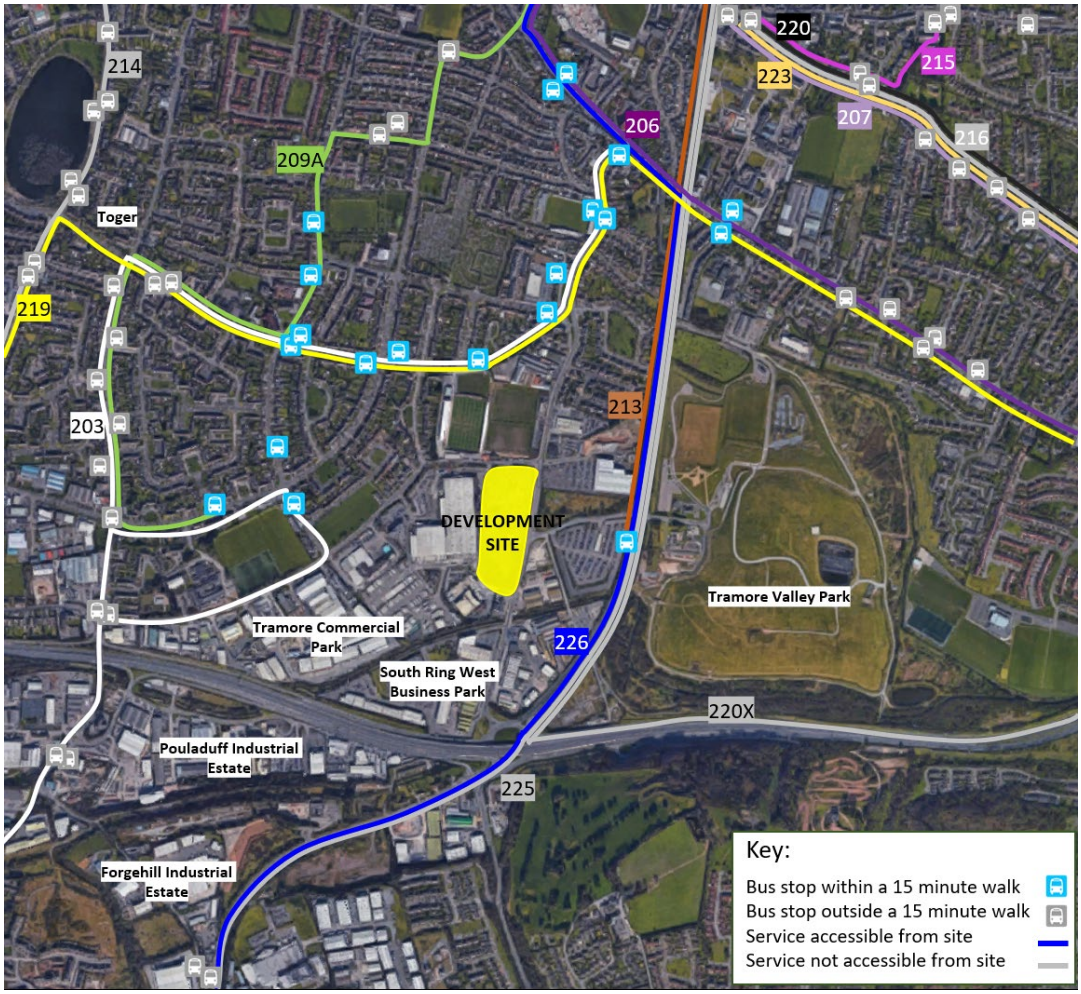
2.1.1 15-minute walking distance

For purpose of analysis a walking time of 15 minutes were used to determine bus services within comfortable walking distance. An average walking speed of 1.2m/s were used to determine the travel distance. Based on these assumptions, Figure 1: Bus services within 15-minute walking of the site shows bus services available within a 15-minute walking distance from the development site.

There are 20 bus stops within a 15-minute walking distance of the site (signified as a blue bus icon). These stops include both inbound and outbound services. Bus stops that fall outside the 15-minute walking distance are shown by a grey bus icon.

The bus routes that therefore are accessible within a 15-minute walking distance are shown as a coloured line, whereas the routes that are not accessible are shown as a grey line.

Figure 1: Bus services within 15-minute walking of the site



The closest bus stop to the site is at Black Ash Park & Ride, which is 450m from the site. This bus stop serves Route No. 213. The Park & Ride buses operates between 07:00 and 20:30 Monday to Saturday and it is closed on Sundays and bank holidays. The cost associated with parking can be bought per day, monthly or annually (the cost includes the bus fare). Overnight parking is not permitted. Walk-in pedestrians can use the bus services within the Park & Ride between the hours of 07:00 and 20:05, with the option to pay on the bus or use a leap card.

Additionally, Pearse Road is a 6-minute walk to the north from the site, where multiple stops serve Routes No. 203 and 219 which also falls within the 15-minute walking distance. There are continuous footpaths and cycle lanes to these bus stops. Photographic evidence of the routes linking the proposed development site to the bus stops are included in Appendix A of this report.

2.1.2 Bus capacity

Table 1 shows the frequency and capacity of buses within 15-minutes walking of the site, during peak hours. The AM peak is considered to be 08:00-09:00, while the PM peak is considered to be 17:15-18:15.

Based on a typical double decker bus capacity of 90 passengers, the bus capacity of each route were determined by multiplying the number of bus services per hour by the bus capacity. The table shows that Route No. 213 has a total peak hour capacity of 630 passengers during both the AM and PM peaks. Route No. 203 has approximately half of the capacity of Route No. 213, while Route No. 206 has almost three quarters of this capacity. Routes No. 226 and 219 has significantly less capacity due to the limited number of services on these routes.

Table 1: Peak hours bus service frequency and capacity

Route No.	Route Name	Frequency during AM peak (08:00-09:00)		AM peak Capacity	Frequency during PM peak (17:15-18:15)		PM peak Capacity
213	Patrick Street – Black Ash Park via South Mall	10 mins	7	630	5-10 mins	7	630
203	Lehenaghmore – City Centre – Farranree	20-25 mins	3	270	20 mins	4	360
226	Cork Railway Station – Cork City Bus Station – Cork Airport – Kinsale	60 mins	1	90	60 mins	1	90
206	Grange Dunvale – Grand Parade/South Mall	30 mins	5	450	30 mins	5	450
219	Cork Institute of Technology – Mahon Point/City Gate	60 mins	1	90	60 mins	1	90
209A	St. Patrick Street - Ballyphehane	60 mins	1	90	60 mins	1	90

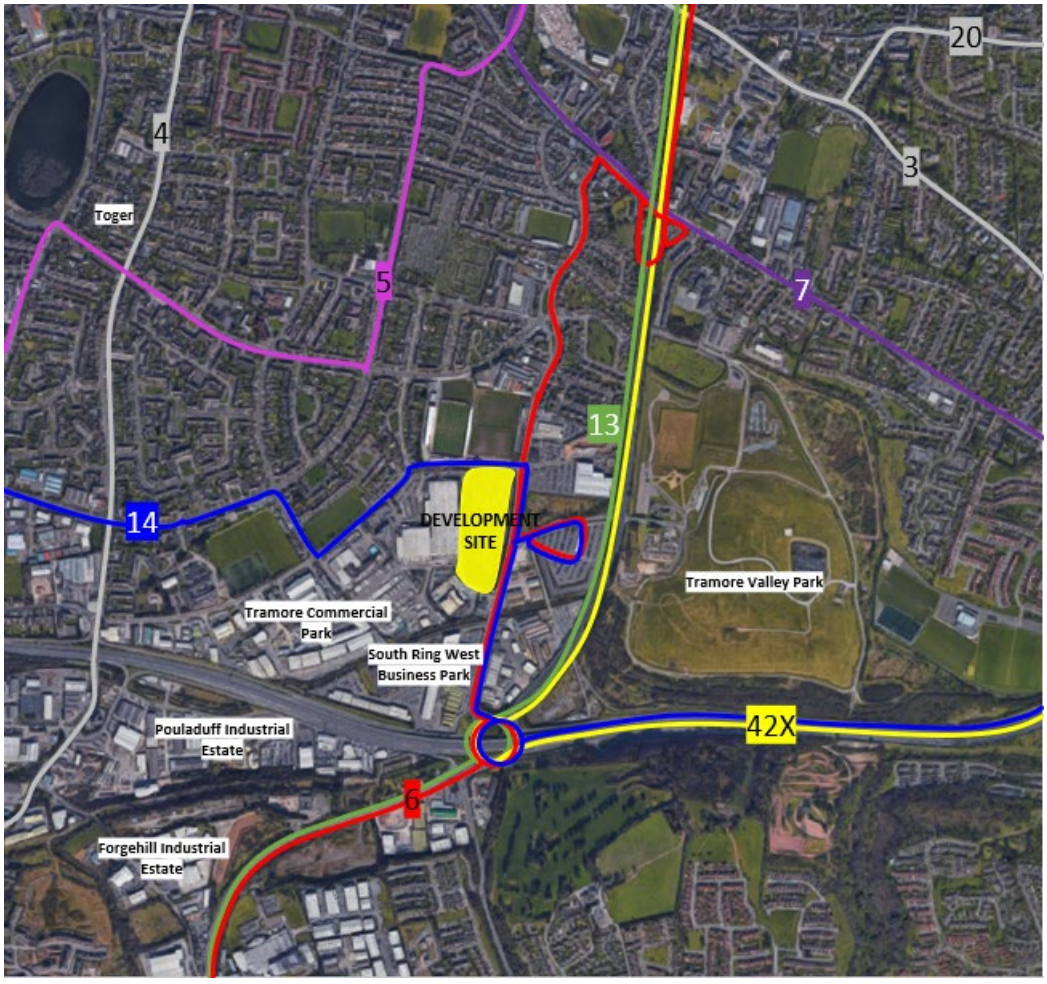
2.2 Proposed Bus services

2.2.1 15-minute walking distance

There are multiple proposed Bus Connects routes within the vicinity of the site. The proposed Bus Connects routes are within a 15-minute walk from the site is shown in Figure 2 below. The routes include No. 5, 6, 7, 13, 14 and 42X. Routes No. 6 (Frankfield to Mercy Hospital) and 14 (CUH to Little Island) directly serves the development site. Routes No. 3, 4 and 20 are further than a 15-minute walk from the site and therefore was excluded from the analysis. The intention under the BusConnects proposals nationwide is to have the fleet transition to low or zero emission double decker buses, therefore a capacity of 90 people per bus is assumed.

The current 213 Black Ash Service will be replaced with two services (No. 6 and No. 13) that enter the park and ride site directly, as well as a number of other services that route in the vicinity of the park and ride. It is not clear if the dedicated bus associated with the park and ride itself would cease.

Figure 2: Proposed Bus Connects routes



2.2.2 Bus capacity

Similarly, to existing bus services, the bus capacity of the future BusConnect services within the vicinity of the development site were calculated.

Table 2 shows the proposed bus services and capacity of the proposed BusConnect services during the weekdays. Compared to the existing bus services, the table shows that bus frequency within the vicinity of the proposed development will increase when Cork BusConnect is implemented.

Table 2: Bus Connects Routes and Frequencies

Route No.	Route Name	Frequency during AM peak (08:00-09:00)		AM peak Capacity	Frequency during PM peak (17:15-18:15)		PM peak Capacity
5	CUH - Cork Bus Stn - Apple - CUH	15 min	4	360	15 min	4	360
6	Frankfield to Mercy Hospital	15 min	4	360	15 min	4	360
7	Mount Oval to Kent Station	20 min	3	270	20 min	3	270
13	Airport to Cork Bus Station	30 min	2	180	30 min	2	180
14	CUH to Little Island	30 min	2	180	30 min	2	180
42X	Carrigaline to Kent Station	60 min	1	90	60 min	1	90

3 Bus Use Scenarios

3.1 Mode Split

The TTA assumed the mode split shown in Table 3 below. The mode split shown is based on the CSO's 2016 Census Small Area Data where six residential zones within the vicinity of the development were selected.

The table shows that currently most residents living within the vicinity of the development drive or walk. 6.9% of residents take public transport to travel to places of work, education or shopping. Since there are no other types of public transport within the vicinity of the development, it was assumed that all of these users travel by bus.

Table 3: Modal split based on CSO

Modal Split	**CSO Small Area Modal Split (%)**
Walking	26.5
Cycling	4.3
Public Transport	6.9
Working from Home	4.0
Car Drivers	37.9
Car Passengers	19.7
Other	0.7
Total	**100**

3.2 Scenario Development

To ensure that potential critical scenarios are considered, this assessment includes both the 2025 and 2031 future year horizons. The year 2025 is the opening year for phase 1 of the proposed development as defined in the TTA. This scenario includes both the first residential phase and the primary care centre. At this stage it is assumed that the BusConnect infrastructure will not be available yet and therefore that residents and primary care users will make use of the existing bus services for commuting purposes.

Planning policy documentation (CMATS and Cork City Council Development Plan 2022 to 2028) schedules the implementation of the Cork BusConnect network before 2031. The TTA has defined this date as a timeframe where the full residential development of the Creamfields site is expected to be built and operational.

The assessment therefore includes 2031 as the second horizon year to determine the impact of the development on bus services. However, it cannot be totally guaranteed that the Cork BusConnects will be functional and so this has been considered as one of the assessment scenarios.

Although the current bus uptake within the vicinity of the development is 6.9%, future bus uptake might be higher than this percentage and stress testing has been carried out to ensure a robust development.

Stress testing is the deliberate intensification of use to review how the system or network responds to this. It involves testing the system beyond its normal operation to represent a worst case. In this case, the current modal share for buses is 6.9% and logically this percentage can be used to calculate the use of buses in the future. However, to represent a worst case, it was decided to double (and round off to the nearest whole number) the expected bus use as a stress test, to review how the bus system operates under such conditions.

The remainder of this section outlines the various scenarios that have been considered based on the future horizon years considered, the availability of BusConnects and the future bus uptake:

3.2.1 Scenario 1: 2025 with opening of Development Phase 1

This scenario considers the 2025 horizon year where only development phase 1 of the Creamfields development is in place. At this stage it is assumed that the existing bus services will still be in place. Although a bus use modal split of 6.9% was derived from the Census data analysis, stress test analysis was carried out by assuming that 10% of the person trip generation of the proposed development will make use of bus services.

3.2.2 Scenario 2: 2031 Full Development, No BusConnects

In this scenario it was assumed that all development phases of the Creamfields development are complete and operational. Similar to the previous scenario it is also assumed that 10% of the development trips will be by bus.

In the eventuality that the Cork BusConnects is still not operational due to delays in its implementation, this scenario assumes that bus users still make use of the existing bus services as is currently available today.

3.2.3 Scenario 3: 2031 Full Development, With BusConnect

This scenario is similar to Scenario 2, however it is assumed that the Cork BusConnects network is implemented and operational.

3.2.4 Scenario 4: 2031 Full Development, With BusConnects, High Bus Uptake

The Cork BusConnect network is expected to improve bus services significantly within the City. Therefore, it is reasonable to expect that this mode of transport is expected to become more attractive. CMATS targets 26% of all trips to be by public transport in 2040. This scenario therefore assumes that 14% of development trips will be by bus. This increase represents approximately a doubling of the existing bus use as recorded in 2016.

3.3 Trip Generation

This section outlines the number of bus trips made expected to be made by residents and visitors to the proposed development in each of the scenarios. This was determined by multiplying the mode share of either 10% or 14% (depending on the scenario) to the person trip generation calculated for the Creamfields development.

Table 4 - Table 7 show the bus trips for each scenario outlined in the previous section.

Table 4: Scenario 1 – 2025 with the opening of Development Phase 1 and existing bus uptake

Residential and Primary Health Care Centre	**AM Peak**		**PM Peak**	
	Arrival	***Departure***	***Arrival***	***Departure***
Per person	7	9	11	9
Two Way	16		20	

Table 5: Scenario 2 - 2031 Full Development, No BusConnects

Residential and Primary Health Care Centre	**AM Peak**		**PM Peak**	
	Arrival	***Departure***	***Arrival***	***Departure***
Per person	12	25	27	20
Two Way	37		47	

Table 6: Scenario 3 – 2031 Full Development, with Bus Connects

Residential and Primary Health Care Centre	**AM Peak**		**PM Peak**	
	Arrival	***Departure***	***Arrival***	***Departure***
Per person	12	25	27	20
Two Way	37		49	

Table 7: Scenario 4 – 2031 Full Development, with BusConnects and doubling of existing bus uptake

Residential and Primary Health Care Centre	**AM Peak**		**PM Peak**	
	Arrival	***Departure***	***Arrival***	***Departure***
Per person	16	35	37	28
Two Way	51		65	

4 Bus Trip Distribution and Assignment

The distribution for each bus route was allocated according to accessibility and attractiveness of services to residents of the proposed development. The accessibility and attractiveness of bus stops considered the following factors:

- Bus stops closer to the development were considered more attractive than bus stops further away;
- Higher frequency bus services at bus stops were also considered to be more attractive compared to lower frequency bus stops;
- The destinations that bus routes serve were considered i.e. bus routes serving high employment areas such as the City Centre were considered to be more attractive.

4.1 Trip Distribution and assignment for Scenario 1 and 2)

Table 8 and Table 9 show the assumed trip distribution and trip assignment for Scenarios 1 and 2, which represents utilisation of the existing bus network.

Route No. 213 were considered the most attractive existing bus service. The bus stop for this service is within the Black Ash Park & Ride less than 250m from the development site. The bus frequency of this service is one bus every 10 minutes which is the highest frequency of all bus services within walking distance of the proposed development site. The bus route is a direct service to the City Centre and therefore provides access to a high number of employment, shopping and educational opportunities.

The bus stop considered to be the second most attractive was Route No. 203. This bus route is located within 500m of the development site and has a bus frequency of 20 to 25 minutes. This route also serves the City Centre.

Route No. 226 has a bus frequency of 30 minutes is located within 1km of the development site which makes it less attractive. The remaining bus routes have low frequencies of one bus every 60 minutes and therefore was considered to be the least accessible and attractive.

Table 8: Scenario 1 travel distribution and assignment

Route No.	Route Name	Distribution	Distribution			
			AM Peak		PM Peak	
			Arrival	Departure	Arrival	Departure
213	Patrick Street – Black Ash Park via South Mall	50%	3.5	4.5	5.5	4.5
203	Lehenaghmore – City Centre – Farranree	20%	1.4	1.8	2.2	1.8
226	Cork Railway Station – Cork City Bus Station – Cork Airport – Kinsale	10%	0.7	0.9	1.1	0.9
206	Grange Dunvale – Grand Parade/South Mall	8%	0.56	0.72	0.88	0.72
219	Cork Institute of Technology – Mahon Point/City Gate	6%	0.42	0.54	0.66	0.54
209A	St. Patrick Street - Ballyphehane	6%	0.42	0.54	0.66	0.54

Table 9: Scenario two travel distribution and assignment

Route No.	Route Name	Distribution	Distribution			
			AM Peak		PM Peak	
			Arrival	Departure	Arrival	Departure
213	Patrick Street – Black Ash Park via South Mall	50%	6	12.5	13.5	10
203	Lehenaghmore – City Centre – Farranree	20%	2.4	5	5.4	4
226	Cork Railway Station – Cork City Bus Station – Cork Airport – Kinsale	10%	1.2	2.5	2.7	2
206	Grange Dunvale – Grand Parade/South Mall	8%	0.96	2	2.16	1.6
219	Cork Institute of Technology – Mahon Point/City Gate	6%	0.72	1.5	1.62	1.2
209A	St. Patrick Street - Ballyphehane	6%	0.72	1.5	1.62	1.2

4.2 Trip Distribution and assignment for Scenario 3 and 4

Table 10 and Table 11 represent the trip distribution and assignment for the Scenarios 3 and 4, which represent the utilisation of the Cork BusConnects network.

The assumed trip distribution across the various routes is more equal for the BusConnects scenarios compared to the existing bus network. The main reason for this is more equal bus frequencies across the routes. Route No. 6 is the most attractive route. This route is served from the Black Ash Park and Ride and has a high service frequency of 15 minutes. The route provides a direct service to the City Centre.

The second most attractive route is Route No. 5 which also has a 15-minute frequency and is within 500m walking distance. This route also connects the development to the City Centre.

Route No. 14 is also considered to be attractive. Although this route only has a frequency of 30 minutes, it is also available from the Black Ash Park & Ride and serves major destinations such as Cork University Hospital. The remainder of the routes were considered to be less attractive and have received lower distribution percentages.

Table 10: Scenario 3 travel distribution and assignment

Route No.	Route Name	Distribution	Distribution			
			AM Peak		PM Peak	
			Arrival	Departure	Arrival	Departure
5	CUH - Cork Bus Stn - Apple - CUH	25%	3	6.25	6.75	5
6	Frankfield to Mercy Hospital	35%	4.2	8.75	9.45	7
7	Mount Oval to Kent Station	5%	0.6	1.25	1.35	1
13	Airport to Cork Bus Station	10%	1.2	2.5	2.7	2
14	CUH to Little Island	20%	2.4	5	5.4	4
42X	Carrigaline to Kent Station	5%	0.6	1.25	1.35	1

Table 11: Scenario 4 travel distribution and assignment

Route No.	Route Name	Distribution	Distribution			
			AM Peak		PM Peak	
			Arrival	Departure	Arrival	Departure
5	CUH - Cork Bus Stn - Apple - CUH	25%	4	8.75	9.25	7
6	Frankfield to Mercy Hospital	35%	5.6	12.25	12.95	9.8
7	Mount Oval to Kent Station	5%	0.8	1.75	1.85	1.4
13	Airport to Cork Bus Station	10%	1.6	3.5	3.7	2.8
14	CUH to Little Island	20%	3.2	7	7.4	5.6
42X	Carrigaline to Kent Station	5%	0.8	1.75	1.85	1.4

5 Bus Trip Capacity Assessment

Table 12 to Table 15 shows the potential increase in utilisation which the proposed development might have on the existing and future bus services. The increase on each route is expressed in terms of percentage and was calculated by dividing the bus trip assignment by the total passenger capacity of each route.

Table 12 shows the results for Scenario 1 and that the highest increase is expected to be on Route No. 226 where bus utilisation might increase by just over 1% to PM peak arrivals. The remainder of the bus routes will have less than 1% increase.

Table 12: Scenario 1 Bus Capacity Increase

Route No.	Route Name	Capacity change			
		AM Peak		PM Peak	
		Arrival	Departure	Arrival	Departure
213	Patrick Street – Black Ash Park via South Mall	0.56%	0.71%	0.87%	0.71%
203	Lehenaghmore – City Centre – Farranree	0.52%	0.67%	0.61%	0.50%
226	Cork Railway Station – Cork City Bus Station – Cork Airport – Kinsale	0.78%	1.00%	1.22%	1.00%
206	Grange Dunvale – Grand Parade/South Mall	0.12%	0.16%	0.20%	0.16%
219	Cork Institute of Technology – Mahon Point/City Gate	0.47%	0.60%	0.73%	0.60%
209A	St. Patrick Street - Ballyphehane	0.00%	0.00%	0.00%	0.00%

Table 13 shows the results for Scenario 2 and shows that the increase in utilisation for Route No. 226 could potentially be almost 3% on the PM peak arrival. The increase in utilisation on other routes is generally less than 2%.

Table 13: Scenario 2 bus capacity increase

Route No.	Route Name	Capacity change			
		AM Peak		PM Peak	
		Arrival	Departure	Arrival	Departure
213	Patrick Street – Black Ash Park via South Mall	0.95%	1.98%	2.14%	1.59%
203	Lehenaghmore – City Centre – Farranree	0.89%	1.85%	1.50%	1.11%
226	Cork Railway Station – Cork City Bus Station – Cork Airport – Kinsale	1.33%	2.78%	3.00%	2.22%
206	Grange Dunvale – Grand Parade/South Mall	0.21%	0.44%	0.48%	0.36%
219	Cork Institute of Technology – Mahon Point/City Gate	0.80%	1.67%	1.80%	1.33%
209A	St. Patrick Street - Ballyphehane	0.00%	0.00%	0.00%	0.00%

Table 14 shows the results for Scenario 3, which assumes that the Cork BusConnects is in place. The potential highest impact is on Route No. 14 where bus utilisation is expected to increase by 5 – 6% due to the development. The remainder of bus routes generally show an increase of less than 3%.

Table 14: Scenario 3 bus capacity increase

Route No.	Route Name	Capacity change			
		AM Peak		PM Peak	
		Arrival	Departure	Arrival	Departure
5	CUH - Cork Bus Stn - Apple - CUH	0.48%	0.99%	1.07%	0.79%
6	Frankfield to Mercy Hospital	1.56%	3.24%	2.63%	1.94%
7	Mount Oval to Kent Station	0.67%	1.39%	1.50%	1.11%
13	Airport to Cork Bus Station	0.27%	0.56%	0.60%	0.44%
14	CUH to Little Island	2.67%	5.56%	6.00%	4.44%
42X	Carrigaline to Kent Station	0.00%	0.00%	0.00%	0.00%

Table 15 shows the results for Scenario 4, which assumes that the Cork BusConnects is in place and that there would be a significant increase in bus use. The potential highest impact is on Route No. 14 with just over 8% on services arriving at the bus stop during the PM peak hour. It should be noted that this is a theoretical exercise and that the impact of the development on the service can be easily reduced by increasing the frequency if the bus service operates near capacity.

Another way of perceiving this information is to understand that the 8.22% increase as outlined in the table represents only 7 passengers. Therefore in reality terms the impact on the service is minor. The remainder of bus routes shows an increase of less than 4%.

Table 15: Scenario 4 bus capacity increase

Route No.	Route Name	Capacity change			
		AM Peak		PM Peak	
		Arrival	Departure	Arrival	Departure
5	CUH - Cork Bus Stn - Apple - CUH	0.63%	1.39%	1.47%	1.11%
6	Frankfield to Mercy Hospital	2.07%	4.54%	3.60%	2.72%
7	Mount Oval to Kent Station	0.89%	1.94%	2.06%	1.56%
13	Airport to Cork Bus Station	0.36%	0.78%	0.82%	0.62%
14	CUH to Little Island	3.56%	7.78%	8.22%	6.22%
42X	Carrigaline to Kent Station	0.00%	0.00%	0.00%	0.00%

6 Conclusion

The purpose of this report is to review the potential impact of the proposed development on existing and future bus services within the vicinity of the site.

The analysis of the existing and future bus services within the vicinity of the site was based on a four-step traffic impact assessment methodology which, includes trip generation, modal split, trip distribution and trip assignment.

Existing and future bus services were reviewed to determine the accessibility, capacity and the attractiveness of these services to residents living within the development and visitors to the primary care centre. The potential demand that the proposed development potentially could have on the bus network were calculated and the percentage increase in the utilisation of the bus services were determined.

The assessment has identified four future scenarios. The scenarios identified were based on future two identified horizon years namely 2025 and 2031. These horizon years represents the opening of the first development phase of the development and the opening of the full development. The scenarios were further developed to consider two infrastructure scenarios i.e. whether the proposed BusConnect infrastructure is in place or not. Stress testing were also carried out by assuming higher than expected bus use uptake from the development.

The assessment has shown that for Scenario 1 which was the 2025 horizon without BusConnects and development phase 1 in place, the development will have less than 2.5% increase in passenger numbers on Route 226 and less than 1% increase on the other routes.

For Scenario 2 which was the 2031 horizon without Bus Connects and the full development in place the development will have less than 6.0% increase in passenger numbers on Route 226 and less than 3% increase on the other routes.

Scenario 3 is similar to Scenario 2 however the BusConnect infrastructure is in place. For this scenario the Route No. 7 PM bus arrivals might increase the passenger numbers by 6% while the remaining bus routes could experience an increase of between 2-3% due to the development.

Finally Scenario 4 is similar to Scenario 3, but a stress test is carried out by assuming bus use will increase to double the existing bus use currently in the vicinity of the site. This increase may then increase the bus passenger numbers by just over 8%, while it may increase the remaining bus routes by between 2 – 4%.

Generally, the percentage increase in bus passengers due to the proposed development is minor. Route No. 226 might increase by 3% on the existing network or when Cork BusConnects is implemented Route No. 14 may increase by 6 – 8% depending on the popularity of the new bus service. These potential increases are minor and in real terms the increase in the number of bus passengers on Route No. 14 PM peak arrival is only 7 people. This is a small impact and the future bus capacity of the Cork BusConnects network should easily be able to absorb this additional demand.

It should also be stressed that the additional demand created by the proposed Creamfields development is beneficial for the operation of bus routes as it makes them more feasible by increasing ridership. High density development which will generate high demand along bus routes should therefore be promoted and supported by Cork City Council and bus operators. High density developments should therefore not be seen as a threat to the bus operation but as an opportunity to stabilise patronage along these routes.

Bus operators should therefore respond to increased demand by adding additional capacity if required rather than seeing this as a problem.

Appendix A

Photographic evidence of the pedestrian routes

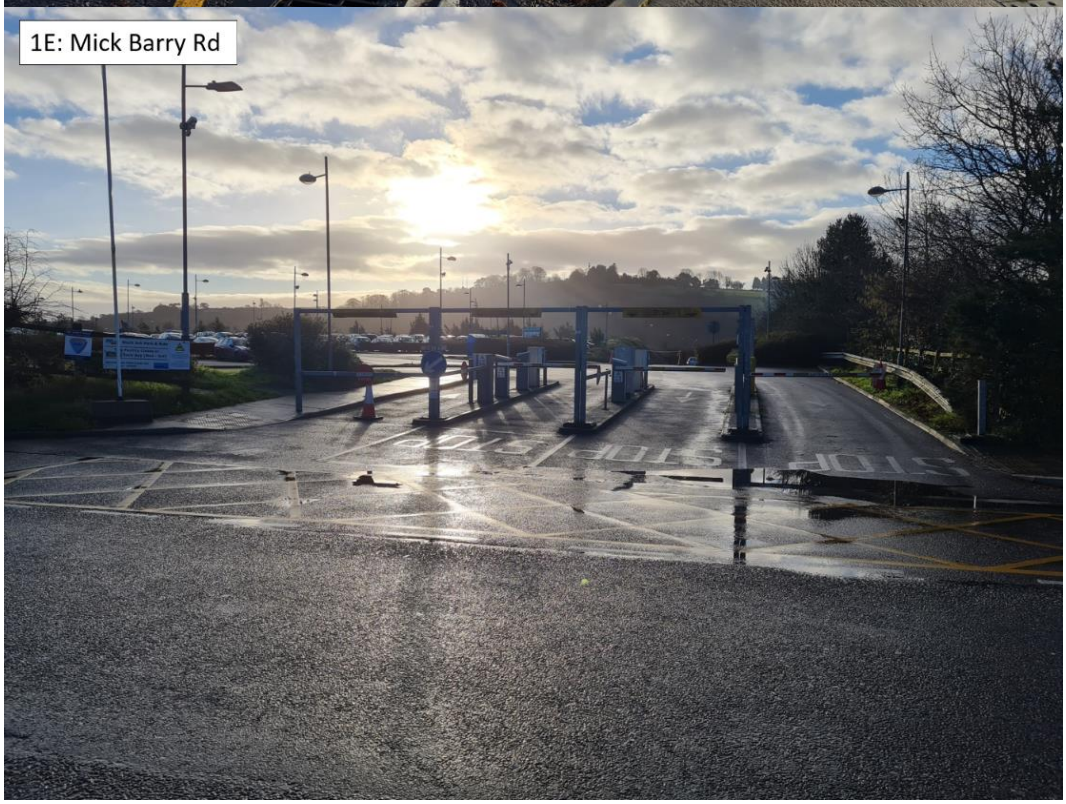

Curragh Road
Pearse Road
Kinsale Road
Tramore Road
Site
1. Mick Barry Road


1A: Kinsale Rd


1B: Kinsale Rd / Mick Barry Rd


1C: Mick Barry Rd


1D: Mick Barry Rd

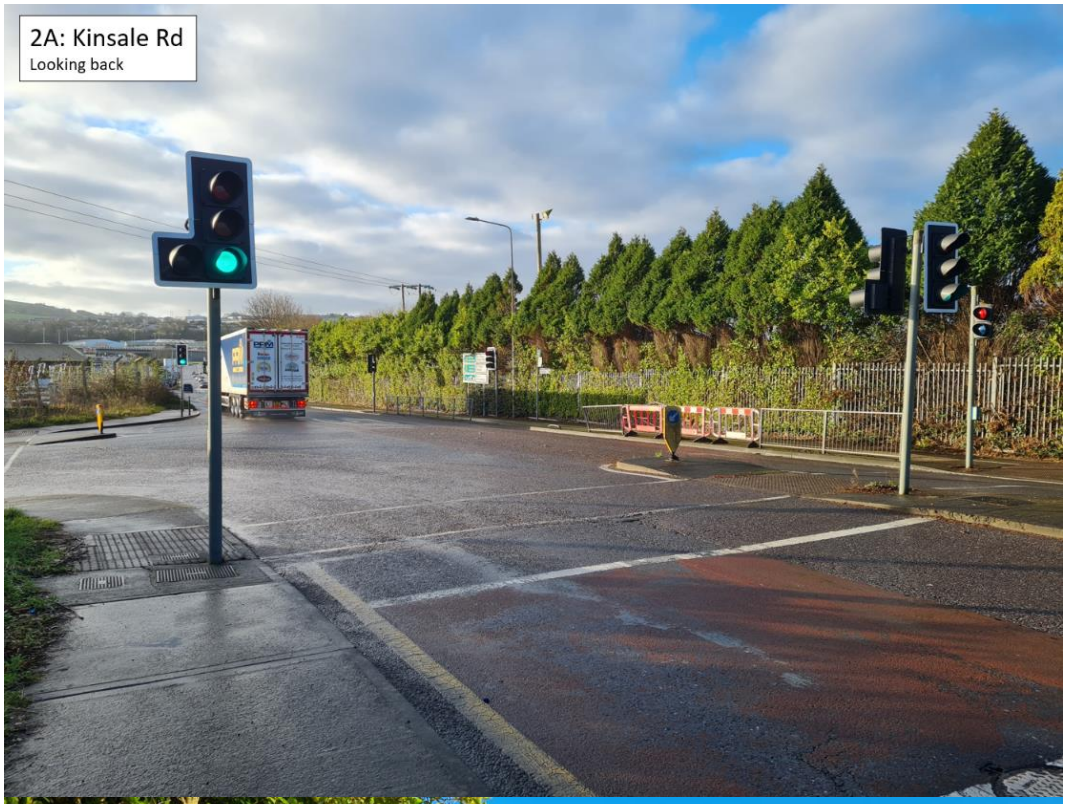

1E: Mick Barry Rd


1F: Mick Barry Rd


1G: Mick Barry Rd
Looking back to Kinsale Road

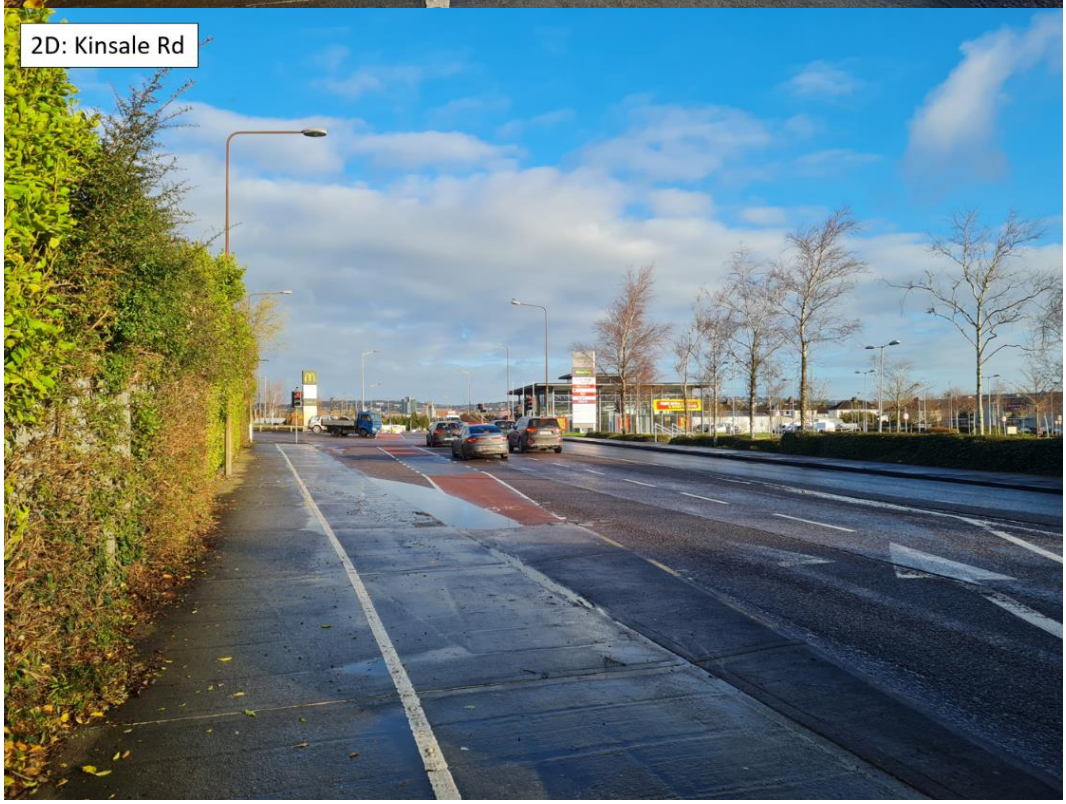

1H: Mick Barry Rd
Looking back to Kinsale Road


Curragh Road
Pearse Road
2. Kinsale Road
Tramore Road
Site
Mick Barry Road

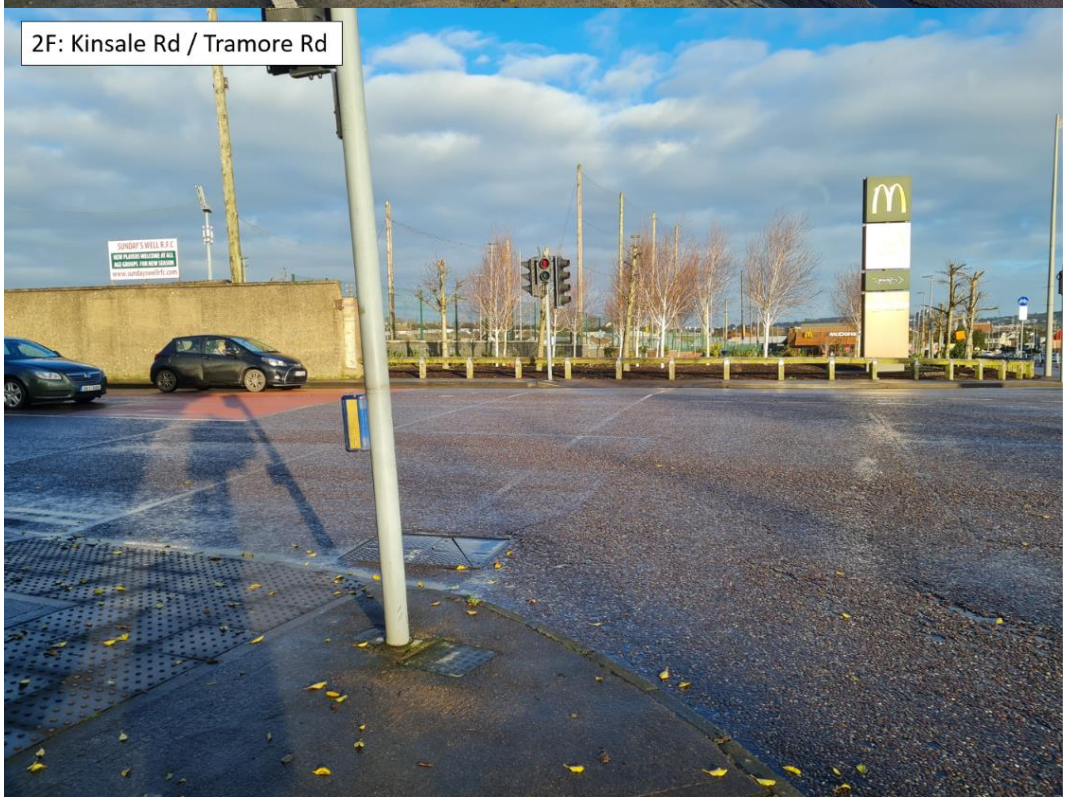

2A: Kinsale Rd
Looking back


2B: Kinsale Rd

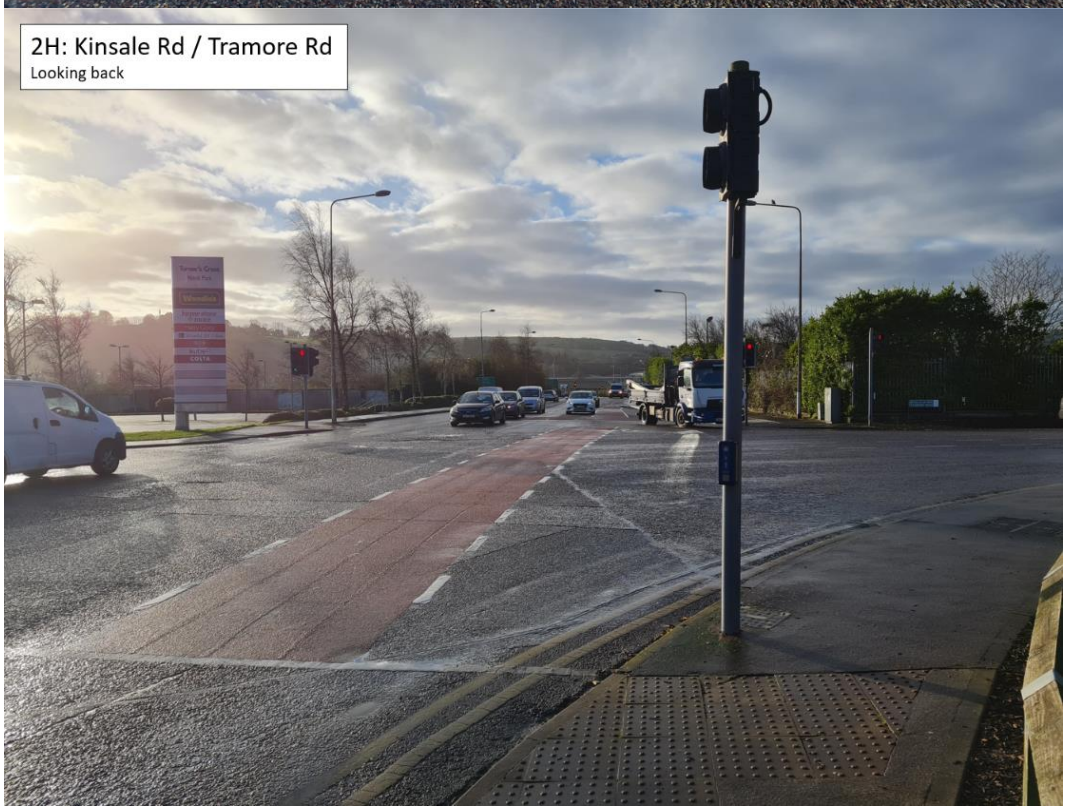

2C: Kinsale Rd


2D: Kinsale Rd


2E: Kinsale Rd / Tramore Rd


2F: Kinsale Rd / Tramore Rd

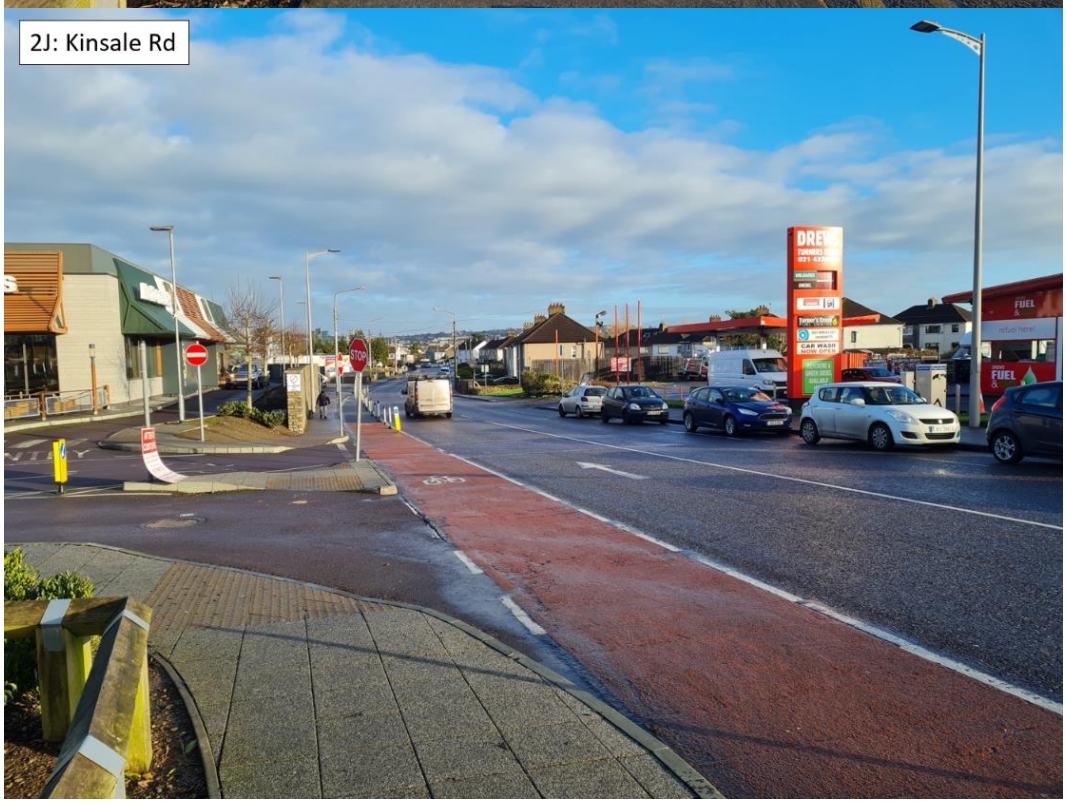
2G: Kinsale Rd / Tramore Rd

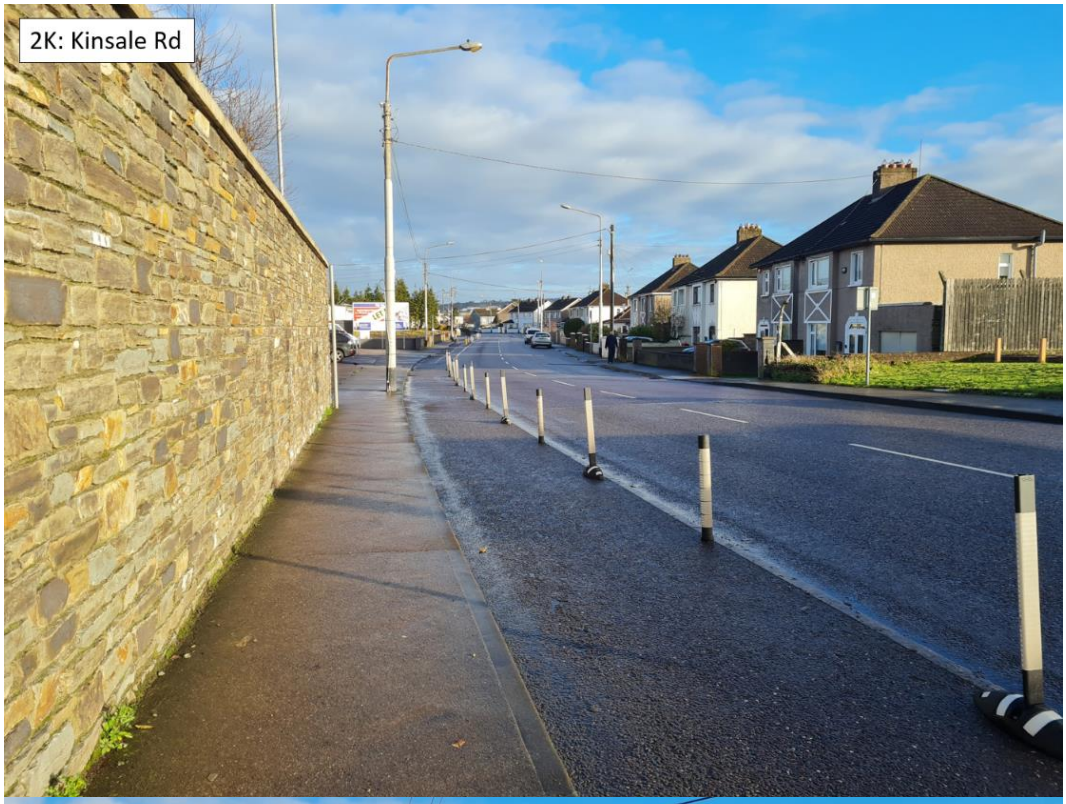


2H: Kinsale Rd / Tramore Rd
Looking back

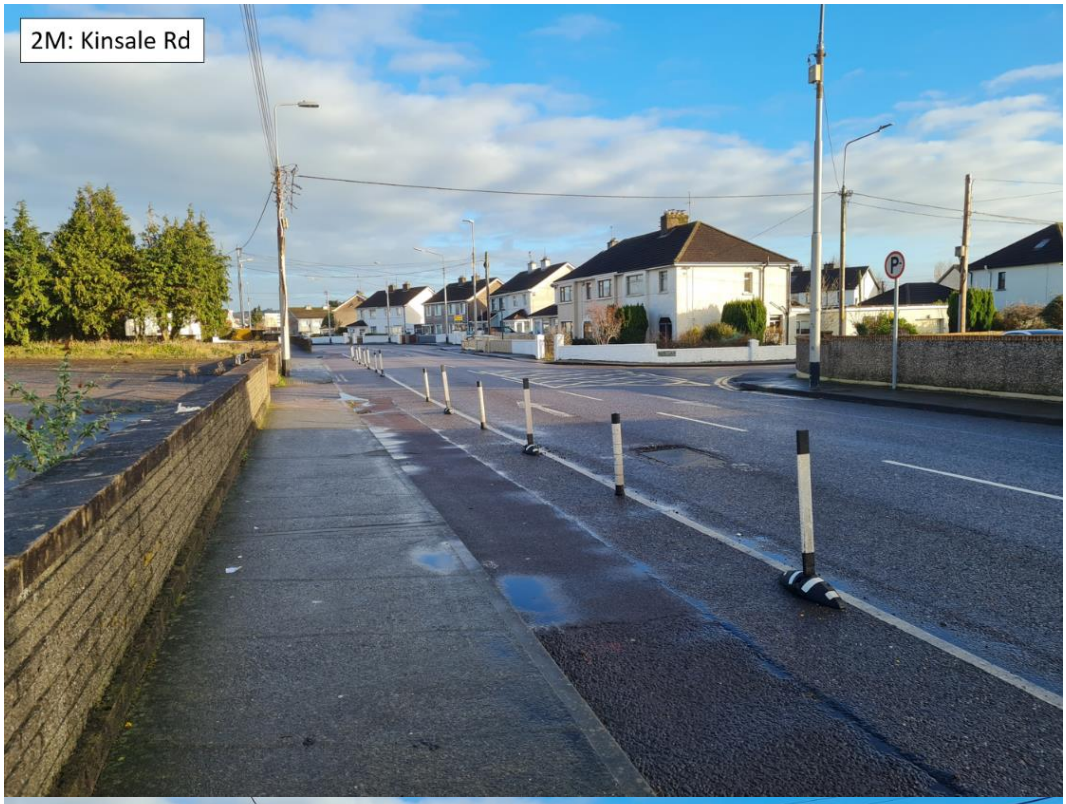
2I: Kinsale Rd

2J: Kinsale Rd

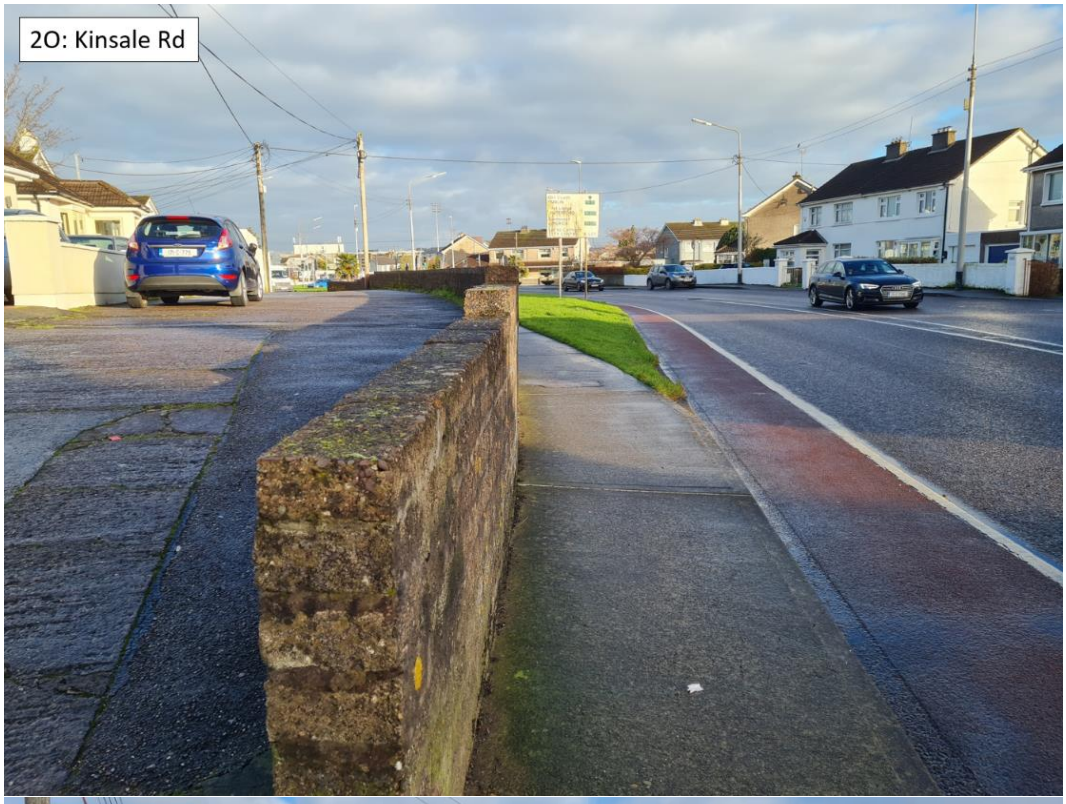


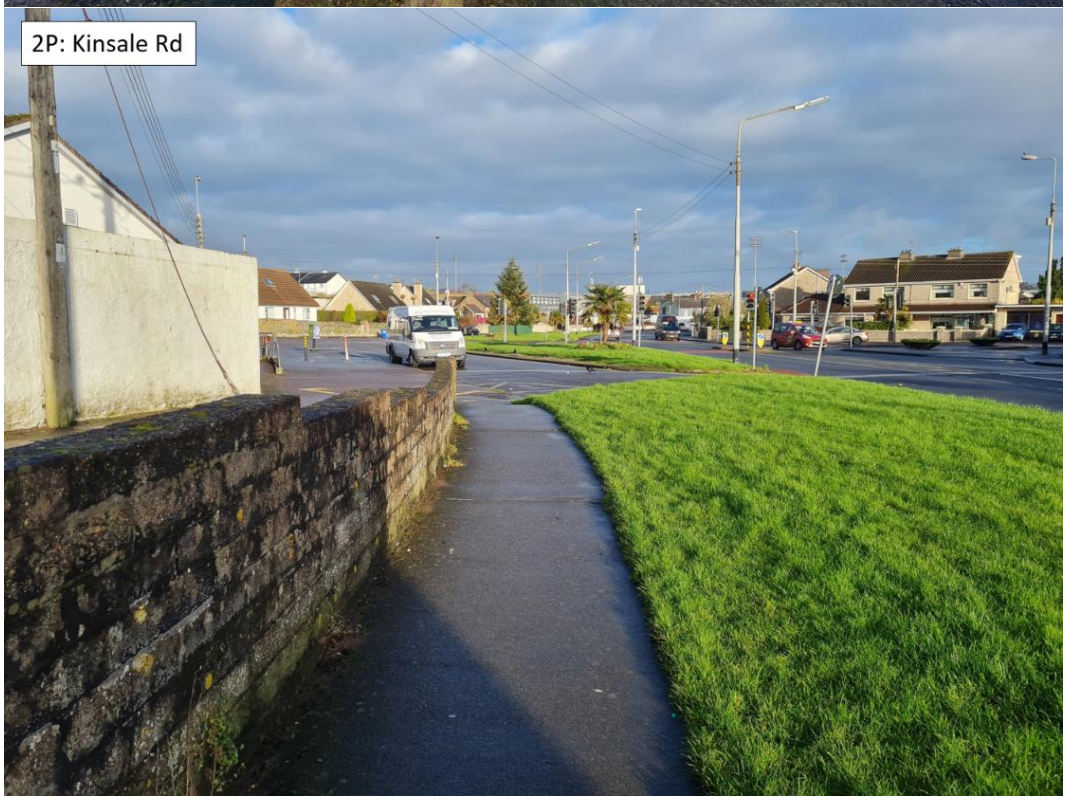

2K: Kinsale Rd


2L: Kinsale Rd
LET BY


2M: Kinsale Rd

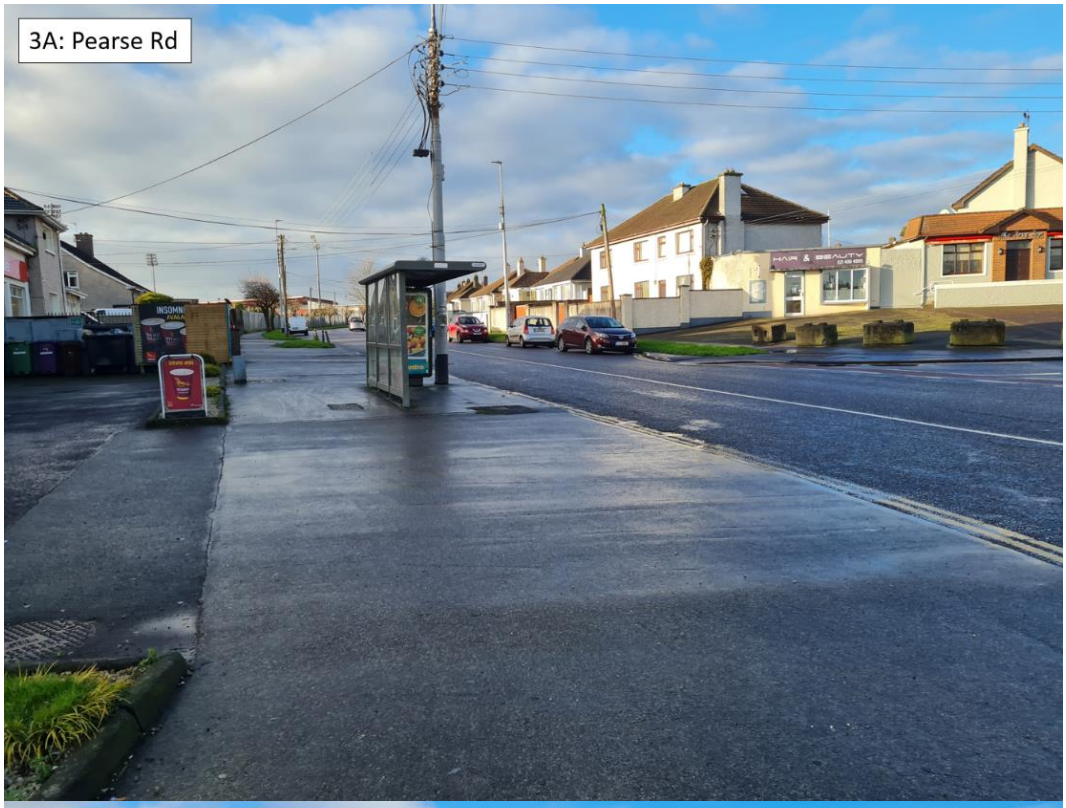

2N: Kinsale Rd


2O: Kinsale Rd


2P: Kinsale Rd

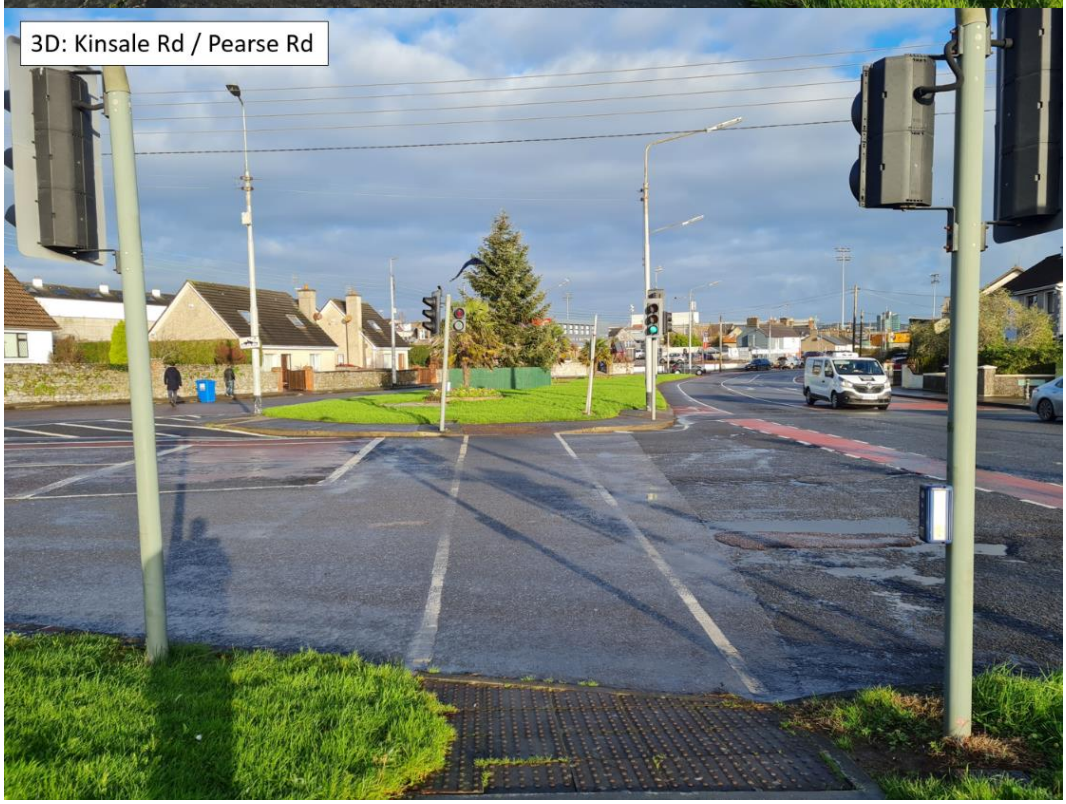

2Q: Kinsale Rd

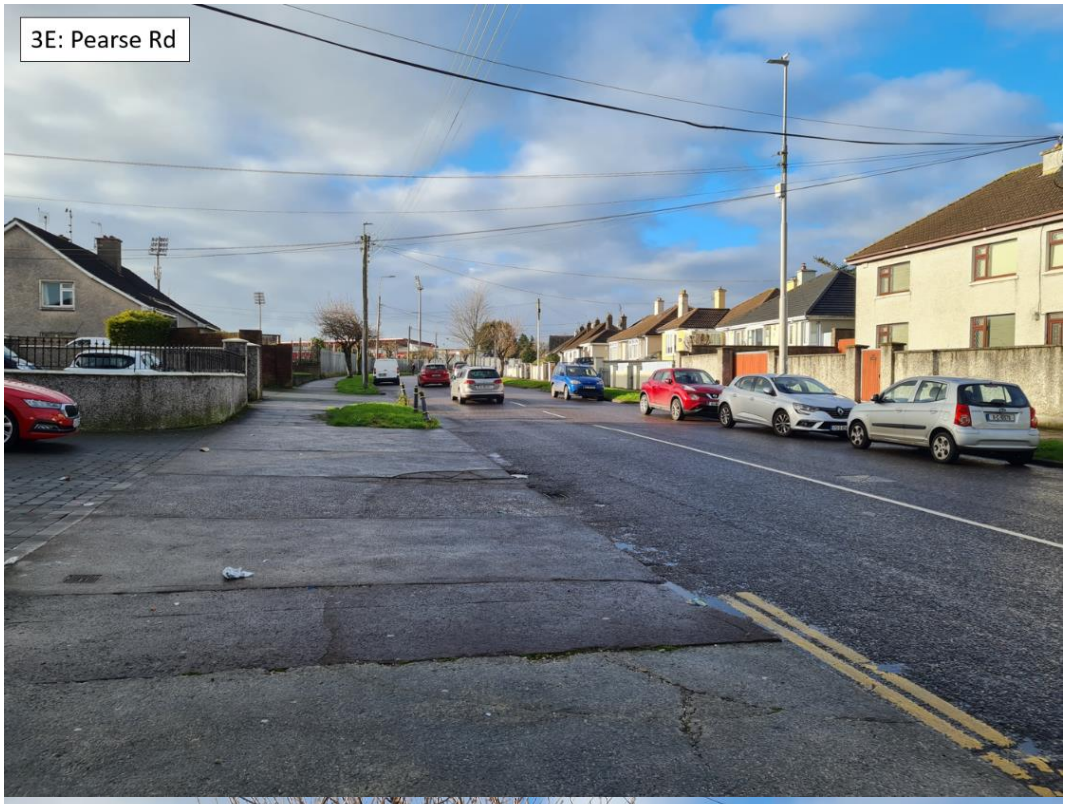

3. Pearse Road
Kinsale Road
Tramore Road
Site
Mick Barry Road


3A: Pearse Rd

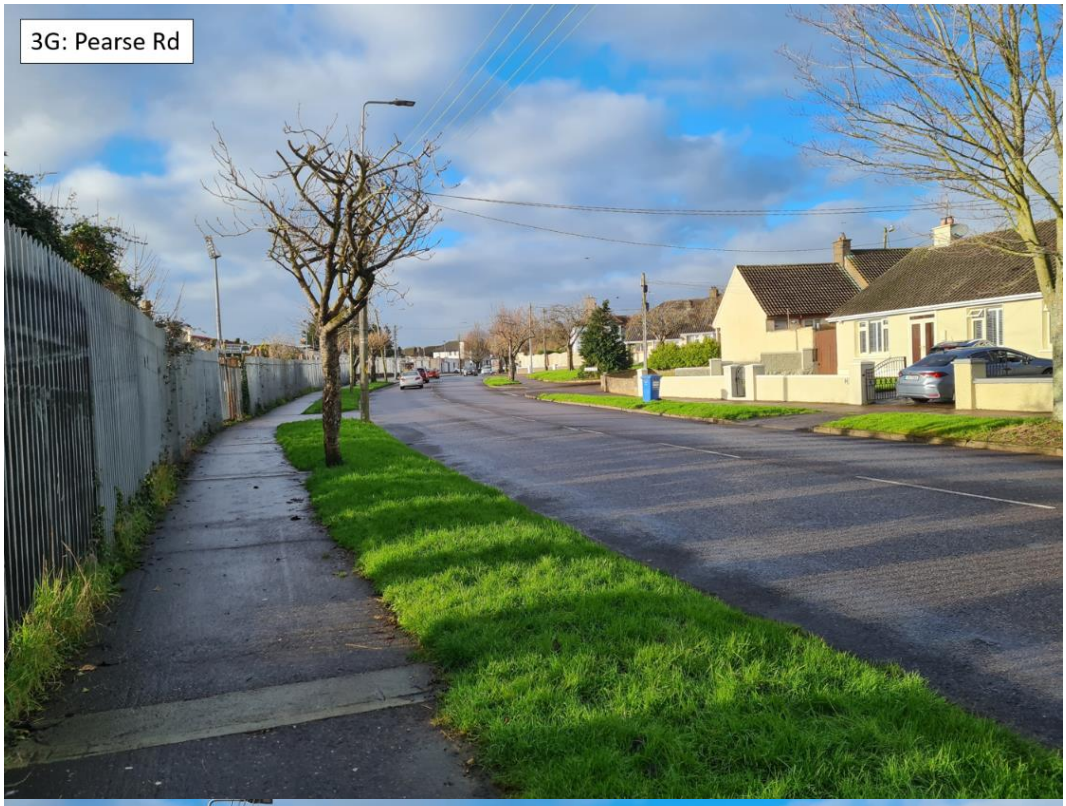

3B: Kinsale Rd / Pearse Rd
STOP

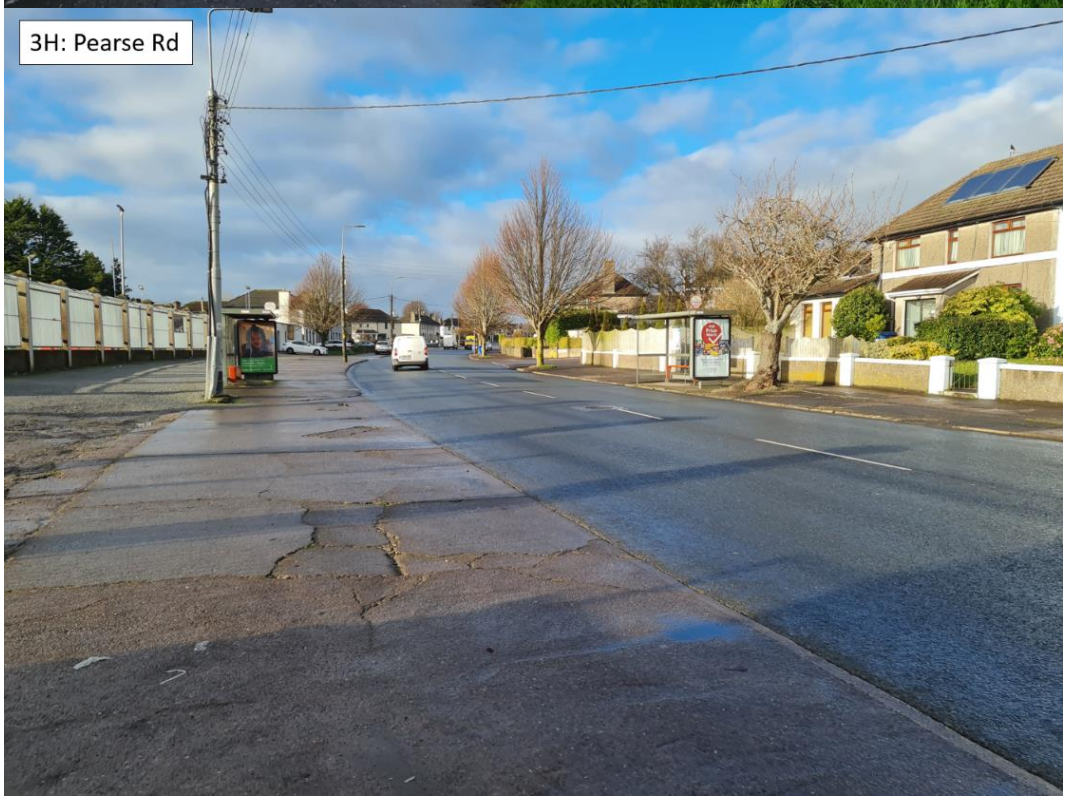

3C: Kinsale Rd / Pearse Rd
Baile Feirtean
BALLYPHEHANE


3D: Kinsale Rd / Pearse Rd

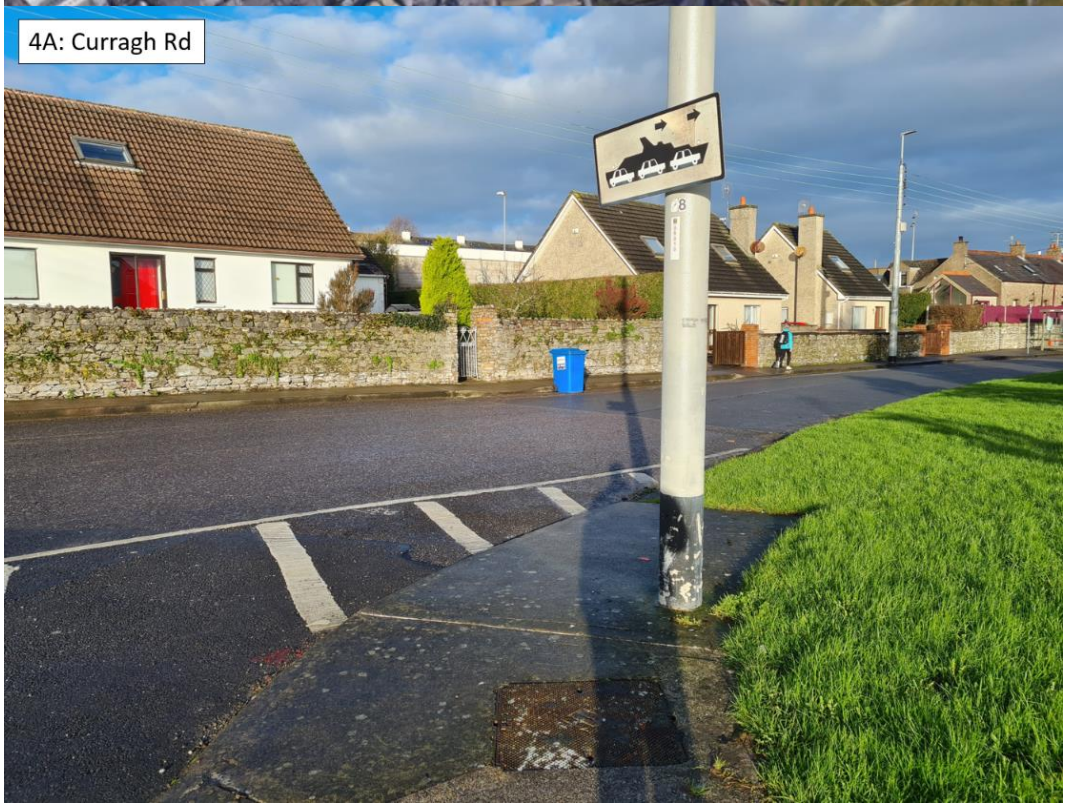

3E: Pearse Rd


3F: Pearse Rd

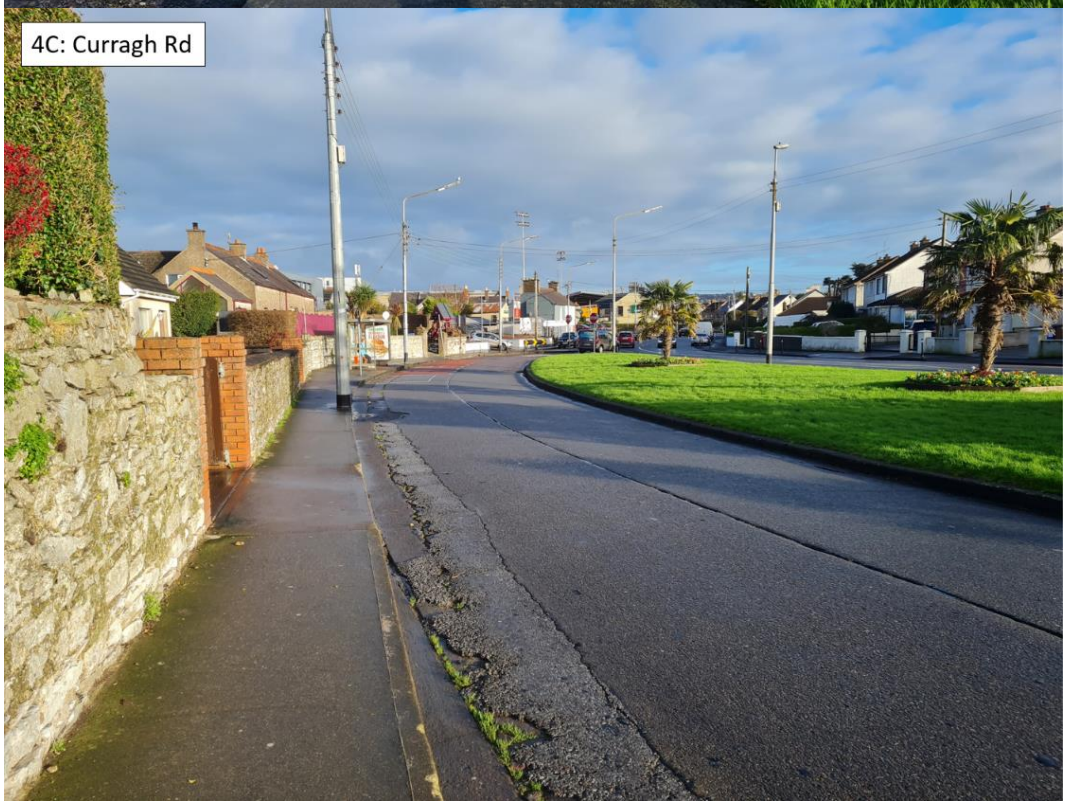

3G: Pearse Rd


3H: Pearse Rd


4. Curragh Road
Pearse Road
Kinsale Road
Tramore Road
Site
Mick Barry Road


4A: Curragh Rd

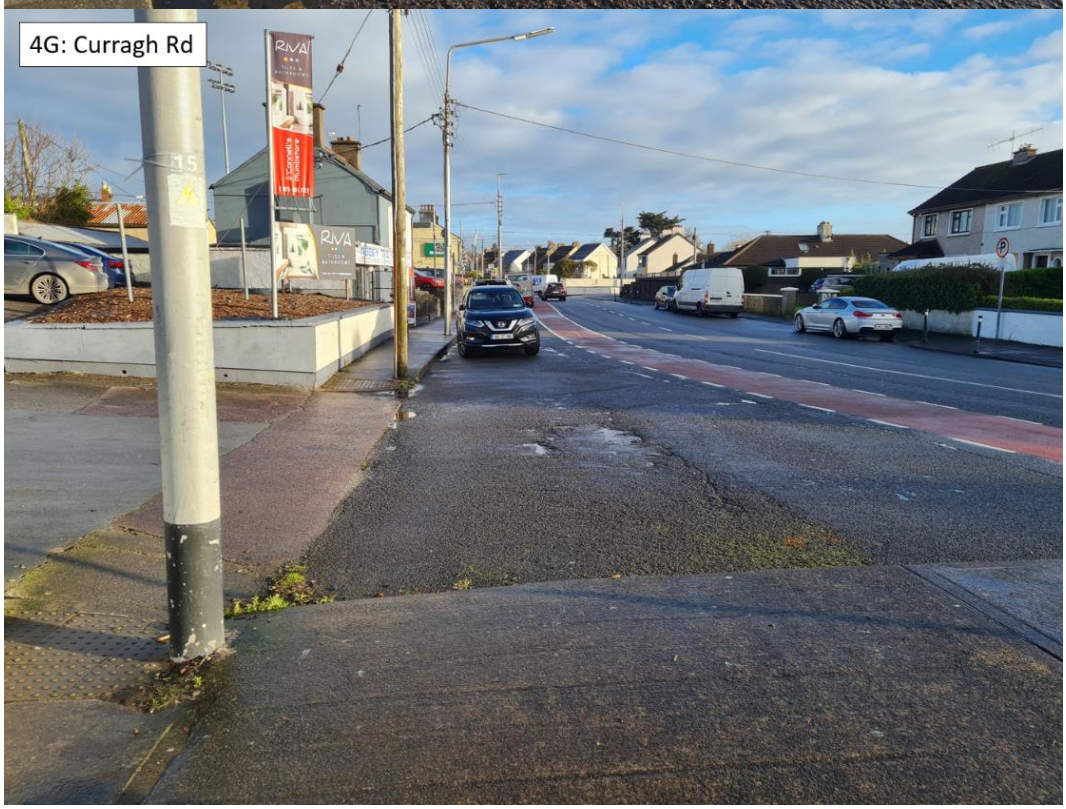

4B: Curragh Rd


4C: Curragh Rd


4D: Curragh Rd

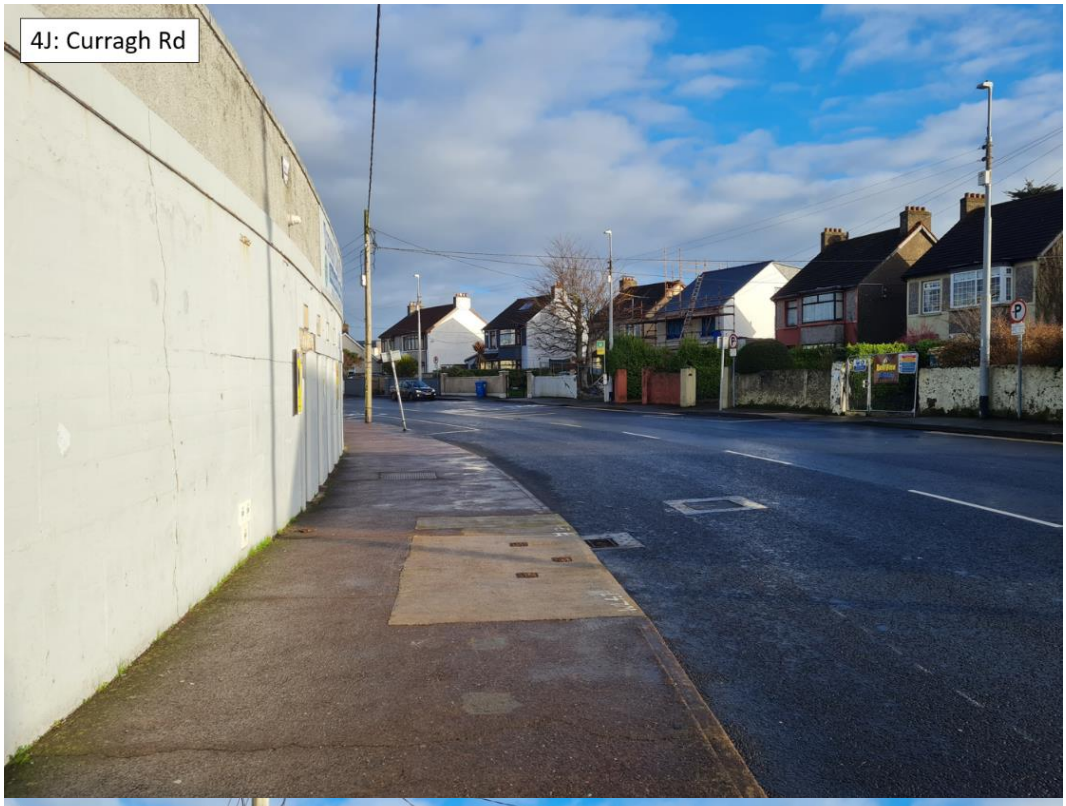

4E: Curragh Rd
Looking back
BUS


4F: Curragh Rd
STOP
STOP


4G: Curragh Rd
RIVA


4H: Curragh Rd


4I: Curragh Rd

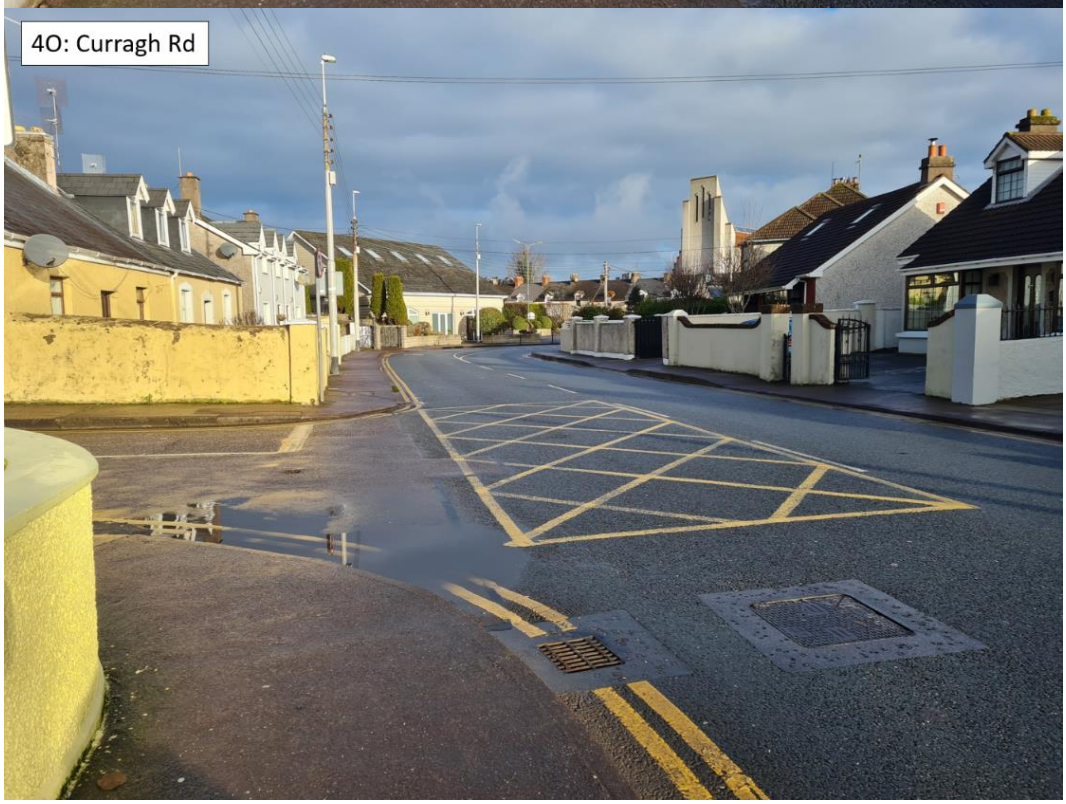

4J: Curragh Rd


4K: Curragh Rd


4L: Curragh Rd
BUS

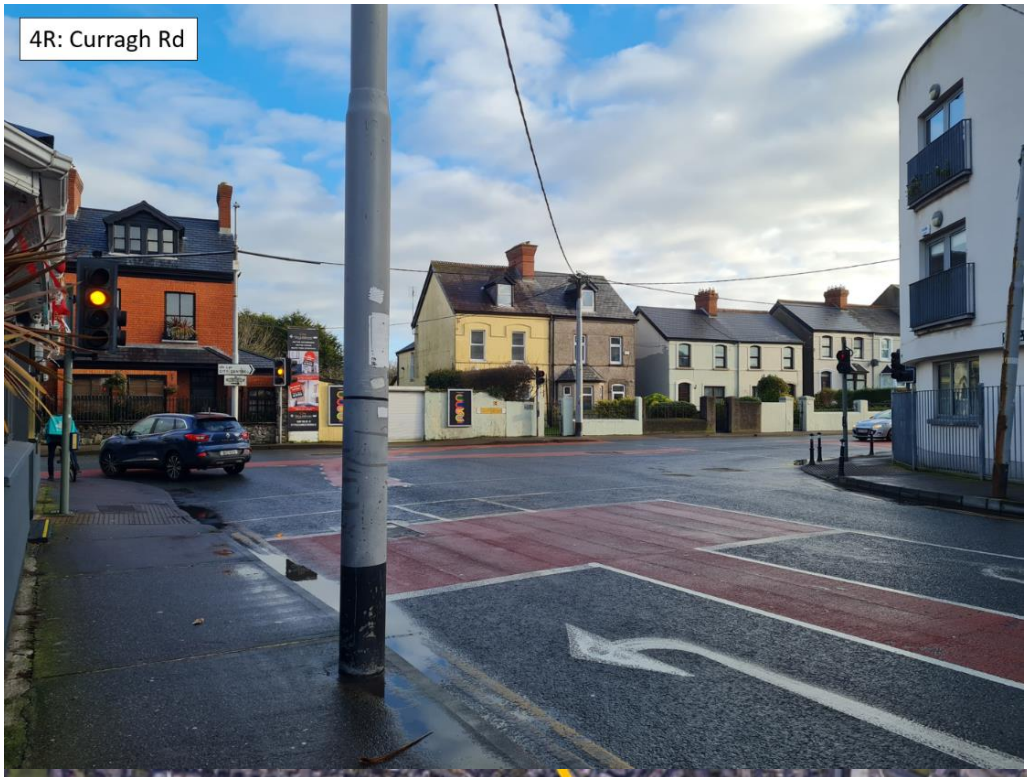

4M: Curragh Rd
Looking Back
Stop 243821
203 219


4N: Curragh Rd
PADDY DENNERY
EAGLES
JOSHUA BURNSIDE
JACK O'ROURKE


4O: Curragh Rd


4P: Curragh Rd


4Q: Curragh Rd
Stop 242201
203 219

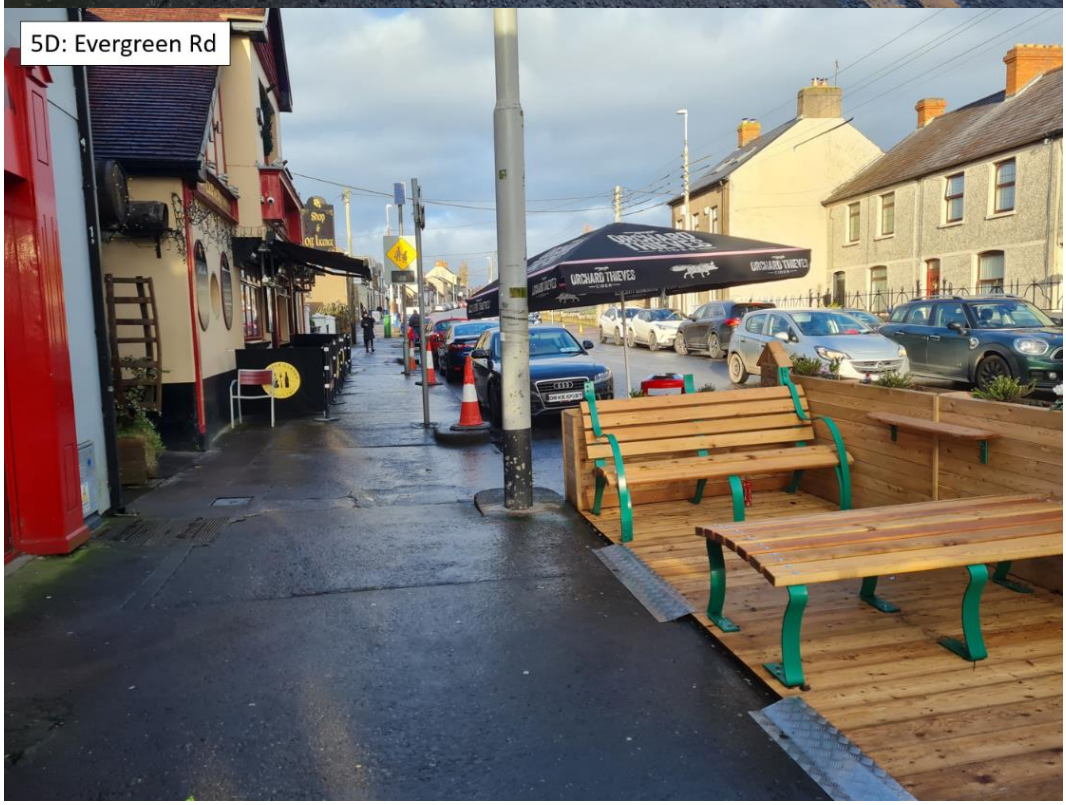

4R: Curragh Rd


5. Evergreen Road
Douglas Road
Curragh Road
Pearse Road
Kinsale Road
Tramore Road
Site
Mick Barry Road


5A: Evergreen Rd
Looking back at Douglas Rd


5B: Evergreen Rd


5C: Evergreen Rd


5D: Evergreen Rd
ORCHARD THIEVES
ORCHARD THIEVES


5E: Evergreen Rd


5F: Evergreen Rd
BARBER
BOOK @
087-1827587


5G: Evergreen Rd
BUS