Confey Masterplan

Strategic Transport and Mobility Report

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Executive Summary

The Masterplan is prepared in accordance with Objective Con 1.1 (a) of the Leixlip Local Area Plan 2020-2023 (extended to 2026), which states that 'No residential development shall take place on the lands identified within the Confey Urban Design Framework until such time as a masterplan is prepared and integrated into the Leixlip Local Area Plan by way of a statutory amendment to the Local Area Plan, pursuant to Section 20 of the Planning and Development Act 2000 (as amended).

The Masterplan incorporates and expands on the Confey Urban Design Framework (UDF) which acts as the preliminary design guide for the future development of the lands. Aligned with the UDF, the Masterplan builds on the previous analysis undertaken to inform the future development of Confey.

This Strategic Transport and Mobility Report (STMR) has been carried out for the Confey Masterplan to assess the potential impact on the surrounding transportation network and to define the infrastructural requirements for the masterplan to ensure that the masterplan complements and leverages the existing and proposed transportation infrastructure to result in the most sustainable possible transport outcomes.

There is a broad range of national, regional and local planning and transportation policy documents inform the Confey Masterplan area and this STA. A reoccurring theme within the planning and policy documentation is the promotion of sustainable transport to reduce carbon emissions by adopting a Avoid / Shift / Improve transport strategy based on the Decide and Provide approach rather than a predict and provide approach. The documents considered are listed below:

- Confey Urban Design Framework (UDF)
- Climate Action Plan 2023
- Cycle Design Manual 2023
- Design Manual for Urban Roads and Streets
- Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019-2031
- Greater Dublin Area Transport Strategy 2022-2042
- Greater Dublin Area Transport Study: North Kildare (2021) [produced to inform the GDA transport Strategy 2022-2042]
- Kildare County Development Plan 2023 – 2029
- Leixlip Local Area Plan (LAP) 2020 – 2023 (extension to 2026)
- Leixlip Strategic Transportation Assessment (2019)
- National Cycle Policy Framework 2009 – 2020
- National Investment Framework for Transport in Ireland (NIFTI)
- National Sustainable Mobility Policy
- National Planning Framework, Project Ireland 2040
- Safe Routes to School
- Toolkit for School Travel

This planning and transportation policy context informs the transport vision for the Confey masterplan which is to prioritise sustainable transport through both the provision of new infrastructure within the masterplan area, and improved integration with existing and planned external transport infrastructure.

In addition to addressing the objectives of the Leixlip LAP, this STA also addresses the objective of the KCC Development Plan for the delivery of a M50 resilient outer orbital link road connecting the M3 and M4, through the provision of a corridor reserve identified and agreed with the necessary land owners to facilitate the development of this link.

At present, the Confey masterplan area is excellently situated in terms of sustainable transport access, along with a wide range of services existing within walking distance. The Confey Train Station immediately to the south of the masterplan unlocks the site for sustainable access to key areas such as Dublin and Maynooth. Furthermore, planned upgrades to the rail line as part of the DART + West project, are proposed to double

the existing capacity of the line, resulting in an extremely attractive and reliable service at the heart of the site.

The Royal Canal Greenway which is currently under construction, will further enhance the sustainable transport characteristics of the area and improve connections to key trip destinations such as Dublin City Centre, Maynooth and key employment sites such as Intel and Blanchardstown.

The proposed masterplan will prioritise sustainable transport modes through its infrastructure provision supported by local authority policies to encourage sustainable travel. Provision of sustainable infrastructure includes a primary off-road cycle network connecting all areas of the masterplan and linking to the existing Confey settlement to the south, high quality pedestrian infrastructure with attractive public realm features, and provision of internal bus stops allowing for extension of existing bus routes to/through the masterplan. Mobility hubs are proposed across the masterplan, which will allow for rental of micro-mobility options such as bikes/e-bikes, cargo/e-cargo bikes, e-scooters etc. along with potential car sharing options at the larger hubs. These Mobility Hubs will have the potential to tie into other hubs across the region as they are rolled out further. The roads/streets within the masterplan will provide priority to active modes, with the use of Home Zones and Local Roads being designed as people-first places as opposed to vehicular thoroughfares. These streets will create attractive places to live, and further encourage the use of sustainable modes to travel both within and to/from the masterplan.

The scheme will be built out in a phased basis, with necessary infrastructure delivered in advance of or in tandem with the various phases. Key infrastructure will unlock the masterplan and enhance connection to the surrounding area including:

Pedestrian/cycle only bridges are proposed, to connect the south-eastern and south-western areas of the masterplan across the railway lines and Royal Canal. These bridges will tie in with existing off-road pedestrian/cycle routes in Leixlip, creating a strong active travel network spanning between Leixlip and Confey.

Captain's Hill will be upgraded to provide high quality pedestrian infrastructure. This will include continuous footpaths and enhanced pedestrian connections. Safe cycling infrastructure along the northern section of Captain's Hill linked to quiet streets to provide continuous linkage to Leixlip town along with a proposed School Zone outside San Carlo School will also be provided. These enhancements will help to improve connectivity in/around Captain's Hill, and further strengthen connection between this are and the Confey Masterplan, establishing a central community and commercial spine along this Northern Leixlip area and into the masterplan itself.

Access to employment centres and town centres will be provided via the proposed Royal Canal Greenway which is currently being developed.

The proposed northern orbital road will enable better vehicular, cycling and public transport connections between the masterplan and the Ongar/ Blanchardstown area to the northeast, along with providing a diversion for traffic which would otherwise pass through the masterplan and potentially along Captains Hill.

As a result of these measures, sustainable transport options in both Confey and Leixlip will be greatly enhanced. Travel between the two areas, in addition to the surrounding areas, by sustainable modes will be easy, safe, and in many cases quicker than by vehicular modes.

A junction modelling assessment has been carried out on the relevant junctions in the area, and it has been found that with the suite of proposed transport measures, due to the relatively low expected mode share for car trips, improvements to junctions, and more balanced trip distribution the full masterplan can be constructed without adverse impact on the surrounding road network.

It is national policy, as set out in the Climate Action Plan 2023, to reduce the transport sector emissions by 50%, as well as reduce the total distance driven across all car journeys by 20% which in addition to the ongoing decarbonisation of private vehicles will support the CAP ambitions. The Confey Masterplan is ambitious in this aspect and aims to reduce car trips by almost 20% compared to the existing car modal share in Leixlip. The target mode split, shown in Figure 1 below, aim for 38% of trips to be made by private vehicle, and 56% of trips made by sustainable modes.

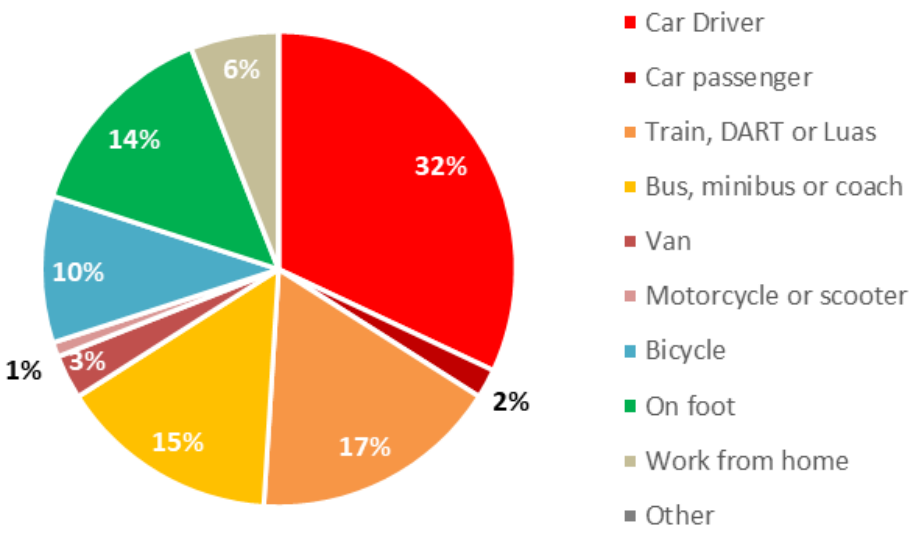


Figure 1: Target mode split for the masterplan

This report has outlined a framework for the transport measures, external and internal, that are required in order to facilitate the construction of the full Confey masterplan in line with policies. As individual planning applications are made for construction of phases within the masterplan, their associated Traffic and Transport Impact Assessments (if required) should make a case for that specific application, using this analysis as the basis, but diverging if appropriate. Should the conditions that may affect the transport characteristics of the masterplan or area change over the course of the implementation of the masterplan, the necessity for implementation of certain measures outlined in this report may change.

1. Introduction

1.1 Project Background

Arup was appointed to carry out a Strategic Traffic Assessment (STMR) for the Confey Masterplan area located to the north of Leixlip town. The purpose of the STA is to provide a transportation and access strategy for proposed land uses on the masterplan lands as outlined in the Leixlip Local Area Plan 2020-2023 (as extended to 2026). The main land uses proposed are mixed use residential, community and open space zoning. According to the Confey vision of the Masterplan, the over-arching concept for the development of the lands are to create a neighbourhood which maximises the use of sustainable modes of transport. This will be achieved by connecting the lands by pedestrian and cycle infrastructure to its surroundings and to take advantage of the existing and proposed public transport infrastructure which includes the Confey railway station (proposed to be upgraded to DART by 2027) and the BusConnects routes terminating nearby.

1.2 Strategic Transport and Mobility Report Scope

The Confey Masterplan are located within the Leixlip LAP area and lie to immediately north of the Sligo railway and Royal Canal as shown in Figure 1-1.

Figure 1-1: Confey Masterplan Location (Extract from Leixlip LAP 2020-2023)

The scope of the STA not only includes the Confey Masterplan themselves but also the surrounding vicinity. The study explores how the subject land can be connected to the surrounding local urban nodes and places of work such as Leixlip, Lucan, Maynooth, Intel and Ongar / Blanchardstown and to the Greater Dublin Area on a regional scale. The scope of work includes all modes of transport focussing specifically on maximising the use of sustainable modes of transport.

1.3 Objective of the Strategic Transport and Mobility Report

The objective of the STA is to provide suitable recommendations for transportation enhancements to accommodate the Confey Masterplan development by:

- Maximising the connectivity of the Confey Masterplan to surrounding existing facilities, urban areas, major employers, education & social centres and town centres.
- Promoting the use of sustainable modes of transport.
- Ensuring a high level of permeability for active modes of transport to allow route choice and short travel distance between destinations.
- Linking into existing and proposed transportation infrastructure within the vicinity of Confey.
- Ensuring the development is accessible by all modes of transport.

1.4 Assessment Methodology

The Strategic Transport and Mobility Report will not only review transportation connectivity within the development but also how the development can be connected to the broader surrounding area, making use of existing transportation assets and future transport proposals, proposed by others. The assessment includes the following main components:

- Planning and Transport Policy Review: There are a wide range of planning and transportation policy applicable to the Confey Masterplan area which sets the approach to addressing transportation requirements
- Transportation Context: This section reviews current and future transportation infrastructure for each mode of transport. It also outlines with existing and proposed land use within the area and some transportation characteristics of users within the area including mode split and origin-destination patterns

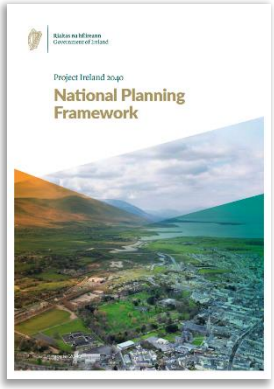
  Having provided a comprehensive overview of the master plan area and its surroundings the masterplan area is benchmarked against locations elsewhere to develop an appreciation of what mode share is realistic to achieve
- Transportation Opportunities and Challenges: Following the previous steps opportunities and challenges were identified that needs to be considered in the development of the transportation strategy
- Proposed Masterplan: This section outlines the proposed transportation elements within the boundaries of the Masterplan area and outlines the approach to proposed transportation provision and how sustainable transport considerations were taken into account
- Proposed External Improvements: This section outlines external transportation improvements proposed to ensure that the Masterplan area is connected to existing and future transportation infrastructure within the vicinity of the development. This section focusses particularly on measures to link Confey to Leixlip and to the community, economic and social services that the town offers
- Strategic Traffic Capacity Analysis: As part of the connection to external services, local upgrades to the road network are proposed. This section outlines the impact of the proposed road upgrades on the traffic operation in Leixlip town
- Conclusion: A conclusion is proposed to outline the findings of each of the study components outlined above and to provide a summary of the proposed transportation strategy.

2. Policy, Guideline and Transport Context Review

This section outlines the transportation policy and guidelines context for the development of the Confey Masterplan area from a national, regional and local perspective. The overall theme of the policy and guideline documentation is for a path towards sustainable transportation with the aim of reducing the potential for carbon emissions emitted by travel.

2.1 National Guidance

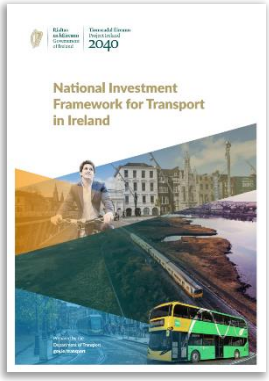
2.1.1 National Planning Framework



The National Planning Framework (NPF), also known as 'Project Ireland 2040' is the Government's high-level strategic plan to shape the future growth and development of the country until 2040. It outlines a vision, a set of national strategic outcomes, and a new way forward for managing regional and urban growth, investing in infrastructure, and enhancing sustainability and quality of life. It is accompanied by a 10-year National Development Plan that provides the funding for implementing the strategy.

Confey is located in the mid-east region, which the NPF notes as having undergone significant development in recent times due to its proximity to Dublin., with more than twice the national growth rate. A critical objective for this area is noted as managing the challenges of future growth, and the report notes that a more balanced and sustainable pattern of development is required, focusing on local infrastructure and employment, along with accessibility by sustainable transport modes and quality of life as opposed to current unsustainable commuting patterns which are focused mainly towards Dublin and primarily by car.

2.1.2 National Investment Framework for Transport in Ireland (NIFTI)



The National Investment Framework for Transport in Ireland (NIFTI) is part of the Irish Government's overarching Project Ireland 2040 vision for the sustainable development of Irish society in the coming decades. NIFTI provides a strategic framework to support the prioritisation of future investment in the land transport network and enable the delivery of the Project Ireland 2040 National Strategic Outcomes. It will guide transport investment in the years ahead to enable the National Planning Framework, support the Climate Action Plan, and promote positive social, environmental, and economic outcomes throughout Ireland.

To support sustainable population growth and the delivery of the national climate change targets, NIFTI prioritises decarbonisation of the transport sector, the protection and renewal of existing infrastructure to secure the value of past investment, urban mobility, and regional and rural connectivity. In delivering future investment, NIFTI also establishes intervention and modal hierarchies, which will seek to ensure the most appropriate solution is deployed for a given transport issue or opportunity. Sustainable modes, starting with active travel (walking, wheeling and cycling) and then public transport, will be encouraged over less sustainable modes such as the private car, as shown in in Figure 2-1.

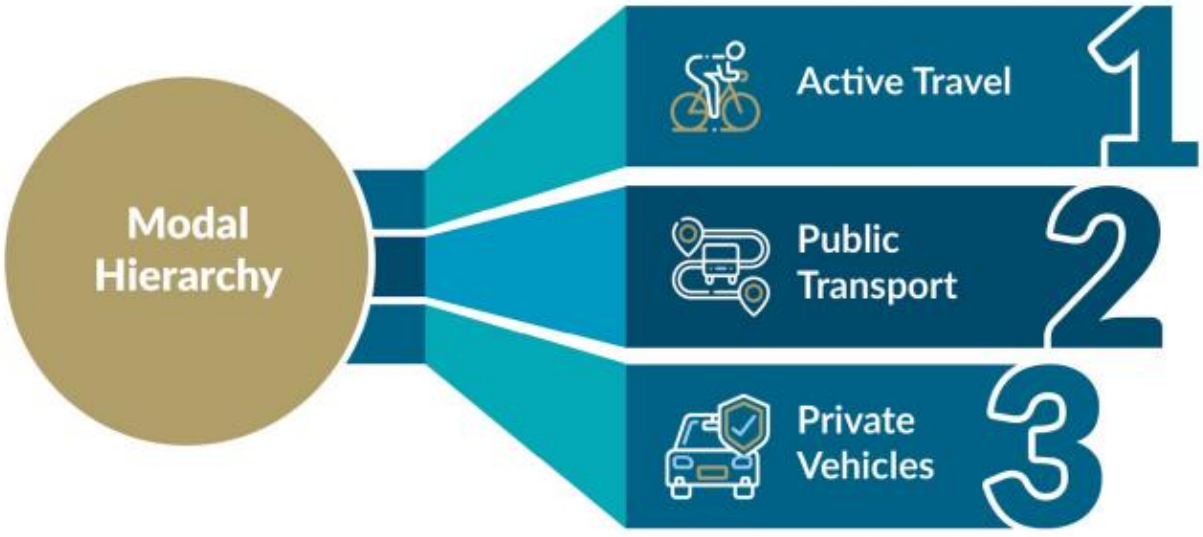


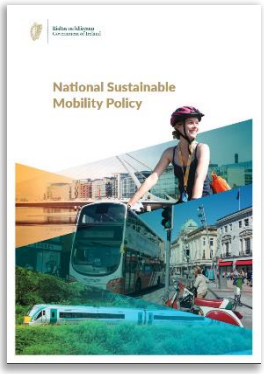
Figure 2-1: Modal Hierarchy Diagram Extract

Active travel is the most sustainable mode of travel. Increasing the share of active travel can reduce the carbon footprint of the transport sector, improve air quality, reduce urban congestion, and bring about positive health impacts as a result of increased physical activity.

Public transport refers to buses, light and heavy rail, and shared transport. Bus and rail, by design, are able to transport large volumes of people and increasing levels of usage can therefore have environmental benefits. While most bus and rail services are subsidised by the State, economies of scale mean that they are more cost-effective in or between areas of higher population density.

Encouraging a shift from private transport to these modes would mean fewer vehicles on the road per traveller and therefore environmental benefits and reduced congestion. As with active travel, the quality of the transport offering— across dimensions including journey times, safety, frequencies and comfort—is very important in attracting users. Private transport includes cars, motorcycles and mopeds. These are low occupancy vehicles which occupy road space, and generally have the greatest contribution to poor air quality and congestion.

2.1.3 National Sustainable Mobility Policy

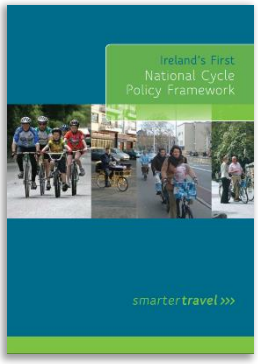


In parallel with NIFTI, the Department of Transport has also undertaken a review and plans to publish a new Sustainable Mobility Policy shortly. This will set out the policy framework for walking, cycling and public transport to support Ireland's overall requirement to achieve a 51% reduction in greenhouse gas emissions by 2030. The new policy will primarily focus on measures to promote and facilitate active travel and public transport for all and, in doing so, encourage less private car usage nationally to support climate commitment.

It will set out a comprehensive set of actions to increase active travel infrastructure provision and improve public transport capacity and services across the country. These will be supported by behavioural change and demand management measures to make sustainable modes the preferred choice for as many people as possible. The Climate Action Plan sets out additional measures to promote other complementary transport mitigation measures such as the switch over to electric car usage and greater use of renewable fuels for transport.

The new policy will build on and replace the existing sectoral policy documents that were published in 2009: Smarter Travel, A Sustainable Transport Future 2009-2020, and the National Cycle Policy Framework.

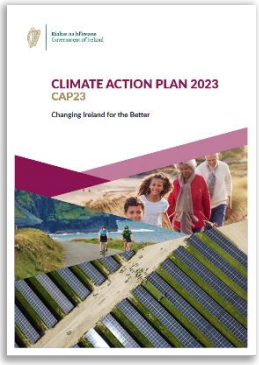
2.1.4 National Cycle Policy Framework 2009 – 2020



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.

2.1.5 Climate Action Plan 2023: Changing Ireland for the Better



The Climate Action Plan 2023 sets out the ongoing urgent response to the climate crisis. It is integral to the National Development Plan 2021 to 3030 by putting climate solutions centrally to the social and economic development of Ireland. Climate Action 2023 has a greater focus on system change.

The plan has identified six vital high impact sectors. One of these sectors is 'Transforming the way we travel'. A target of 50% reduction in emissions is set for 2030. The strategy proposes to reach this goal is to drive policies to reduce transport emissions by improving towns, cities and rural planning and by adopting the Avoid-Shift -Improve approach. This approach involves reducing or avoiding the need for travel, shifting to public transport, walking and cycling and improving the energy efficiency of vehicles.

Specific goals set by this plan to reduce emissions include:

- A change in the way we use our road space
- Reduction in the total distance driven across all car journeys by 20%
- Walking, cycling and public transport to account for 50% of our journeys
- Aim for 1 in three vehicles to be an electric vehicle
- Increasing walking and cycling networks
- 70% of people in rural Ireland will have buses that provide at least 3 daily trips to the nearby town.

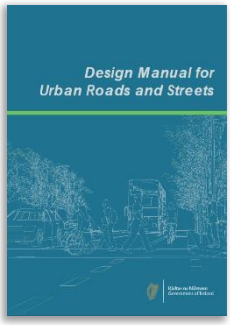
The Government realises that some communities can be 'locked-in' to car ownership without alternative options. Based on the vision of 'to connect people and places with sustainable mobility that is safe, green, accessible and efficient', outcome based indicators are set for 2025. The following is relevant to new development:

- Communicate and demonstrate the well-being and co-benefits that accompany enhanced place-making and sustainable transport behaviour;
- Expand the number of safe, accessible, walking and cycling routes, including through the provision of 500 Safe Routes to School schemes and the rollout of over 1,000 kilometres in active travel infrastructure;
- Enhance the integration of sustainable transport considerations into the spatial planning system;

The following indicators are relevant for 2030:

- Address transport poverty through the Connecting Ireland programme and by prioritising public transport projects and demand responsive services that enhance regional and rural connectivity;
- Communicate the benefits of a shift away from private car usage and facilitate the provision of the required infrastructure and services to bring about a very significant modal shift to public transport and active travel, and away from car journeys (internal combustion engine and electric vehicle (EV)).

2.1.6 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 (2013), 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.

Since its publication, additional advice notes have been publish to build upon the guidelines included within the main report, two which are of particular importance are 'Advice Note 5, Road and Street Drainage Using Nature-Based Solutions' and 'Advice Note No. 6 Junction Tightening'.

2.1.7 Cycle Design Manual

The Cycle Design Manual (CDM) has been prepared by the National Transport Authority (NTA) and overseen by the Department of Transport. It replaces the previous National Cycle Manual, published by the NTA in 2011.

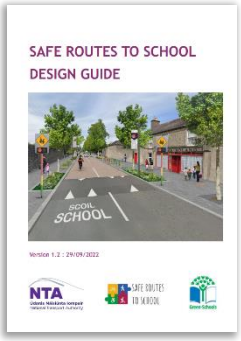
The CDM includes a number of new types of infrastructure such as protected junctions, Dutch style cycle-friendly roundabouts, and parallel crossings which are commonly used in other countries, and will now become an option for cycle infrastructure in Ireland.

2.1.8 Toolkit for School Travel

The Toolkit for School Travel is a document prepared by the National Transport Authority in conjunction with An Taisce and the Department of Transport, Tourism and Sport. The toolkit presents a set of measures for use by schools who are currently not engaged with the Green-Schools programme and who wish to promote ways of reducing car use on the trip to and from school, and to reduce the impact of traffic on the community around the school. The toolkit outlines actions to promote more sustainable travel for the school trip through increased walking, cycling, public transport and car-sharing.

2.1.9 Safe Routes to School

The Safe Routes to School (SRTS) Programme was developed in partnership with the NTA and Green-Schools in 2020 as a response to the need to support schools to increase walking and cycling to school. The aim of this guide is to provide technical guidance on design principles and considerations that will enable Local Authorities, in conjunction with Green-Schools, to create safer, calmer, more attractive routes to school and front of school environments. The guide aims to provide designers with a set of design concepts and ideas, and precedent examples of schemes that have successfully enhanced sustainable access to school.



2.2 Regional Guidance

2.2.1 Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019-2031

The Eastern & Midland Regional Assembly's Regional Spatial & Economic Strategy is a strategic plan and investment framework for shaping future growth and managing regional planning and economic development in the region from 2019-2031. It identifies regional assets, opportunities, and pressures, and provides appropriate policy responses in the form of Regional Policy Objectives.

As part of the Dublin Metropolitan Area Strategic Plan (MASP), the strategy identifies Confey, within the 'North-West corridor', as a strategic greenfield site with capacity for phased development and improved links to Leixlip and adjoining Dublin/Meath lands. The nearby large-scale former Hewlett Packard site and Collinstown site are also mentioned as potential areas to strengthen the employment base for North Kildare. The phasing/enabling infrastructure for these developments is listed as short to medium term and includes a LUAS extension to Maynooth, road upgrades, community and social infrastructure, and wastewater and local water network upgrades.

2.2.2 Greater Dublin Area Transport Strategy 2022 - 2024

The overall aim of the Transport Strategy is: "To provide a sustainable, accessible and effective transport system for the Greater Dublin Area which meets the region's climate change requirements, serves the needs of urban and rural communities, and supports economic growth." Some of the key principles of this study includes:

- Consolidated development as a means of preventing sprawl, reducing the demand for long-distance travel and maximising the use of existing public transport infrastructure and services.
- Focussing development towards public transport services. Transit-Oriented Development (TOD) incorporates the idea that the level of accessibility afforded by public transport infrastructure and services allows for a higher proportion of uses than would ordinary be the considered.
- Mixed Land Uses: An appropriate mix of uses within development areas can potentially reduce the need for longer distance travel. Many of people's daily needs can be provided within walking and cycling distance of their homes.
- Filtered Permeability: Facilitating movement by walking and cycling is a critical element in neighbourhood planning. In particular, the concept of filtered permeability, whereby pedestrians and cyclists can travel through areas and motorised traffic cannot, is important in conferring an advantage on these modes making them safer and more attractive than the car for short trips to local services.
- Urban Design and Placemaking: Placemaking is the process of creating quality places that people want to live, work, invest and spend time in. It is based on a simple principle; that if you plan for people and

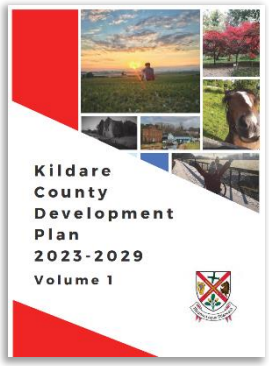
places, you get people and places. Increased traffic and congestion are not the inevitable result of growth. It is the product of choices made to shape our communities to accommodate the private car. Better street design in urban areas, including the presence of active street frontages, will encourage more people to choose to walk, cycle or use public transport by making the overall experience safer, more accessible and attractive. It will lower traffic speeds, reduce unnecessary car use and create a built environment that responds more sympathetically to the distinctive natures of the individual communities and places.

- Planning for Schools: The location and design of schools, and the management of transport requirements for those travelling to schools, are major considerations in land use and transport planning. Driving as the norm at a young age instils the development of a car-culture. Driving also results in a lack of social interaction for children and parents, increases air pollution levels at schools and result in a lack of exercise for children leading to obesity and other associated health issues. Land use and transportation planning should ensure that access by walking, cycling and public transport is a key determinant in the location of new schools.

- The Road User Hierarchy: In order to encourage the use of sustainable modes of transport, the design of our networks must consider a hierarchy of users and provide for them in that order. Almost all journeys begin and end on foot. In addition to those who walk for the entirety of journeys, public transport users have to walk to and from stops and stations and car drivers often need to walk from their parking spaces to shops and places of work. As such, the pedestrian is placed at the top of the user hierarchy. A high priority must also be given to cyclists, because trips by this mode have a great potential to replace trips by private car, most specifically for short to medium distance trips, but increasingly for longer trips as e-bikes extend the range of this mode. Due to the significantly greater numbers of people that can be carried by bus and tram, public transport needs to be prioritised over the private car in the design of our transport networks. Below that, access for goods delivery and services should be considered next, in particular for serving the economic needs of town and city centres.

The Greater Dublin Area Transport Studies: North Kildare document was prepared to inform the overall GDA transport Strategy, and provides a suite of recommendations for the North Kildare area. These include public transport options focusing on the radial corridor along the existing rail line, supporting upgrade as part of DART+ along with supporting orbital bus services, specifically noting Confey station as a key interchange with the ‘greatest potential to improve modal shift’. The recommendations also include cycle interventions and behavioural change measures to better market public transport and active travel.

2.2.3 Kildare County Development Plan 2023 – 2029



Chapter 5 of the Kildare County Development Plan 2023 – 2029 is the Sustainable Mobility & Transport section. The aim set for sustainable mobility and transport is to promote and facilitate ease of movement within and through County Kildare, by integrating sustainable land use planning and a high-quality integrated transport system; and to support and prioritise investment in more sustainable modes of travel, the transition to a lower carbon transport system, and the development of a safer, efficient, inclusive and connected transport system.

The overall policy direction is also to adopt the Avoid-Shift-Improvement approach, but also the Decide and Provide approach to plan for the travel demand deemed necessary. This approach involves on a preferred future that is desirable and achievable and providing a development path best suited to achieving it.

The Council recognises the overall benefits of sustainable modes of transport, which include reduced traffic, reduced number of road accidents, improved air quality, lower levels of noise pollution, improved physical and mental health of population and economic benefits.

It is the policy of the Council to prioritise and promote the development of high-quality, suitable, safe and sustainable walking and cycling pathways, to promote sustainable development in delivering major improvements to the public transport network and to encourage a shift from car-based travel to public transport that is accessible for all, regardless of age, physical mobility or social disadvantage. With this in mind the Council set the following targets for the lifetime of the Plan:

- To reduce car based journeys to work from the current 74% to 50%;

- To reduce car based journeys to education from the current 50% to 40%;
- To increase walking trips to work from 6% to 20% and from 1% to 10% for cycling;
- To increase walking trips to education from 28% to 50% and from 2% to 15% for cycling;
- To increase bus trips to work from 5% to 13% and from 5% to 14% for rail trips;
- To increase bus and rail trips to education from 20% to 25%;
- To increase car share trips to work from 4% to 8%.

2.3 Local Guidance

2.3.1 The Leixlip Local Area Plan (LAP) 2020 – 2023 (extension to 2026)

The Leixlip Local Area Plan (LAP) sets out an overall strategy for the proper planning and sustainable development of Leixlip in the context of the Kildare County Development Plan 2017-2023 and other regional plans applicable to this area.

Section 8 of the LAP includes the Movement and Transport section for Leixlip and the overall transportation objective of the LAP is *'To promote and facilitate a sustainable transport system for Leixlip that prioritises walking, cycling and public transport and provides an appropriate level of road infrastructure, road capacity and traffic management to support future development.*'

A Strategic Transport Assessment (STA) carried out by AECOM in 2019 was undertaken to inform the LAP. It considers active transport modes, public and private transport modes and provides guidance on the transportation infrastructure to support the growth and expansion of Leixlip. This report is summarised below in Section 2.3.2 below.

The Council identified a number of objectives to deliver a high quality, permeable and attractive pedestrian and cycle network for Leixlip. It specifically outlines the following objectives:

- To improve, maintain and enhance Captain's Hill from a pedestrian and cycle perspective.
- To facilitate the development of new pedestrian and cycle links across the canal and railway that will enhance connections to the town.
- To provide a footbridge over the River Rye with associated connections to connect Confey Community College to nearby housing estates.
- To improve access, security and safety along the Royal Canal towpath, including:

  (i) Improved pedestrian access from Cope Bridge to the towpath;

  (ii) Improved car-parking facilities adjacent to Royal Canal entry points at Cope Bridge and Louisa Bridge; and

  (iii) The integration of the towpath with the new development at Confey.

According to the Plan, bus priority is critical to the success of sustainable transport modes. Bus priority at congested points needs to be addressed through the provision of bus priority signals at Cope Bridge together with bus priority at junctions within the town where feasible. These measures are proposed as interim measures before the upgrade of Cope Bridge.

The following specific objectives to the Confey Masterplan have been identified:

- MT1.5: To facilitate the development of new pedestrian/cycle links across the canal and railway that enhance walking and cycling options and connect the new neighbourhood at Confey and the Royal Canal Greenway to existing residential areas, public spaces, Confey Station and facilities within Leixlip

- MT1.6: To provide a footbridge over the Rye Water with associated paths to connect Confey Community College to nearby housing estate
- MT1.12: To improve access, security and safety along the Royal Canal towpath, including: (i) Improved pedestrian access from Cope Bridge to the towpath; (ii) Improved car-parking facilities adjacent to Royal Canal entry points at Cope Bridge and Louisa Bridge; and (iii) The integration of the towpath with the new development at Confey.
- MT2.1: To focus people-intensive land uses around existing and planned public transport nodes and to improve access to services.
- MT2.2: To support and facilitate the delivery of electrification and upgrading of the Dublin – Sligo rail line from Connolly Station to Maynooth, including improvements to Cope Bridge.
- MT2.4: To engage with the National Transport Authority (NTA), Dublin Bus, Irish Rail, Local Link and other stakeholders to improve the provision of public transport in Leixlip including the provision of bus priority measures to ensure the free running of bus services through the town centre and the provision of bus turn around facilities proximate to Confey Station.
- MT2.5: To provide for improved access to Confey railway Station in consultation with the NTA and Irish Rail supporting the sustainable development of the Confey area.
- MT2.9: To review the configuration and movement of pedestrian, cycle, public transport and private vehicle modes at the junction of Main Street and Captain's Hill in order to prioritise the sustainable movement of people.
- CON 1.1 (b): The masterplan should include (but not be restricted to): (iii) Transport Impact Assessment including proposals (if any) for Captain's Hill (R149). (iv) Upgrades to Cope Bridge. (v) Details of any upgrade works to Captain's Hill, to include entrances/exits to existing housing estates from same

In terms of roads the LAP recognises that strategic road access is required for any development to the north of the Royal Canal and Cope Bridge. It is important to account for current constraints in the town and to develop measures to improve accessibility particular for the residential areas adjacent to Captain's Hill.

Specific roads objectives relating to the Confey Masterplan include the following:

- MT3.1 (i): The improvement of Cope Bridge to provide two lanes of traffic, segregated cycle tracks and footways.
- MT3.1 (iii): Improvement of the L1015 and L1014 west of Confey;
- MT3.2: To support the implementation of the following road improvement schemes, subject to the availability of funding and environmental and conservation requirements: (i) The improvement of the bridge at Confey Railway Station to provide two traffic lanes, segregated cycle tracks and footways and the adjacent junctions at the entrances to Glendale and River Forest estates. (ii) The realignment of the R148 (Maynooth Road) at Collinstown in line with the approved Part 8. (iii) Improvement of the L1015 and L1014 west of Confey. (iv) The improvement of the junction of Main Street and Mill Lane. (v) Capacity enhancements of the M4 Leixlip to Maynooth as provided for in the NTAs Transport Strategy for the Greater Dublin Area 2016-2035 and the Regional Spatial and Economic Strategy
- MT3.3: To implement the recommendations of the Leixlip Strategic Transport Assessment including road improvement measures required to provide access to and facilitate the development of a new neighbourhood at Confey and improved accessibility over the canal and railway line to facilitate permeability and connectivity.
- MT3.5 (i): The realignment and improvement of the R149 (Confey Road) between the L1015 (Kellystown Lane) and the County boundary with Fingal.
- MT3.5 (ii): The upgrading of the L1015 and L1014 or an alternative north-south connection west of the R149.
- MT3.6: The improvement of the intersection between the R149 (Captain's Hill) and the R148 (Main Street)

- MT3.11: To ensure that all significant development proposals for KDAs and masterplan lands at Collinstown, Confey and the Liffey Business Campus (former Hewlett Packard site) are subject to Transport Impact Assessments (TIA), to be carried out in accordance with the Traffic and Transport Assessment Guidelines (NRA, 2014) and informed by the 'Area Based Transport Assessment' Advice Note (TII and NTA. 2018).

Map 1 'Leixlip Transport Map' included as part of the LAP provides an overview of the various transport objectives for Leixlip and Confey. Figure 2-2 shows an extract of the Confey area as shown in Map 1.

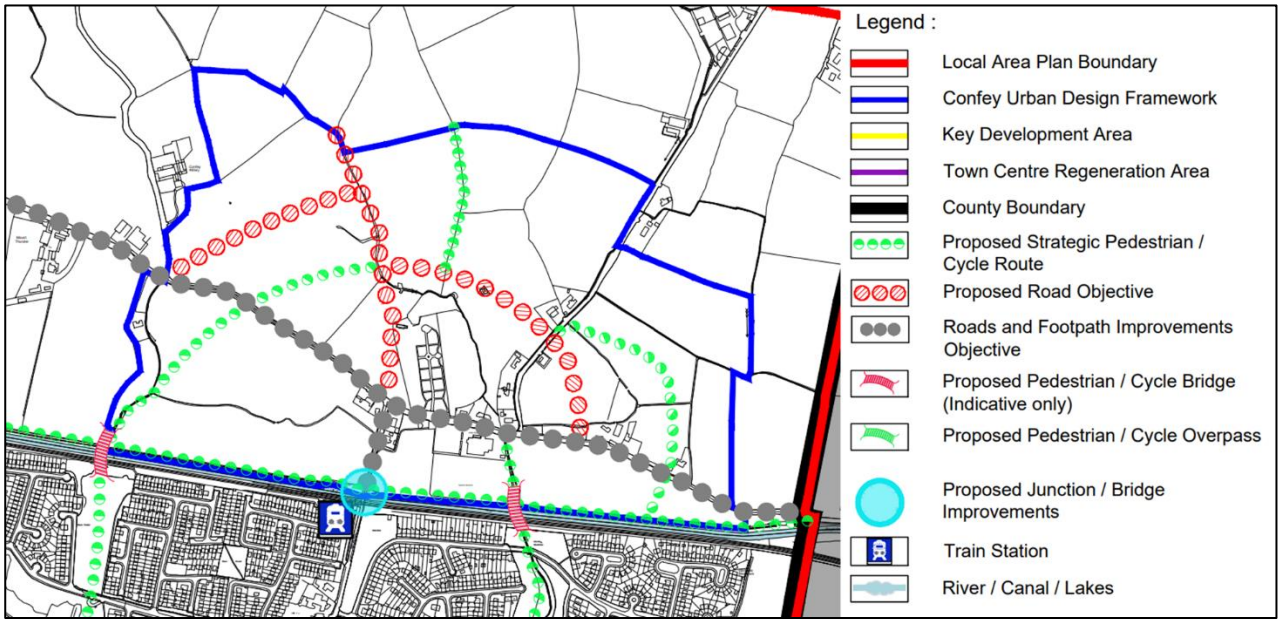
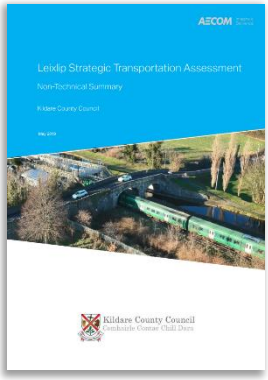


Figure 2-2: Extract from Map 1 in the Leixlip LAP 2020-2023 (as extended to 2026) showing the Confey area

2.3.2 Leixlip Strategic Transportation Assessment (2019)



Overview

As referenced in Section 2.3 above, the Leixlip Strategic Transportation Assessment was produced to inform the Leixlip Local Area Plan 2020-2023. The STA follows the planning and policy framework established by Project Ireland 2040, the Regional Spatial and Economic Strategy, and other relevant documents. The STA also considers the existing and future transport context of Leixlip, including population and land use, public transport, road network, modal split, origin-destination analysis, active mode permeability, planning assessment, and social inclusion and impact.

The document presents a series of transport interventions for each mode of transport: road, active modes, bus, and rail. The interventions are developed and assessed using a multi-criteria analysis (MCA) based on relevant data and a strategic traffic model. The MCA considers the benefits, costs, and impacts of each intervention on various criteria such as accessibility, safety, environment, economy, integration, and deliverability. The document identifies the preferred options for each mode and provides a phasing matrix that shows the recommended timing and level of development for each intervention, depending on the number of residential units provided at Confey. The document concludes with some next steps for further study and monitoring of the transport situation in Leixlip.

Road Options Assessment

The road infrastructure assessment section of the Leixlip STA report examines a number of options for potential new road infrastructure to the west and to the east of Confey. To the west, five different route options were considered. The options (shown in Figure 2-3) and descriptions are summarised as per the STA report below:

Option 1: Connect the Confey development lands to the R148 (west of Intel) via the L1015 and L1014. The existing infrastructure along this route would need to be upgraded in order to cater for an increased traffic demand. Particularly along the L1014, the existing Kellystown Bridge over the Rye Water would need to be widened or replaced; it currently operates as an unsignalised shuttle system.

Option 2: Connect the Confey development lands to the R148 (west of Intel) via a new, direct road south of the L1015 which would join the L1014 adjacent to Kellystown Bridge. This route option would offer a shorter journey time but would require more land acquisition with likely environmental constraints. In addition, a new junction would be required to connect the new road to the L1014.

Option 3: Connect the Confey development lands to the R148 (east of Intel) via a new, more direct road south of the R149 and parallel to the Royal Canal. This option would travel close to the Royal Canal and have a high environmental impact; cognisance would have to be taken of the protected monument (Leixlip Spa) and Wildlife Park (Leixlip waterfall) in close proximity to this route option.

Option 4: Connect the Confey development lands to the R148 (east of Intel) via a new, more direct road south of the R149 and parallel to the Royal Canal. would pass via the eastern carpark of Intel to join the R149 at a new junction or roundabout.

Option 5: Connect the Confey development lands to the R148 (east of Intel) via a new, more direct road south of the R149 and parallel to the Royal Canal. would require a new bridge across the Royal Canal and railway. This route option would avoid impact on Leixlip Spa, Leixlip waterfall and Intel site but would have environmental consequences and visual impacts, as well as significant infrastructure costs i.e. the construction of a new junction at Station Road / Accommodation Road as well as a new bridge across the Royal Canal and railway.

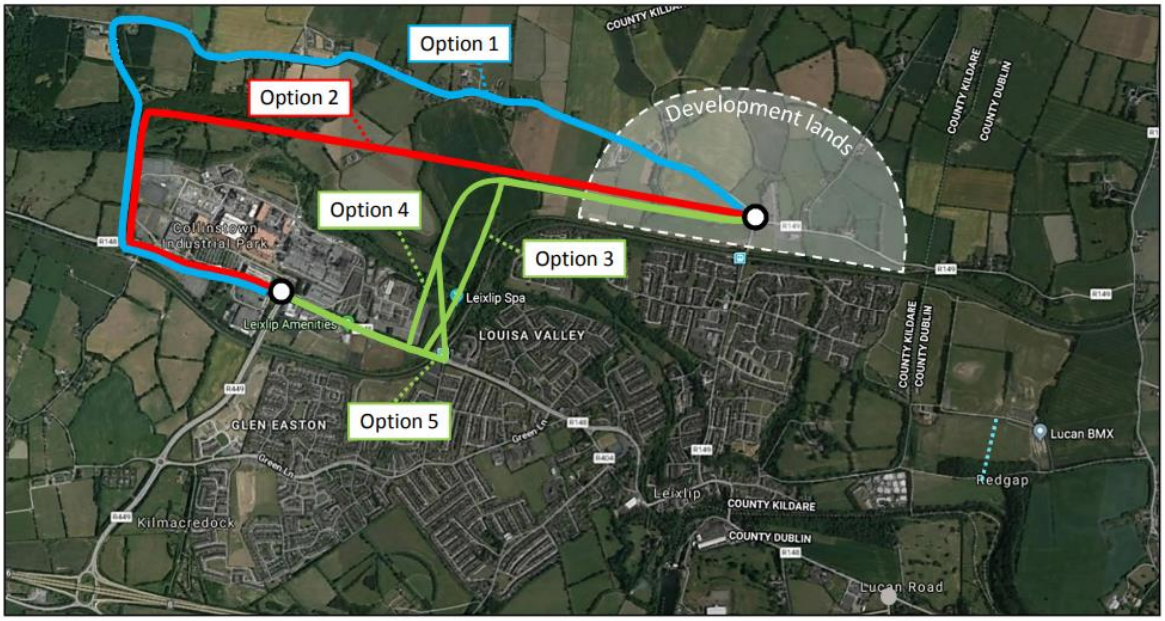


Figure 2-3: Western Route Road Options Considered (extract from AECOM Leixlip STA 2019)

To the east, two options were assessed, the DoMin option and a new M4 link as shown in Figure 2-4 below. The DoMin option comprises two existing routes to connect Confey development lands to junction 3 of the N4 in Lucan; via the town centre or the R149 / Clonee Road. The eastern connection towards Lucan (along the R149 and L3005) would require only minor, localised improvements to junctions, footpaths, and particular isolated points of poor alignment. The southern route to Leixlip would require upgrades to Cope Bridge, for which two possibilities are outlined, upgrade of the existing bridge, or construction of a new bridge alongside the existing one. (Note: Since the publication of the 2019 STA, the upgrade of the existing bridge has been proposed as part of the DART+ West Railway Order submitted to An Bord Pleanála)

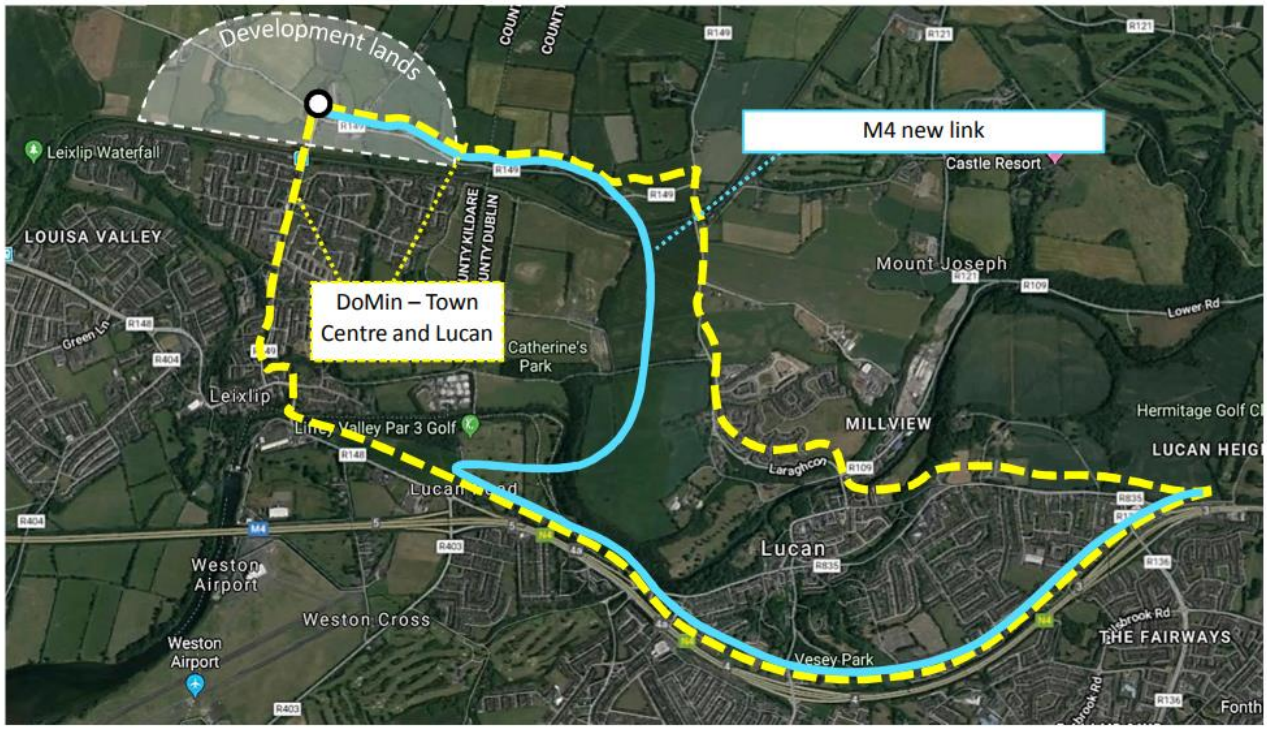


Figure 2-4: Eastern Route Road Options Considered (extract from AECOM Leixlip STA 2019)

As part of the STA, a Multi Criteria Analysis (MCA) was conducted for both the western and eastern routes. This assessment concluded in the recommendation of Option 4 of the western routes, and the DoMin scenario for the eastern route, shown below in Figure 2-5 and Figure 2-6

Option 4, as shown below in is the proposed new road heading to the southeast of the masterplan, connecting to the R148 through the eastern edge of the Intel site. Since the production of the 2019 STA, changes to the Intel campus have resulted in this alignment no longer being possible, and so this route is not considered as part of this assessment. The report notes that should Option 4 be unfeasible, Road Option 1 becomes the next best option and should be progressed as an alternative. This option is therefore the one being considered as part of this report going forward.

Figure 2-5: 'Option 4' Western Road Recommendation (extract from AECOM Leixlip STA 2019)

The DoMin eastern connection option proposes no new road infrastructure, but upgrade of the existing roads towards Lucan, including the R149 and L3005 route to the east, along with Captains Hill to the south. Objective TM078 of the Kildare County Council Development Plan 2023 -2029 states: "Protect the amenity of St. Catherine's Park, no road proposal shall be considered by this Council through the park within the Council's ownership or jurisdiction." Therefore, due to this strong statement against any options through the park, the STA study did not consider any possibility of any road infrastructure affecting St Catherine's Park.

The route to the south along Captains Hill, however, has significant potential to be upgraded and can form an important part of unlocking the land in terms of pedestrian, cycle, bus, and vehicular access.

Figure 2-6: DoMin Eastern Road Connection Recommendation (extract from AECOM Leixlip STA 2019)

2.3.3 Confey Urban Design Framework (UDF)

The Confey Urban Design Framework (UDF) was prepared as part of the Leixlip Local Area Plan ('the LAP') 2020-2023 (as extended to 2026) to ensure that any future development is carried out in a sustainable manner. The UDF was underpinned by the policies and objectives set out in Section 12.7 of the LAP in particular 'Policy CON1 – Confey'.

The intention of the UDF was to act as a preliminary design guide for the future development of the lands, informed by background research and baseline analysis in respect of green infrastructure and ecological enhancement, surface water and drainage, land use, density and building heights, land capacity and indicative typologies, character areas, and phasing.

The Masterplan replaces the UDF as an updated version of Appendix 1 of the LAP and continues to incorporate the vision, design principles and concept from the UDF, and follows on from the preliminary process undertaken during the preparation of the LAP, and provides area specific and detailed design guidance..

The UDF sets out the following Transport and Movement principles which have informed the STMR and the Masterplan:

- To fully realise the potential of the Royal Canal Greenway as an axis for internal trip movements within the new neighbourhood and to the existing built-up area of Leixlip and beyond.
- To maximise the potential of increased public transport services for the new neighbourhood through permeable design principles ensuring a safe and convenient means of access for all residents to such facilities and surrounding areas.
- To create a neighbourhood that is highly permeable and accessible and links attractive streets, squares, open spaces and parks.
- To promote walking and cycling over car travel through proximity to local facilities and by the provision of a carefully planned high quality network of footpaths and cycle paths.

- To provide a high quality, accessible and safe public domain.
- To ensure a hierarchy of spaces, from public to private, that is legible and easy to understand, where public and private spaces are clearly distinguishable.
- To develop a new street (extension of Captains Hill (R149)) that will facilitate connectivity to Captain's Hill in a manner that places a strong emphasis on pedestrian and cycle movements.
- To provide for robust and adaptable development particularly along the new streets through innovative design.

The over-arching concept for the development of the Confey Masterplan is to create a neighbourhood which maximises the use of sustainable modes of transport. Such measures will be achieved through the development of a new street along the R149 which will facilitate through traffic but in a pedestrian/cycle friendly manner ensuring ease of access to Confey Railway Station and the Royal Canal Greenway. Alongside the new street, the central community hub will act as focal point and intersection for all pedestrian/cycle and traffic movements within the overall framework area.

The UDF outlines the following works required to deliver the Movement and Access Strategy which have informed the STMR and the Masterplan:

- The replacement of Cope Bridge to facilitate the DART Expansion Programme and connectivity to/from Captains Hill to the framework lands;
- Two pedestrian/cycle bridges across the Royal Canal and railway line east at Glendale Meadows and connecting through to St. Catherine's Park and west at Riverforest Park connecting to existing services and amenities within the wider Leixlip area;
- A dedicated pedestrian/cycle connection extending from each of the proposed new pedestrian/cycle bridges to the east and west along a c. 400m circumference from Confey Railway Station extending through a proposed new parkland to the northeast;
- Dedicated and passively supervised new connections off the Royal Canal Greenway providing ease of access to the new street;
- Pedestrian and cycle paths will be provided along the principal roads and together with other linkages will maximise pedestrian and cyclist permeability in the area. Junctions will be designed in order to give greater priority to pedestrians and cyclists than to vehicular movements;
- Upgrades to the R149 north of the railway line re-defining this area as a street;
- Connections from the new street to backlands particularly the proposed new car park which will provide for a dual usage accommodating retail needs with limited capacity for commuter trip movements;
- The provision of a new arterial route along a c. 800m circumference from Confey Railway Station connecting the L1015 at Mount Thunder the L5051 and the R149 via an upgraded layout for the L5052; and
- Local link connections to and through identified development lands connecting the outer c. 800m orbital route to the inner 400m radius routes.

The overall framework layout will ensure that all future residents will be within a c. 5-minute walk from the new street/neighbourhood centre and the proposed community hub. Sustainable forms of transport such as walking, cycling along the new street and main arterial routes shall be prioritised through the development of permeable links, maximising pedestrian/cycle linkages to this area, the new Community Hub and Confey Railway Station. It is envisaged that the presence of the train station will ensure a high proportion of trips outside the Framework lands will be undertaken by public transport.

3. Transport context

3.1 Site Location

The Confey Masterplan area is located on green field lands located to the north of Leixlip town in the northern parts of County Kildare. Leixlip is located around 15km from Dublin City Centre and connected to surrounding urban areas by the Dublin to Sligo railway line. The railway line runs in an east west direction parallel to the Royal Canal, segregating the Confey Masterplan from Leixlip town. The railway line places the Confey Masterplan in a strategic position due the Confey railway station which provides a direct high capacity link to Dublin, Maynooth and other urban nodes along the railway line which offers employment, social and community opportunities.

The Royal Canal is a major asset directly to the south of the Confey Masterplan which provides excellent opportunity to provide attractive active travel linkage to surrounding local nodes and urban areas. Cope Bridge and Captain's Hill are providing a direct link between the Confey Masterplan and Leixlip town centre. The linkage that this road and bridge provides is currently constrained by the narrow width of the bridge and needs to be reconfigured to improve north south accessibility. Options are available to address this issue together with new connections to the east and west of Cope Bridge to provide a development that is truly integrated with the existing Leixlip urban area.

There are existing road links through the Masterplan area to the east, west and north which provides the opportunity to create connections to Ongar / Blanchardstown, Lucan, Intel and Maynooth by reconfiguring these routes to offer a higher level of road safety and to cater for all modes of travel.

The Masterplan area is located at a position where significant public transport improvements are planned. These include the Dart + West railway upgrade and the extension of the BusConnects C-Spine towards Confey (Figure 3-1).

The Confey Masterplan are therefore considered to be ideally located to accommodate large scale mixed use residential and community uses development which can be integrated with the existing urban fabric, linked to existing and planned transportation infrastructure, capitalise on local assets and be developed to have an active town centre with active streets and where shopping, community and educational services are within 10 minutes walking and cycling distance.

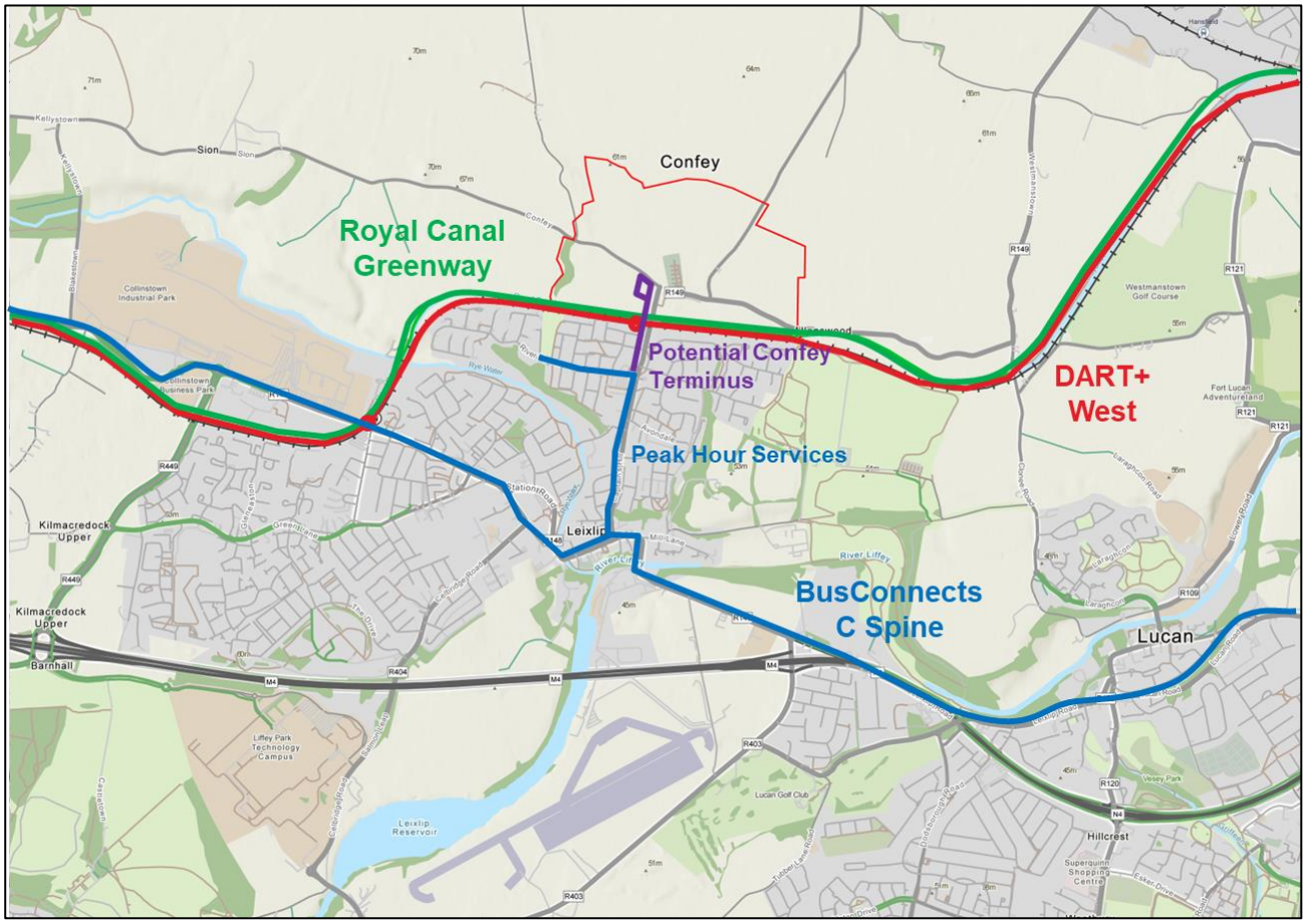


Figure 3-1: Transport Context Overview

3.2 Existing and Future Population and Land Use

3.2.1 Population

Since the Confey Masterplan are located on greenfield lands, the current population living on the lands are low. The Masterplan area is however located close and within travel distance of Ireland's capital, Dublin and according to the 2022 Census, it is estimated that the current Dublin City and Suburbs area population was 1,263,219 people.

Within closer proximity of the Masterplan area there is a number of major population centres. As per the 2022 Census, the settlement of Leixlip had a total population of 16,733 persons, which represented a slight increase on the 2016 population of 15,504 persons. Maynooth had a population of 17,259 people, while Celbridge had a population of 20,601.

The Masterplan area is therefore located close to a large population catchment within close proximity and reasonable travel distance and time. The population distribution within the vicinity of the masterplan is spatially shown in Figure 3-2.

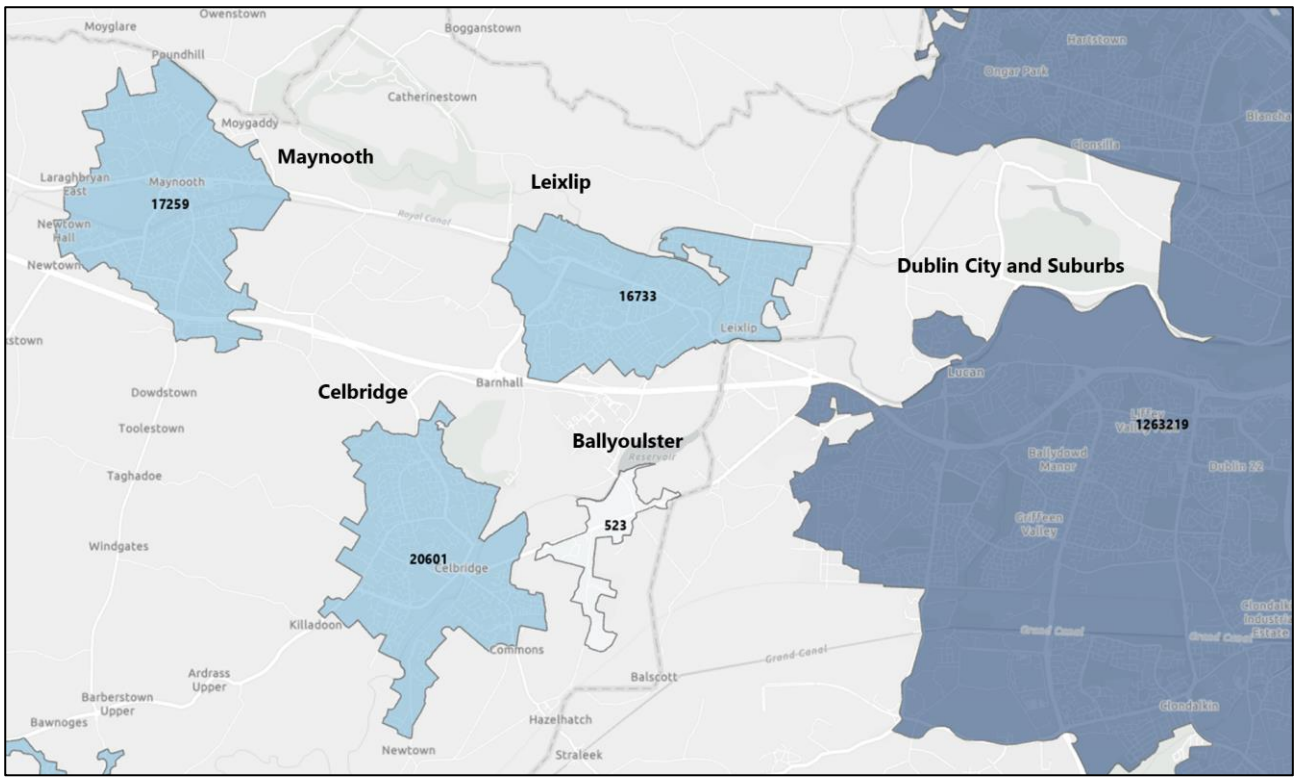


Figure 3-2: Population Distribution within the vicinity of Confey (Census 2022 Built Up Areas)

Relevant planning policies applicable to the Masterplan area foresee population growth within the vicinity. These policy documents range from National to local level and includes the following:

- The National Planning Framework and the Regional Spatial and Economic Strategy set the Kildare County population target as 254,000 persons to 2026, estimating an additional 31,496 persons to the population of 222,504 across the County in 2016 Census.
- The Metropolitan Area Strategic Plan for the Dublin Metropolitan Area, in which Leixlip is located, identifies a number of strategic development areas including Leixlip/Confey in recognition of the area's location and proximity to the Dublin – Maynooth railway line.
- The Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019-2031 recognises that Leixlip, through its identification within a 'Strategic Development Corridor', will play a contributory role in supporting future residential and employment services for the DMA.
- The estimated residential capacity for Leixlip, as set out in the Leixlip Local Area Plan 2020-2023 (as extended to 2026) is 3,315 no. units, of which it estimated 1,765 no. units for the lands at Confey
- The Local Area Plan acknowledges that the future strategic direction for the expansion of Leixlip will be focused around the rail-based site at Confey.

3.2.2 Land Use

Currently the Masterplan area is mainly agricultural in nature. There are some farm houses with barns, sheds and outbuildings and houses located next to roads following through the area. Within the vicinity of the Captain's Hill / R149 junction the GAA club is located to the east of Captain's Hill while the cemetery is located to the north of the R149.

The Leixlip LAP 2020 to 2023 (as extended to 2026) outlines the land use zoning for the Masterplan area which is shown in Figure 3-3. The majority of the land is zoned for new residential development which is clustered around a mixed use node focussed around Confey railway station. The area around the cemetery and to the north of it is zoned for community and educational purposes. Land portions have also been zoned for strategic open space as well as open space and amenity which provides the opportunity to provide a permeable urban structure. The proposed zoning is centred on the Captain's Hill R149 junction and provides

the opportunity for a compact urban structure where all services and facilities is within a 5 minute walking or cycling distance.

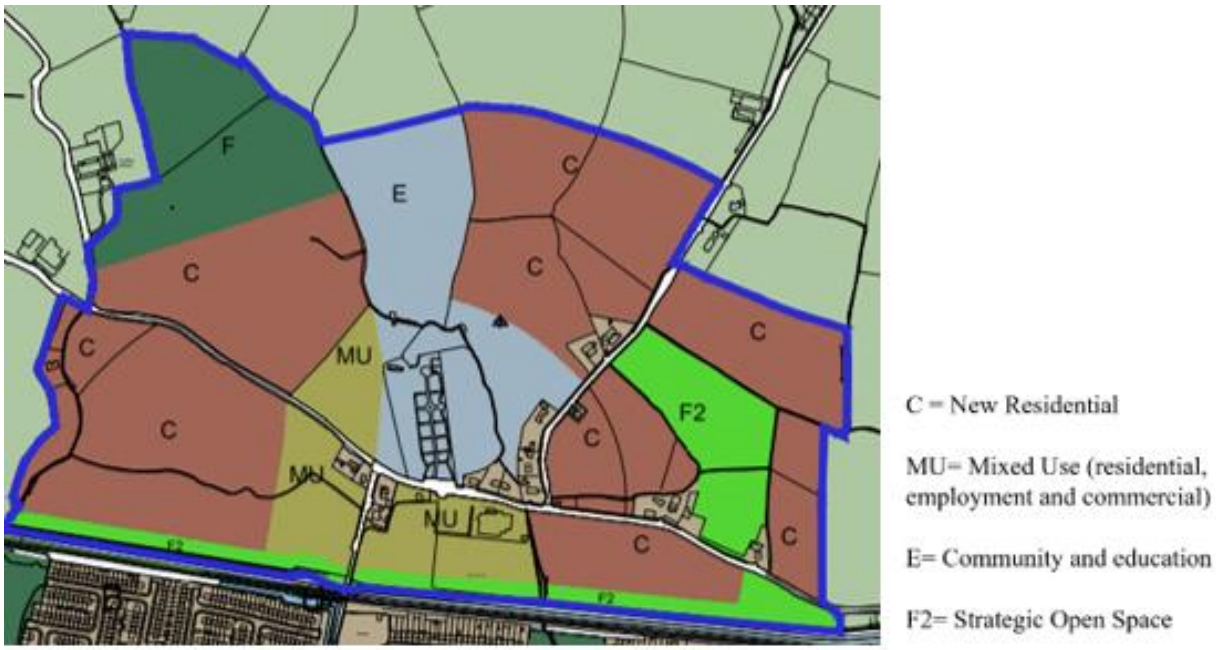


Figure 3-3: Land use zoning in the masterplan area

3.3 Current Modal Split

Figure 3-4 to Figure 3-6 below show the mode split for work trips, school trips, and the overall split for Leixlip based on the 2016 census. Work trips are predominantly made by car, with 58% of people opting to drive a car, along with 5% travelling by van and 3% as car passenger resulting in a total of 66% of people traveling to work by private vehicle.

The mode split for school trips differs dramatically from the work trip mode split, with 42% of trips being made on foot, and 29% of trips being made by car. The high level of walking trips could be attributed to the location of the schools in the town, which are all relatively central, and surrounded by residential areas. This is also supported by the high level of permeability and walking routes between the different housing estates, minimising walking times and providing safe routes to the schools.

The current overall percentage car based trips is 40% while a significant percentage (18%) of people walk to destinations. 20% of trips is by public transport including 11% by bus and 9% by train.

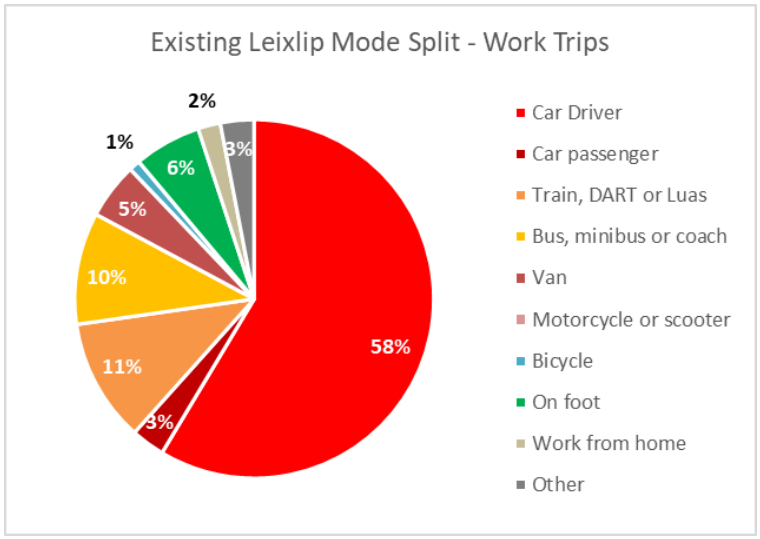


Figure 3-4: Mode split Work trips in Leixlip as per Census 2016

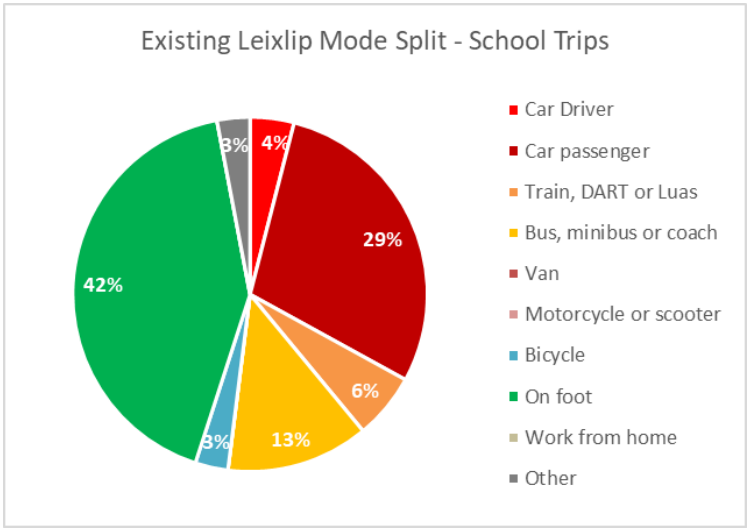


Figure 3-5: Mode split for school trips in Leixlip as per Census 2016

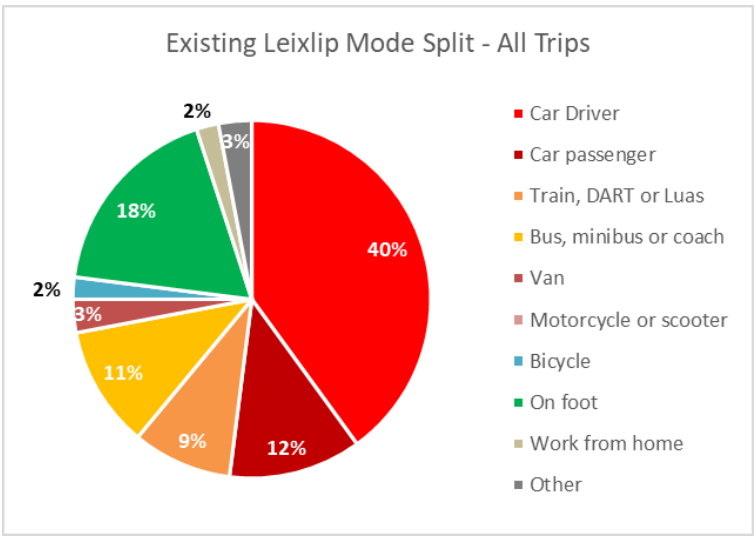


Figure 3-6: Overall ode split for all commuting trips in Leixlip as per Census 2016

Figure 3-7 shows a predicted 'status-quo' modal split for Confey, which is based on a hypothetical 'typical' development being constructed in Confey in which no sustainable accessibility measures are provided. This predicted mode share is based on the existing Leixlip mode share, but accounts for the unique aspects of the location of the Confey Masterplan itself.

- A 15% mode share is expected for trips taken by train/dart compared to 9% in Leixlip due to the close proximity of the Confey railway station and the proposed DART+ West upgrades.
- An increase in cycling is also expected as a result of improvements in infrastructure, as outlined in the GDA Transport Strategy. Cycling in the 'Status Quo' scenario for Confey is estimated at 3% compared to the current 1% for Leixlip. However a small decrease of 1% in walking is estimated.
- The car travel mode share is expected to be 52% in comparison with the 58% of Leixlip as the sustainable transport advantages outlined above is expected to have an impact on typical travel patterns.

Additional measures are explored within the remainder of this report to promote even a higher sustainable transport mode share and to reduce potential car trips. These are discussed in Section 3. The potential mode split for the Confey Masterplan are revisited later in this report to take cognisance of measures proposed.

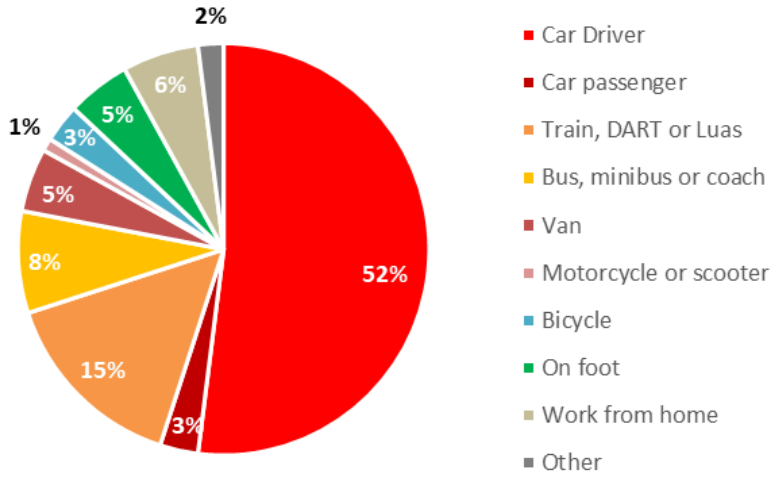


Figure 3-7: Estimated 'Status Quo' mode split for work trips in Confey

3.4 Current Origin-Destination Analysis

Figure 3-8 shows the travel patterns to/from Leixlip for work trips, as per the 2016 Census data as an indication of how work trip patterns to the Masterplan area may emanate. The POWSCAR data provide information on the place of work, school or college for each person surveyed and aggregate information at the electoral district level. This provides a rough estimation of the number of commuting trips to/from an area at morning peak. The census data shows that including outcoming, incoming and internal trips there are just over 12,000 trips made to and from Leixlip at morning peak.

During the morning peak, more than 4,800 of trips are outbound from Leixlip to other destinations. A large portion of these trips (more than 1,000) travel to Dublin, while there are also high volumes of trips made to and from local towns including Maynooth, Celbridge and Lucan. These towns are located too far from Leixlip to walk to, but can potentially be reached by bus, train (in the case of Maynooth) and by bicycle.

Leixlip itself is also a major trip attractor and 32% of trips made during the morning peak is incoming trips. Intel is located adjacent to Leixlip and can account for many of these trips. The attractiveness of this town as an employment hub is expected to increase with the planned Area Q: Enterprise and Employment area next to the R449. The majority of the incoming trips to Intel is from nearby towns within the vicinity. Many of these trips can shift from car based trips to potentially rail, bus or bike trips depending on how much the linkage by these modes of transport is improved.

28% of trips are internal trips within Leixlip. This percentage represents the potential of trips that can be provided by active modes of transport.

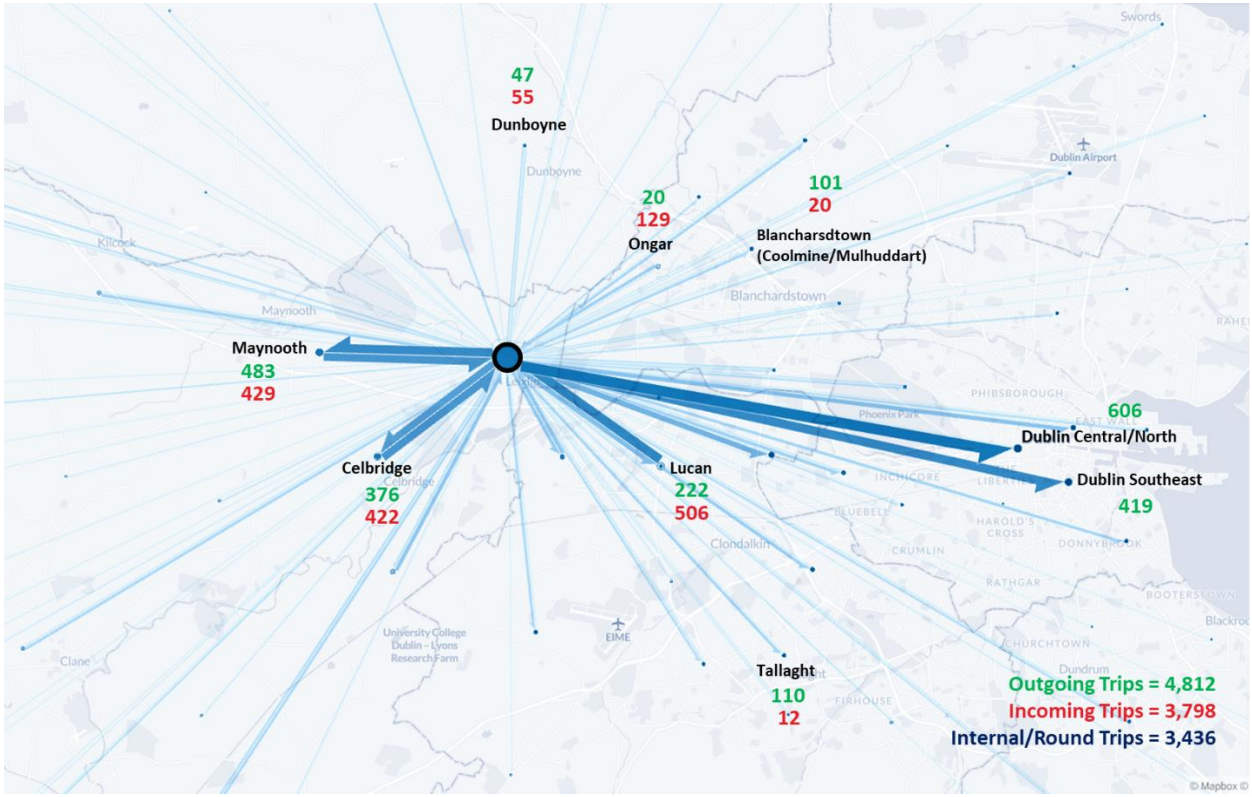


Figure 3-8: Origin-destination analysis as per Census 2016

3.5 Planned Developments in the area

The Leixlip Local Area Plan 2020-2023 (as extended to 2026) identifies three key development areas (KDA) as strategic lands capable of accommodating future residential and employment growth. These include the Wonderful Barn KDA, Celbridge Road East KDA, and Leixlip Gate KDA (off Green Lane) as shown in Figure 3-9. The Wonderful Barn KDA has already been developed while the Leixlip Gate KDA is partially developed. Development has not started yet at the Celbridge Road East KDA. It is however assumed that all of the KDA lands will be fully developed within the next few years and for purposes of this study it is assumed that it will be fully occupied developments with the opening year of the Confey Masterplan first development phase.

Another significant proposed land use is Collinstown industrial area (Area Q: Enterprise and Employment). This area lies to the south of Intel and to the west of the R449 and are identified as strategic employment lands in the Leixlip LAP 2020-2023 (extended to 2026). Development of the lands are subject to the preparation of a masterplan to be agreed with the planning authority. This is an area of over 50 Ha and it is expected that it would strengthen and diverse the available employment, service and shopping opportunities in Leixlip significantly. The development of this area is expected to provide a great opportunity to promote sustainable transport within Leixlip as new employment opportunities will become available closer to living locations which reduces travel distance and the need for motorised travel and increases the viability of using active modes of transport and the feasibility of providing local public transport services in Leixlip and surroundings. Following the alignment of the Royal Canal Greenway, the Confey Masterplan are 3km away from Area Q. This distance might be too far for some to comfortably walk on a daily basis but is certainly within cycling distance or can be accommodated by a frequent local public transport service.

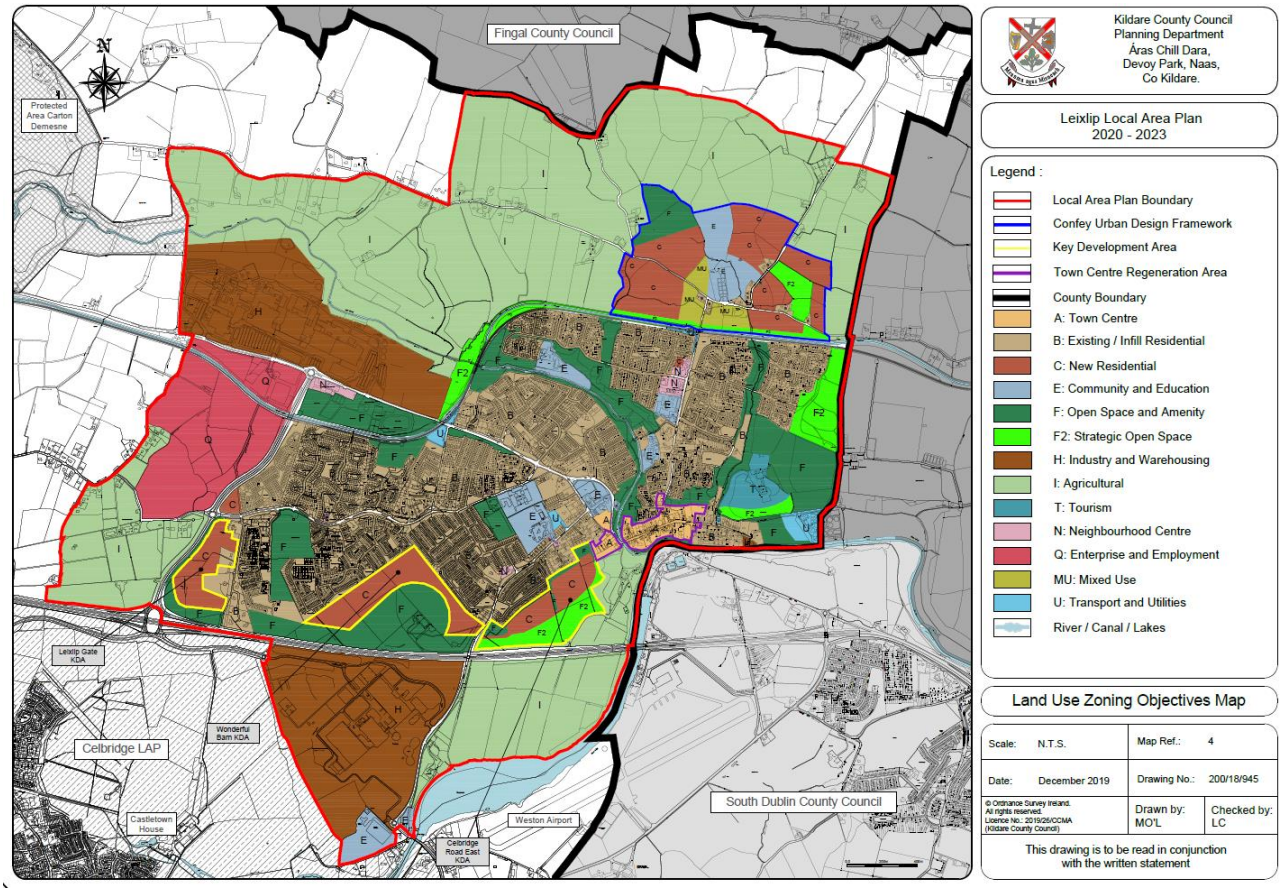


Figure 3-9: Land Use and Zoning Objectives

3.6 Active Travel

3.6.1 Existing Pedestrian and Cycle Network

3.6.1.1 Pedestrian Network

There is no pedestrian infrastructure along the roads within the Masterplan area at present and pedestrians are forced to walk in traffic lanes where sight distance is limited. The railway line and Royal Canal segregates pedestrian movement between Leixlip and the Masterplan area and there is a need for improved integration once the Confey Masterplan are developed.

Within Leixlip the quality of footpaths is generally in a reasonable condition although the surfacing of routes is in locations broken and routes are discontinuous. The town centre would benefit from improved pedestrian footpaths, crossings and priority along Main Street and Captain's Hill.

There are off-road pedestrian routes in and around the town, some of which follow features such as the Rye Valley, Royal Canal, Síleacháin Valley and St Catherine's Park, whereas others act as links between different housing estates. This results in a good level of pedestrian permeability throughout much of the town, even in areas where the road network itself isn't particularly permeable. The Rye River presents a particular barrier to permeability in the northern area of the town between River Forest and Ryevale Lawns, resulting in a potential 45-minute walk between areas that are just 250m apart.

Figure 3-10 shows the pedestrian infrastructure in the vicinity of the masterplan.

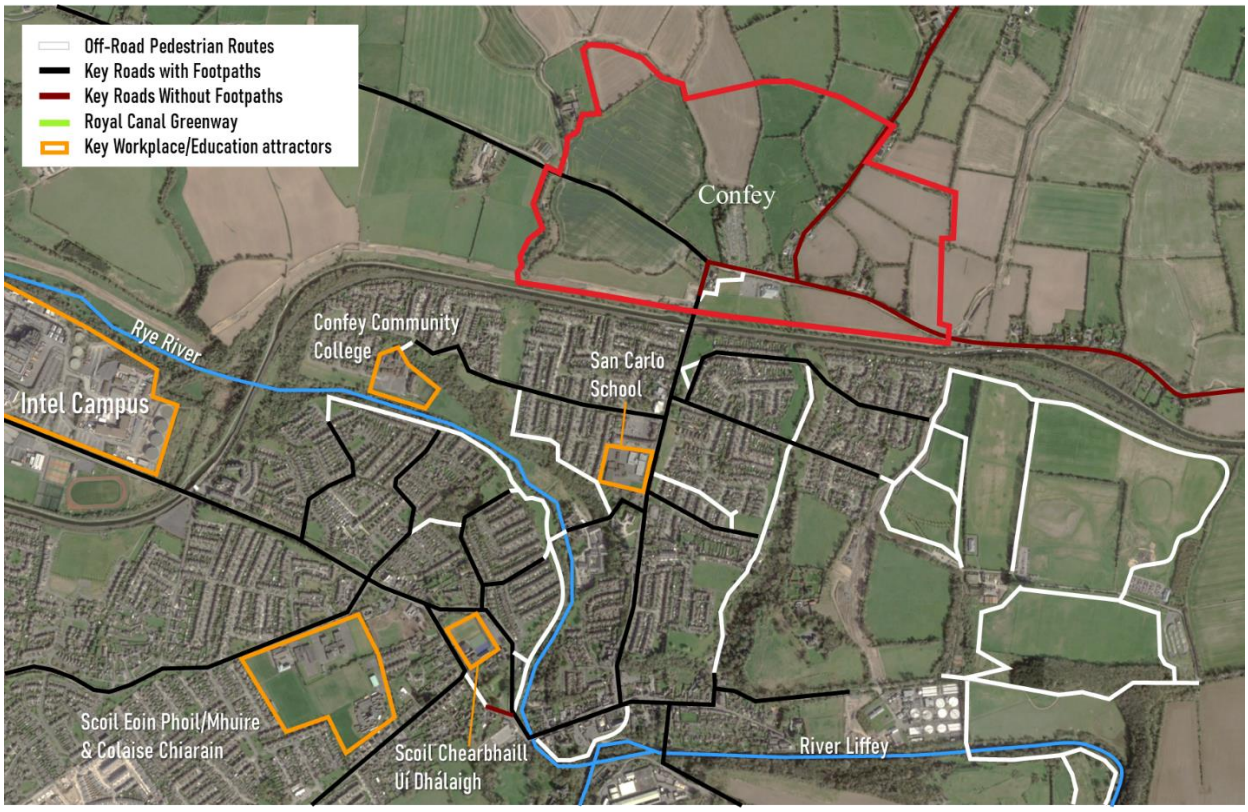


Figure 3-10: Pedestrian infrastructure in the vicinity of the masterplan

3.6.1.2 Cycle Network

At present the only connection between the Masterplan area and Leixlip across the canal is via Cope bridge which is a narrow bridge where cyclists have to join general traffic as shown in Figure 3-11.

There are limited existing cycle lanes within Leixlip and these only include the R148 and Green Lane linking to Intel and towards the R449. There are no cycle facilities on Main Street, Captain's Hill or the roads within the Confey Masterplan including the R149, the L5051 and the L1015. Main Street and Captain's Hill are heavily trafficked routes and provides no cyclist protection.

Most routes within the Leixlip residential estates can be classified as quiet routes where traffic moves slowly, and traffic volumes are low. There are also a number of off-road pedestrian routes within residential areas that are cyclable, where footpaths are wide and of good quality.

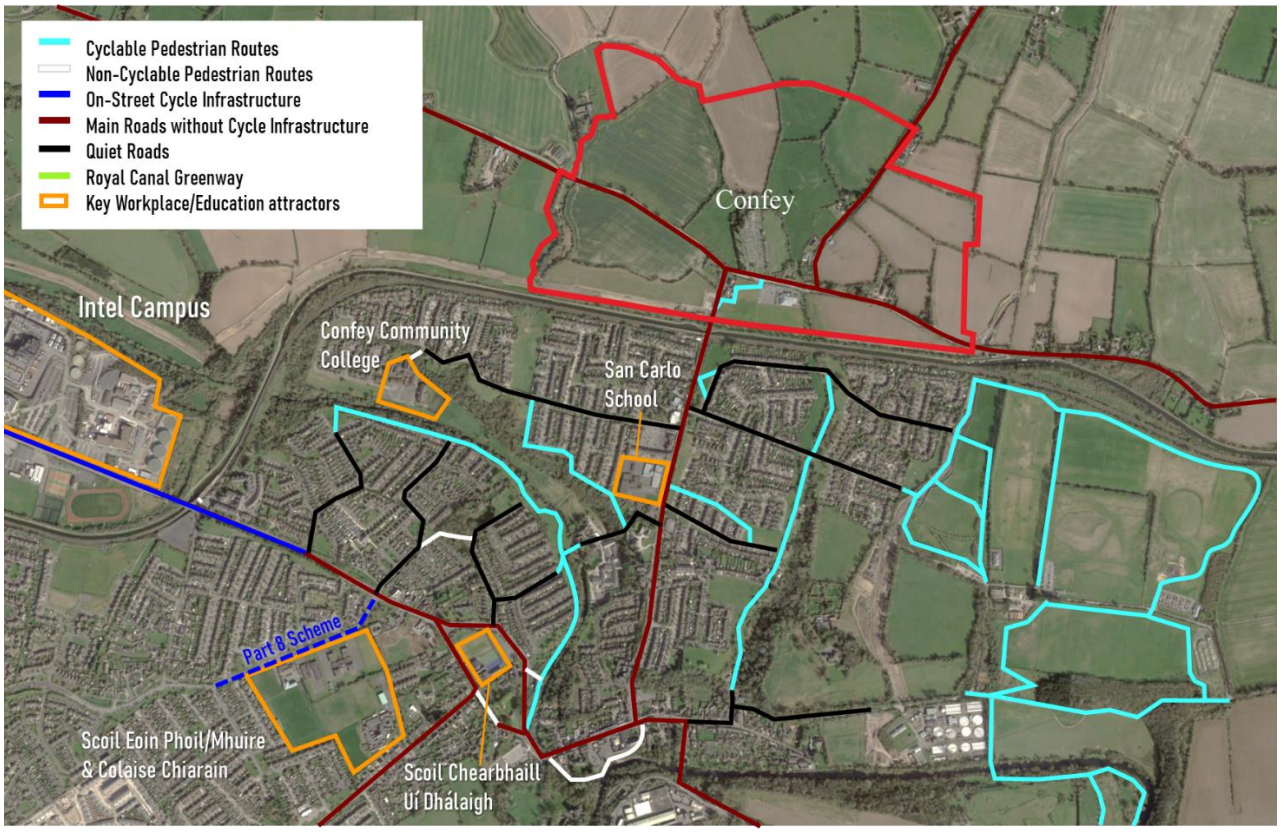


Figure 3-11: Cycle infrastructure and cycle-friendly routes in the vicinity of the masterplan

3.6.1.3 Royal Canal Greenway

One of the major assets that the Masterplan area can benefit from is the Royal Canal greenway. The Royal Canal Greenway is a 130km route which currently runs between Maynooth and Galway. The route has a wide tarmacked surface and facilities next to it including bins and toilets. The greenway was constructed and is maintained by Waterways Ireland who has plans underway to upgrade the existing towpaths to Greenway status from Maynooth, all the way to Dublin. The upgrade of the route is discussed in Section 3.6.2 of this report.

3.6.1.4 Walking and Cycling Catchments

The walking catchment analysis (Figure 3-12) shows that Leixlip town centre is within 20-minute walking distance from the Masterplan area. A wide range of facilities and amenities are accessible from the masterplan lands within 10-minute walk. Some of these include San Carlo School, Confey Shopping Centre, Little Harvard Creche, Confey Library and Youth Centre, as well as Confey GAA. This highlights the ability of the Masterplan lands to support the 15-min city concept. The Confey Community College is within a 20-minute walking distance. Intel, to the west of Confey, and St Catherine's Park, to the south-east, can be reached within 30 minutes walking.

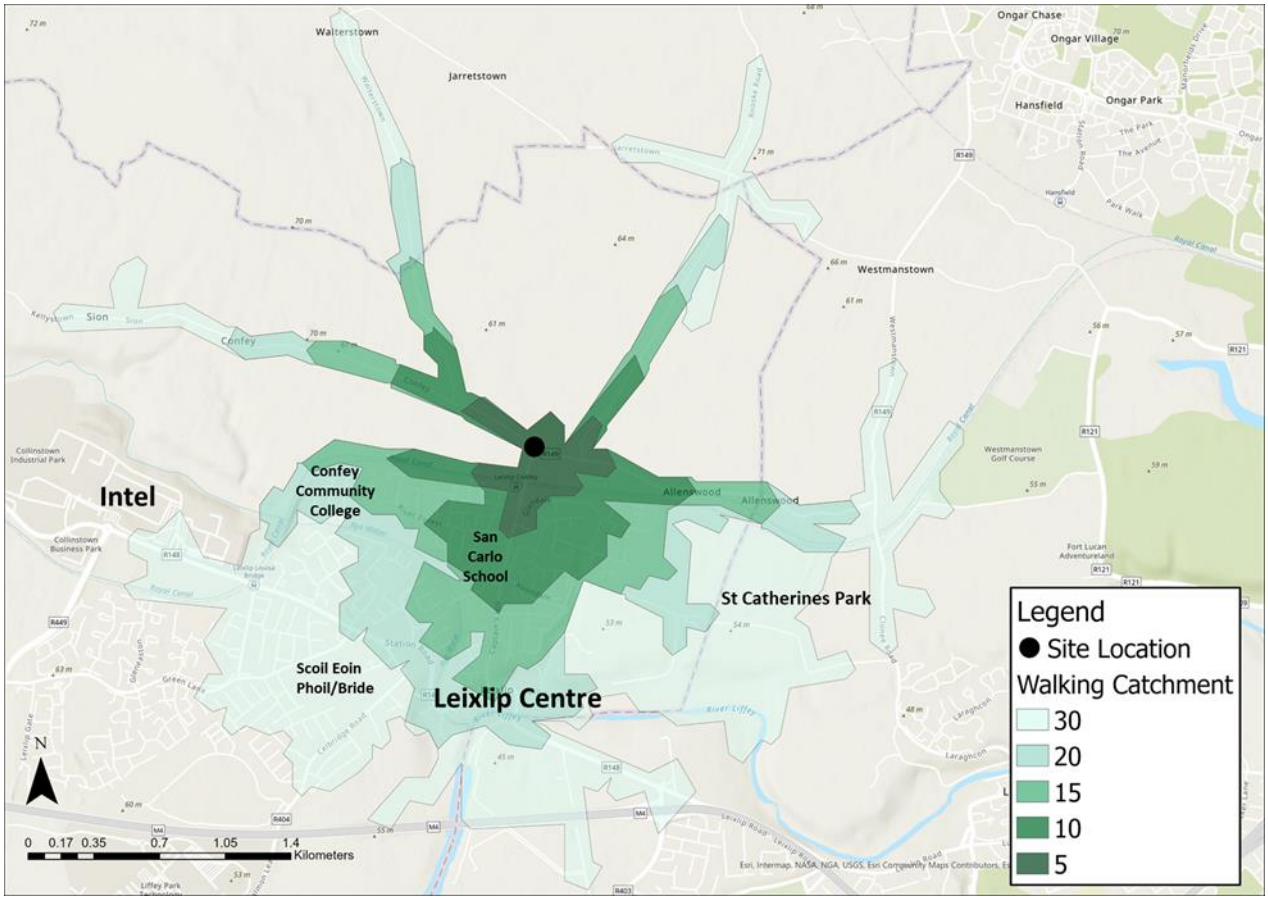


Figure 3-12: Pedestrian accessibility

Figure 3-13 shows the cycle accessibility of the proposed masterplan location illustrating the results of a cycling catchment analysis of the masterplan location. This shows that Leixlip is within 10-minute cycling distance, while Lucan and Ongar are accessible within 20 minutes cycling from the masterplan. Dunboyne, Celbridge and Maynooth are within the 30-minute catchment masterplan. Blanchardstown, Castleknock and Clondalkin are also accessible in approximately 40 minutes.

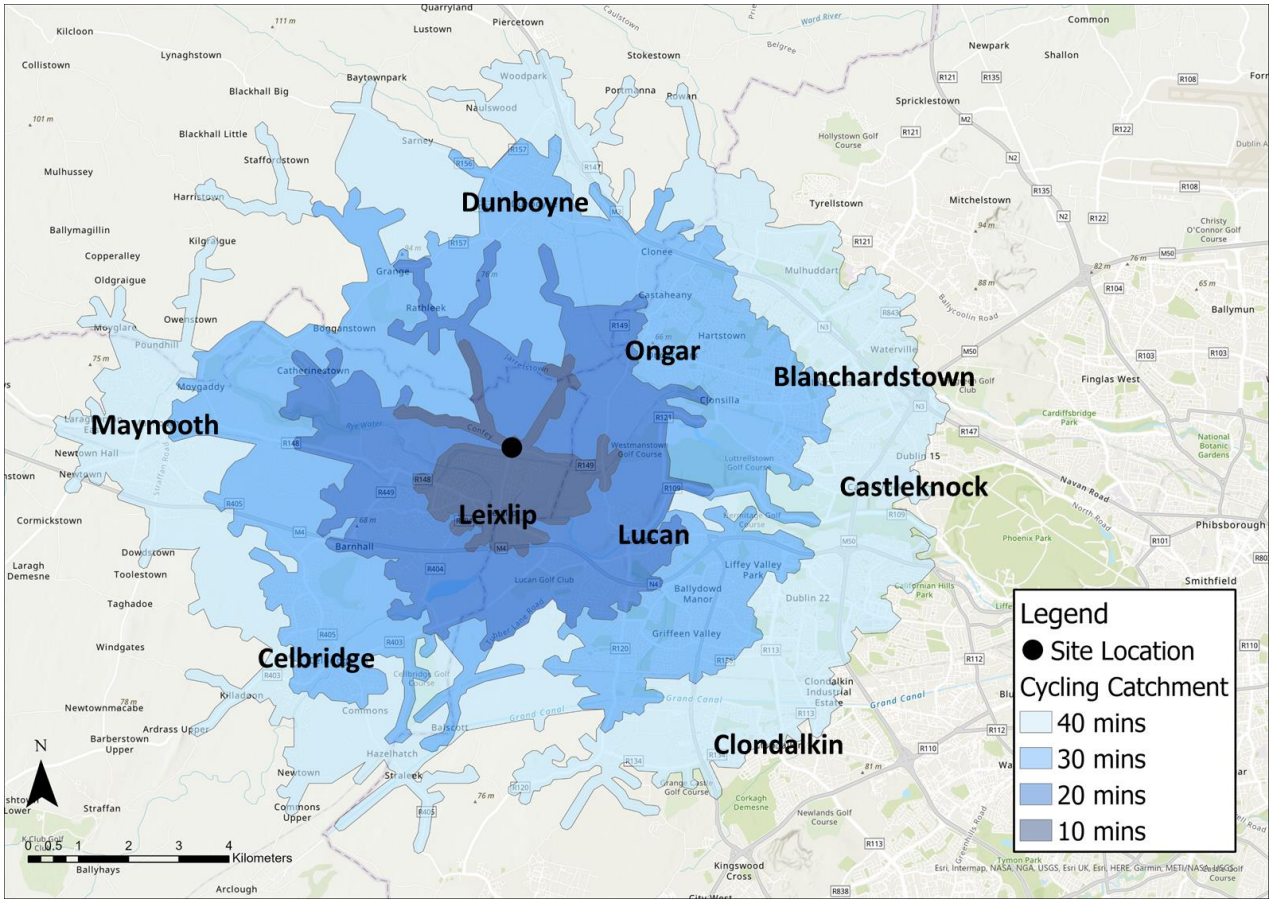


Figure 3-13: Cycle accessibility

3.6.2 Future Active Travel Infrastructure

3.6.2.1 Greenway

The delivery of the section of the Greenway between Maynooth and Dublin is undertaken by various local authorities. The section between Confey and Maynooth, which includes a 7.6km length being carried out by Kildare County Council and construction is currently underway.

The section between Confey towards Dublin (to Lock 12) is 9km in length and is according to the Waterways Ireland website: www.waterwaysireland.org in pre-planning stage.

3.6.2.2 Greater Dublin Area Cycle Network Plan

Figure 3-14 shows the cycle infrastructure proposals in the wider area near the masterplan, as per the Draft GDA Cycle Network Plan. The Plan proposes that the towpath adjacent to the Royal Canal is development as a greenway, which would make this route more suitable for commuting and strengthen the connections to Intel, Maynooth, Blanchardstown and beyond. A greenway is also proposed from Captain's Hill, south of the railway line to follow a route to the east through the residential estates which then swings south through St. Catherine's Park and beyond.

A secondary link is proposed along Captain's Hill while a primary link is proposed on Main Street and the R148. These proposals are expected to improve cycle access to the Confey Masterplan significantly and assist in the integration with Leixlip.

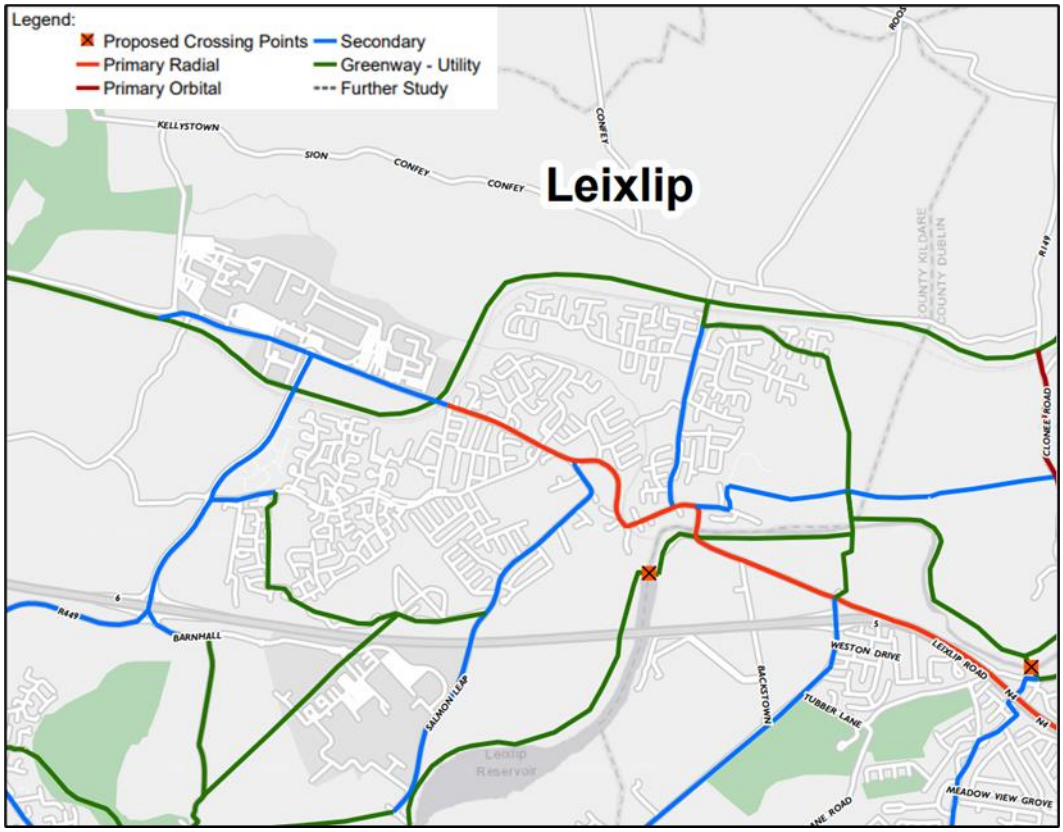


Figure 3-14: Cycle infrastructure proposals in the vicinity of the masterplan

3.6.2.3 Cope Bridge upgrade

As part of the railway order for DART+ West submitted to An Bord Pleanála, the proposed upgrade of Cope Bridge is shown in Figure 3-15 below, which shows the two lateral bridges which will each provide 2.0m wide pedestrian and cycle lanes in each direction leaving the existing bridge with a 6.35m width to accommodate two way traffic on the road. In addition to the lateral bridges, a new underpass is shown to provide for a new towpath under Cope Bridge. The underpass will however not be provided by Irish Rail and is likely to be provided by Waterways Ireland or another government body.

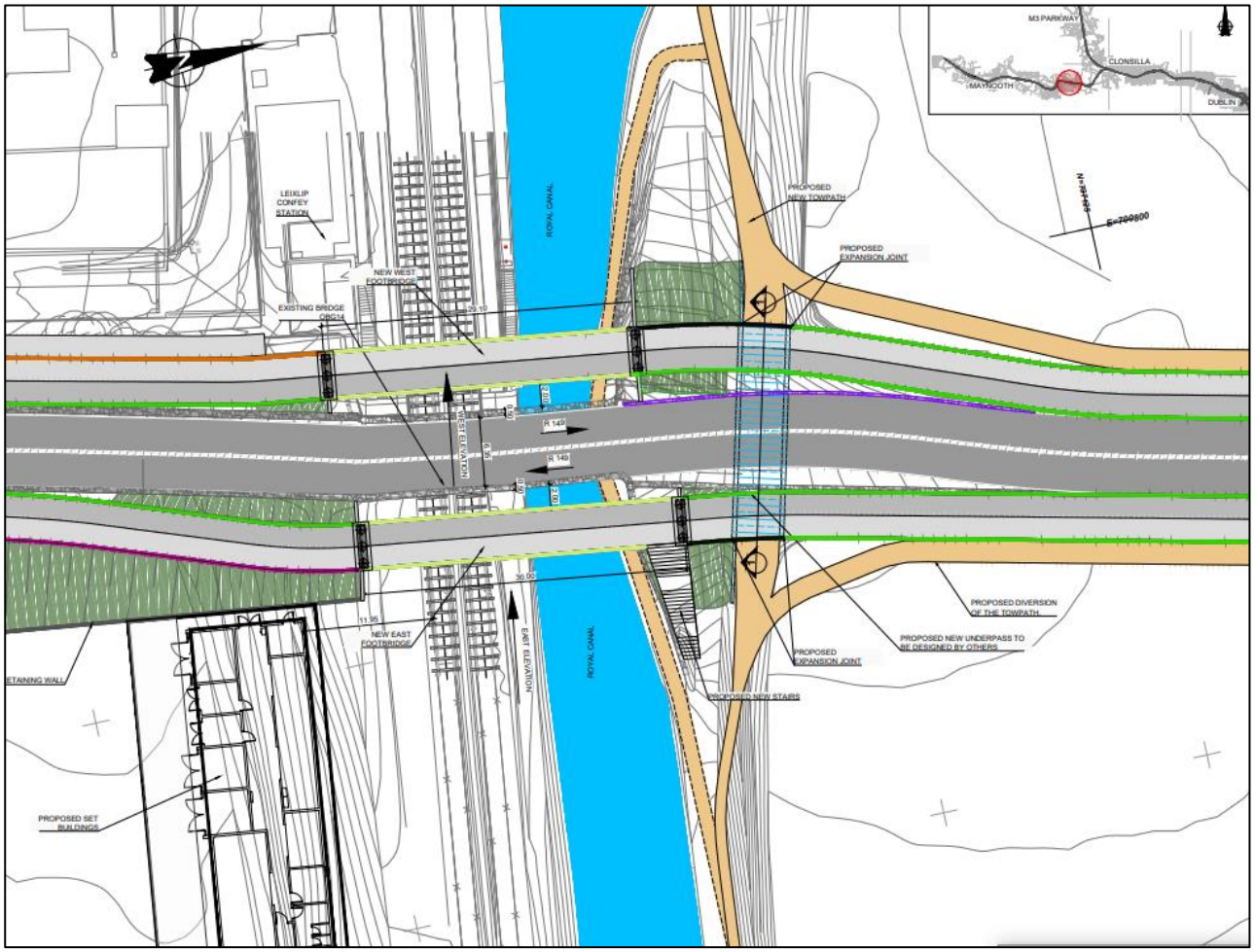


Figure 3-15: Proposed Cope Bridge Upgrade by Irish Rail as part of DART + West upgrade (Extract from Dart+ West Railway Order)

The proposed bridge upgrade will improve the connectivity between the Confey Masterplan and Leixlip significantly and the proposal is welcomed. Although the existing walking and cycling distance between the heart of the Confey Masterplan and the railway station is already short, a more direct route to the station from the north will potentially encourage higher usage of the rail services and exploring options to achieve this is highly recommended.

3.6.2.4 Masterplan Urban Development Framework Active Travel Proposals

To overcome the limited connection between Leixlip and Confey, the Masterplan seeks to incorporate the UDF's proposed movement and access strategy which requires the following works in relation to active travel:

- Two pedestrian/cycle bridges across the Royal Canal and railway line east at Glendale Meadows and connecting through to St. Catherine's Park and west at Riverforest Park connecting to existing services and amenities within the wider Leixlip area;
- A dedicated pedestrian/cycle connection extending from each of the proposed new pedestrian/cycle bridges to the east and west along a c. 400m circumference from Confey Railway Station extending through a proposed new parkland to the north east;
- Dedicated and passively supervised new connections off the Royal Canal Greenway providing ease of access to the new street;
- Pedestrian and cycle paths will be provided along the principal roads and together with other linkages will maximise pedestrian and cyclist permeability in the area. Junctions will be designed in order to give greater priority to pedestrians and cyclists than to vehicular movements.

The overall masterplan framework layout will ensure that all future residents will be within a c. 5-minute walk from the new street/neighbourhood centre and the proposed community hub. Sustainable forms of transport such as walking, cycling along the new street and main arterial routes shall be prioritised through the development of permeable links, maximising pedestrian/cycle linkages to this area, the new Community Hub and Confey Railway Station. It is envisaged that the presence of the train station will ensure a high proportion of trips outside the Framework lands will be undertaken by public transport.

3.7 Public Transport

3.7.1 Existing Public Transport

3.7.1.1 Rail Services

The Confey Masterplan is located on the Dublin – Sligo Railway Line. The Leixlip Confey train station is located south, adjacent to the development. The station is served by the Dublin -– Maynooth commuter rail service provided by Iarnród Éireann. Table 3-1 shows the frequency of existing railway services on the railway line. During weekdays train services are at a 15-minute frequency to Dublin. This is a highly frequent service providing an excellent service to Dublin convenient to use to commute to work, education facilities or shopping and waiting times for the next train is limited. Train services to Maynooth is at a 30-minute frequency which is still a highly frequent service and provides an attractive service for students travelling to Maynooth for educational purposes.

Table 3-1: Rail services.

From	Journey Time	Frequency (Weekday)	Frequency (Sat)	Frequency (Sun)
Leixlip Confey – Dublin Connolly	33 mins	~15 minutes during peak hours	~20 minutes during peak hours	~20 minutes during peak hours
Leixlip Confey – Maynooth	12 mins	~30 minutes during peak hours	~30 minutes during peak hours	~30 minutes during peak hours

3.7.1.2 Bus services

Bus services within Leixlip saw recent significant improvements when the NTA's BusConnects scheme was implemented. BusConnects Dublin includes the Network Redesign and the Core Bus Corridor project, aiming at introducing a redesigned, higher capacity bus network which is more coherently planned and more understandable and ultimately delivering a better overall bus system for Dublin and the surrounding areas.

The BusConnects routes currently operating within Leixlip and surroundings is shown in Figure 3-16. BusConnects C Spine, which launched on 28th of November 2021, serves Leixlip via the C3. This route connects Maynooth to Ringsend in Dublin via Leixlip, operating every 20 to 30 minutes. Leixlip is also complemented by route C5 which is a night service connecting Maynooth to Ringsend via River Forest and provides an hourly service.

There are also three local routes serving within the vicinity of the masterplan and provides a service every 30 minutes. These routes links to the C3 and includes the:

- L54: From River Forest to Red Cow Luas via Lucan Village, Balgaddy and Clondalkin

- L58: From River Forest to Hazelhatch via Hewlett Packard
- L59: From River Forest to Hazelhatch via Green Lane

Route 52, a radial route operating hourly from Intel to Ringsend Road also serves the surrounding area.

A peak time route, route X31 runs along Captain's Hill and River Forest, providing three morning peak services to Earlsfort Terrace in Dublin and three evening peak services back to Leixlip.

In addition to these services, two more lines serve certain bus stops at Captain's Hill and the R148. Line 139 connects Naas Hospital and TU Dublin campus at Blanchardstown. It runs every 90 minutes and serves the bus stops along Captain's Hill near the masterplan. Line 767 runs between Maynooth, Straffan Road, and Dublin Airport, with a frequency of 30 minutes during weekdays and 60 minutes during weekends.

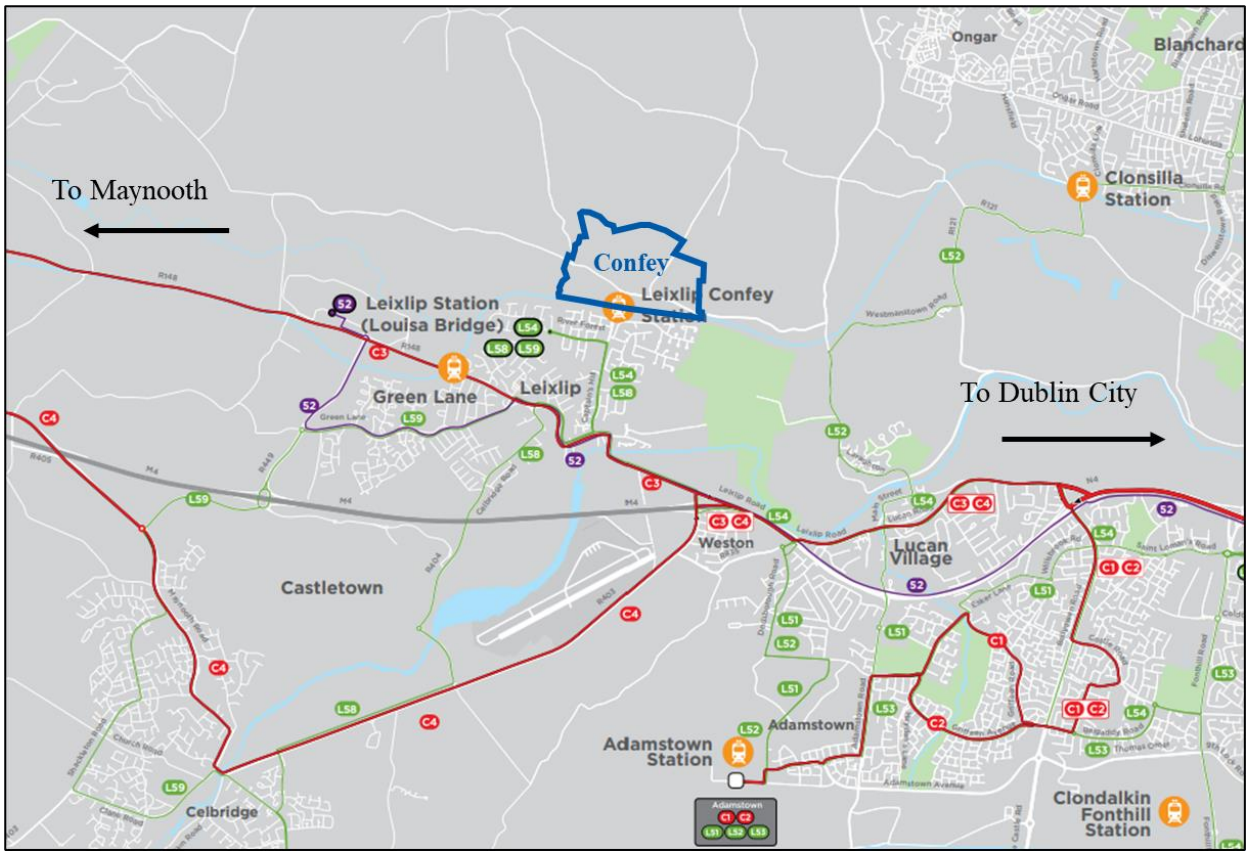


Figure 3-16: BusConnects services in the vicinity of the masterplan

Figure 3-17 shows the bus services available at bus stops within the vicinity. The nearest bus stop within the vicinity is on Captain's Hill within Leixlip, located approximately 550m from the heart of the Confey Masterplan. From this location it is possible to avail of the C5, L54, L58, L59, X193 and 193 bus services. This distance is at the limit of a comfortable walking distance and considering the size of the lands, the majority of these trips will be around 1.0km involving a gradient over Cope Bridge.

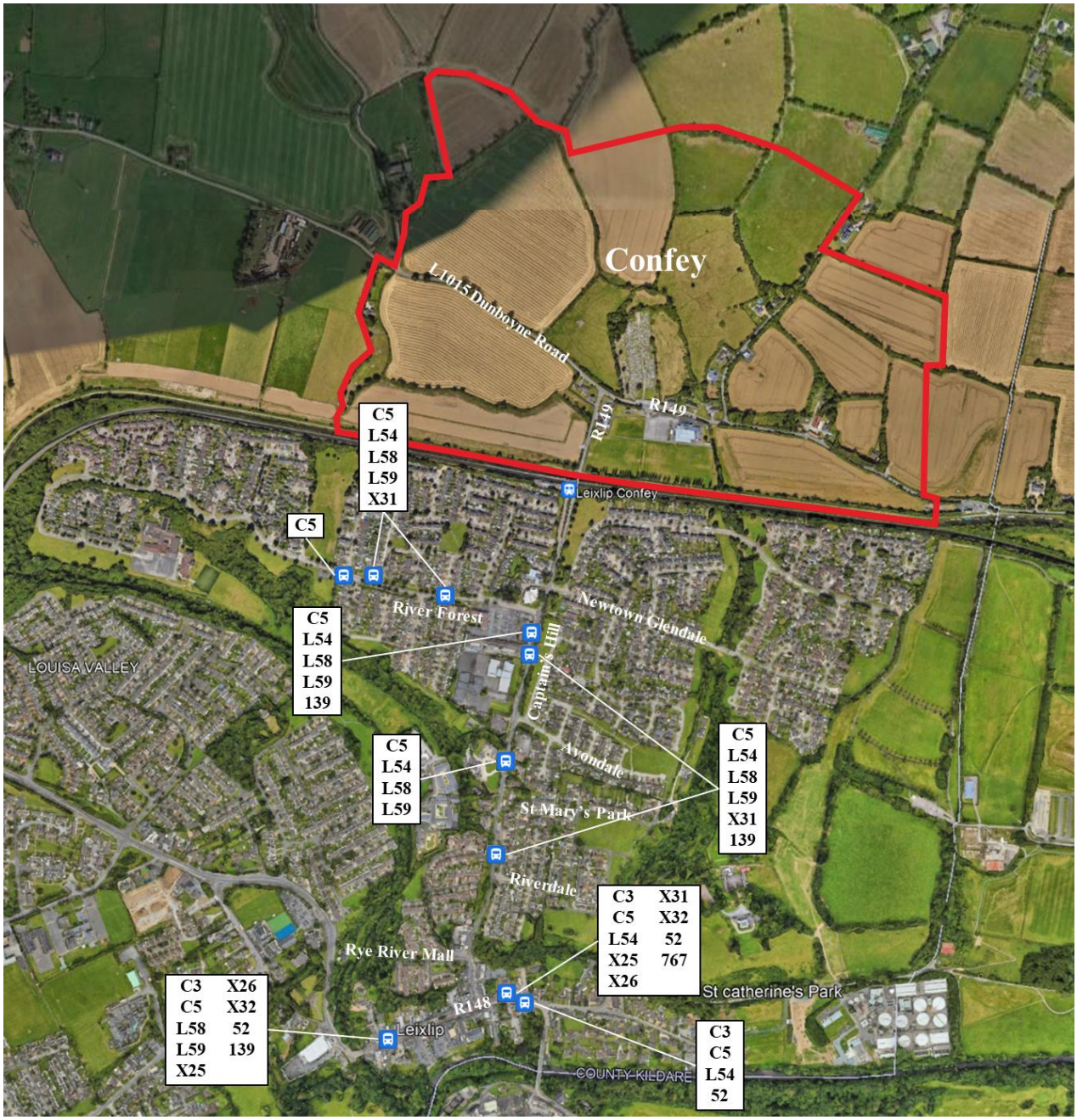


Figure 3-17: Bus stop locations in the vicinity of the masterplan

3.7.1.3 Existing Public Transport Catchment

Figure 3-18 shows the potential public transport catchment for the Confey Masterplan in the morning peak. The analysis was carried out based on the availability of public transport (coverage and frequency of services) within 15-, 30-, 45- and 60-minute intervals.

The majority of Leixlip is accessible by public transport within 30 minutes travel time while Lucan, Maynooth and parts of Blanchardstown and Dublin along the railway line are accessible within 45 minutes travel time. Dublin city centre is also accessible in 45 minutes. Approximately a third of Dublin is accessible within 45 minutes travel time including the city centre.

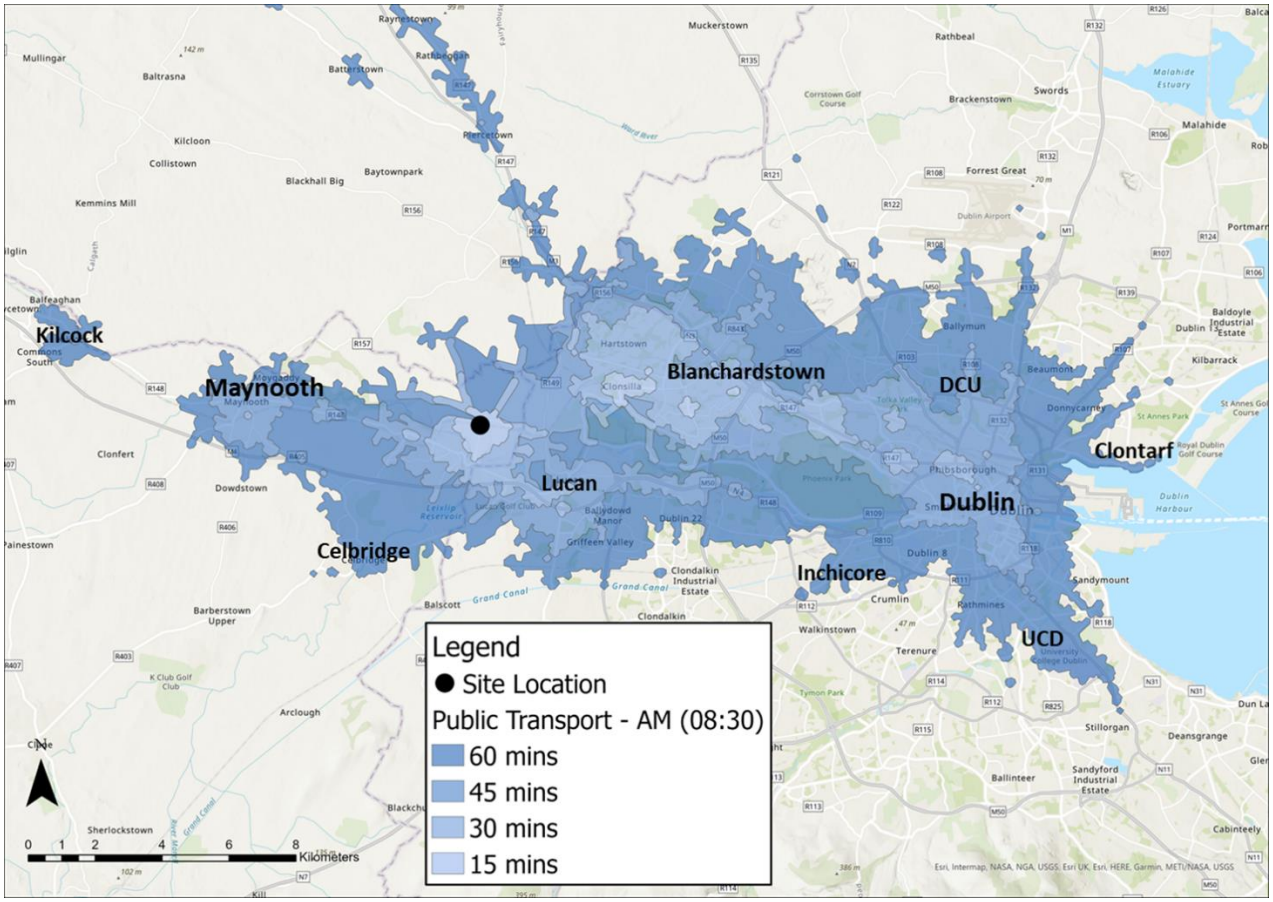
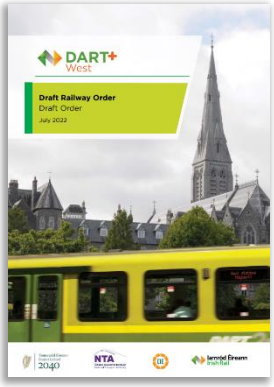


Figure 3-18: Public transport accessibility

3.7.2 Future Public Transport Infrastructure

3.7.2.1 Planned DART+ West Upgrade



As part of the DART+ West, the Dublin-Sligo rail line from Connolly Station to Maynooth will be electrified, while level crossings along the line will be removed and the signalling infrastructure of the line will be upgraded. This work will be carried out to provide additional railway services on this line and thereby to improve the capacity and frequency of services and therefore the quality of the service. Construction stage work is expected to commence in the coming years and it is expected to be completed/operational after 2027.

Passenger capacity will increase from 5,000 to 13,200 passengers per hour per direction, while the increased train frequency between Maynooth and M3 Parkway and Dublin City will facilitate fast, frequent and reliable transport to the surrounding communities.

DART+ West is likely to have design implications for Confey Station and, subject to detailed design, the replacement of Cope Bridge. The upgrade of the bridge has wider implications for the town in terms of improved vehicular, pedestrian and cyclist provision and capacity.

The DART + West works to be carried out at Confey Station is also expected to improve the accessibility of the station to some extent. The electrification of the railway line will require significant alteration to the Cope Bridge. Irish Rail proposes to rebuild Cope Bridge to achieve a higher head height and to add two lateral bridge additions for pedestrians and cyclists. This will allow two way traffic over Captain's Hill where currently one way traffic across the bridge is controlled by traffic signals.

Figure 3-19 below provides an overview of the proposed DART+ West line and stations.

Figure 3-19: Dart+ West scheme

3.8 Road Network

3.8.1 Existing Road Network

The road network within the vicinity of Leixlip is shown in Figure 3-20. The M4 runs to the south of Leixlip in an east to west direction. The most direct access from the M4 to Leixlip is available from junction 6 which intersects with the R449 and a more indirect access to Leixlip is junction 5 which intersects with the R148.

The Confey masterplan area is located 15km from Dublin City Centre. The R449 provides a direct link to Intel and terminates at a roundabout junction with the R148. The R148, the former N4 runs through the Main Street linking Leixlip to Maynooth to the west. It is also possible to gain access to the Main Street of Leixlip via Green Lane, which runs through the residential estates in the west of Leixlip.

Vehicular access to the masterplan from the national road network is primarily provided via the R149 Captain's Hill which intersects with Leixlip Main Street which links to the M4 Junction 5 via the R148 to the east. Alternative access routes are possible either via Lucan to the east from M4 junctions 3/4 via Clonee Road and the R149 or by travelling around the west of Intel via the R148, the L1014 and the L1015 Dunboyne Road approaching the Confey Lands from the west.

Vehicular access to the masterplan area is also available via the M3 located to the north of the masterplan. The nearest junction off the M3 with either the R147 /R149 and the L3025 is however more than 5km from the masterplan area and is not expected to be an attractive route.

Within the masterplan area the most prominent roads include the R149 Captain's Hill route that directly connects Leixlip to the masterplan and the east west L1015 Dunboyne Road. There are also local rural roads available which serves farms and one off housing within the area.

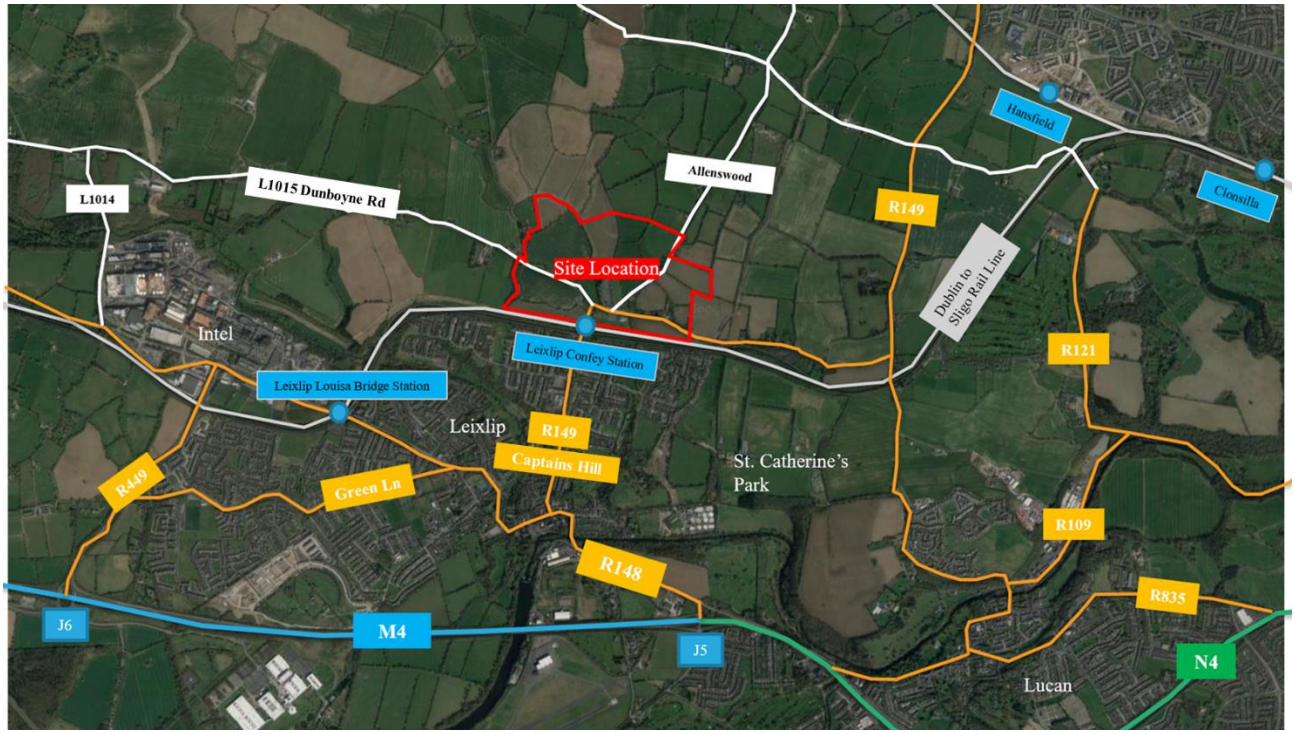


Figure 3-20: Local road network in the vicinity of the masterplan

There are currently road capacity constraints on the R149 Captain's Hill. This is a two way road which drains all traffic from the northern estates in Leixlip. The route choice for the population using this road is to either journey north or south. During morning peak hours the majority of drivers travel southbound through Leixlip town centre to gain access to the M4 or to travel towards other destinations. The R149 / Main Street junction currently struggles to cope with traffic demand and improvement of the operation of this junction would relieve the long vehicular queues and delays experienced on the R149.

Traffic is limited to travel north on the R149 due to the one way shuttle system controlled by traffic signals at Cope Bridge. The routes available to the M4 travelling north involves long travel distances on narrow roads.

3.8.2 Future Road Network

M50 Resilience Study

The TII 'M50 Resilience between M50 J6 and J7: N3 to N4 Link' report (May 2019) outlined a number of potential road option proposals for a diversion route between the N3 (Junction 6) and the N4 (Junction 7) to be used as an emergency diversion route should the section of the M50 between these two junctions be shut. Eleven route options are proposed as part of the study, four of which include a route which passes through St Catherine's park, close to the Confey Masterplan. The other seven routes do not pass or traverse the Confey Masterplan. The abovementioned report did not recommend a preferred route and concluded all eleven options remain as potential routes and further studies to be undertaken to consider their merit.

Fingal County Council Development Plan

Figure 3-21 below compares two road options which was proposed in the 2017-2023 Fingal County Council Development Plan and the 2023-2029 Development Plan. The comparison shows how the proposed road alignment connecting Ongar to the north with the M5 Junction 5 to the south, passing by the western edge of St Catherine's Park was removed with the objective to protect the park. Although the road through the park is not desirable, the link to Ongar is an attractive route to connect to the Masterplan area and to distribute traffic over a wider network and relieve congestion elsewhere.

2017 - 2023 Fingal Development Plan

2023 – 2029 Fingal Development Plan

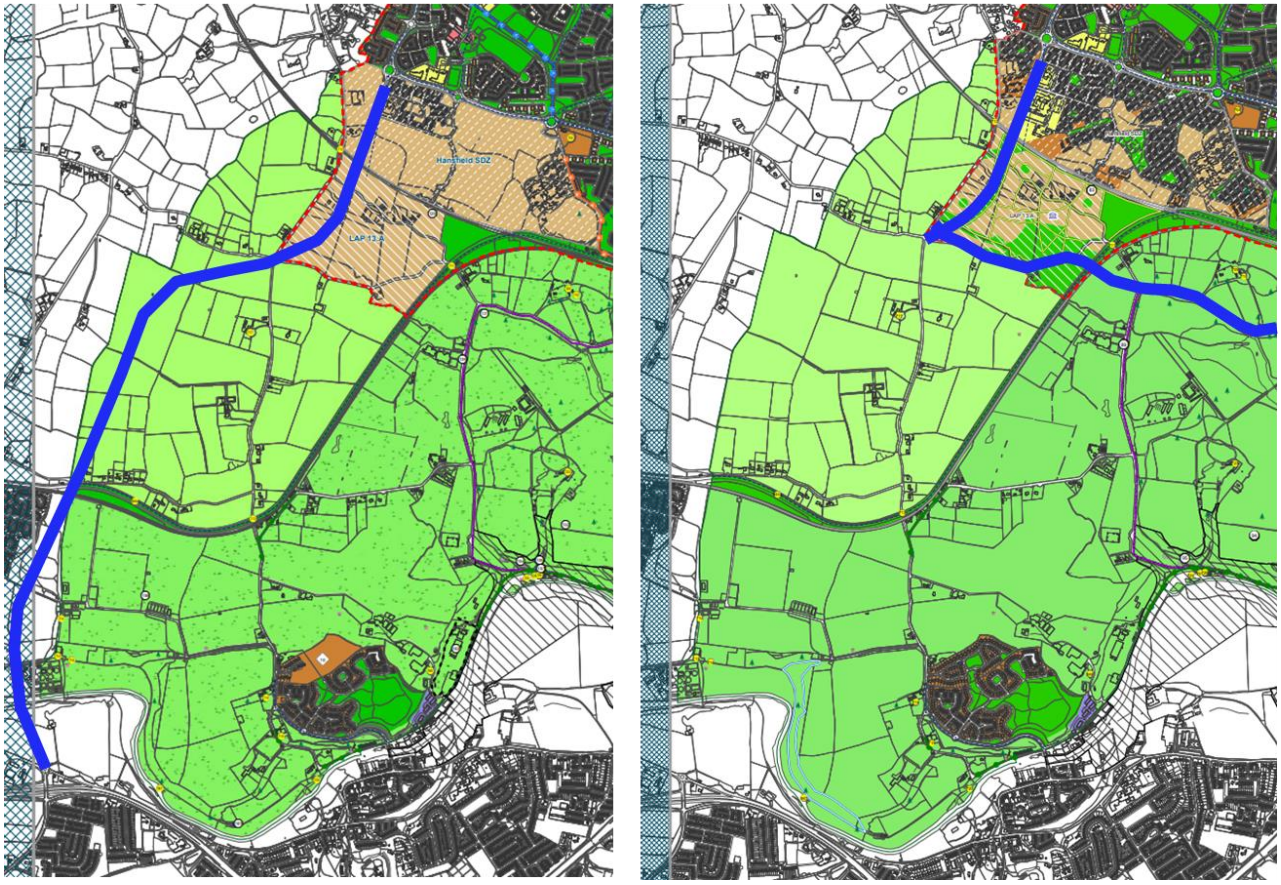


Figure 3-21: Extract from Previous and Current Fingal Development Plans (Blue Highlight Annotation Added)

Local Roads Planning

The Leixlip LAP 2020 to 2023 (as extended to 2026) proposes the following road improvements that could potentially impact on the Confey Masterplan:

- Upgrade Cope Bridge at the railway station to a two traffic lanes and segregate pedestrians and cyclists from vehicular traffic;
- Improve the L1014 and L1015 to the west of the Confey Masterplan
- The realignment and improvement of the R149 between the L1015 (Kellystown Lane and the County boundary with Fingal;
- Facilitate the improvement of the intersection between the R149 (Captain's Hill) and the R148 (Main Street)

All of the above objectives of Kildare County Council will enhance the connectivity and accessibility of the masterplan area.

The Confey UDF is incorporated into the Masterplan, and the Masterplan continues to include the following specific road improvements:

- The replacement of Cope Bridge to facilitate the DART Expansion Programme
- Upgrades to the R149 north of the railway line to redefine this area as a street
- Connections from the new street to backlands
- The provision of a new arterial route along a c. 800m circumference from Confey Railway Station connecting the L1015 at Mount Thunder, the L5051 and the R149 via an upgraded layout for the L5052;

- Local link connections to and through identified development plans connecting the outer 800m orbital route to the inner 400m radius route.

3.9 Benchmarking

To determine a reasonable estimated mode split for the masterplan, similar existing and proposed sites were examined to use as a benchmark. The sites chosen were similarly sized largely residential masterplan sites, in the surrounding areas of Dublin City, with rail links to the city centre.

3.9.1 Sample Existing Developments

Adamstown

Adamstown is a suburban development located in approximately 16 km from Dublin city centre. The development is based on a 220 hectare Strategic Development Zone masterplan south of the N4 road and Lucan, west of Liffey tributary the Griffeen River and north of the Grand Canal. It was selected for benchmarking due to its similar characteristics to Confey, being a new masterplan development with a direct rai link to Dublin.

Figure 3-22 shows the mode split for Adamstown based on data from the 2016 Census. It is observed that the car mode share in the area is estimated at 40%, while walking represents 23% and public transport constitutes 17%. 50% of households in the area own a private car, while more than 36% own two cars or more. The proportion of households which don't own a car is 7%.

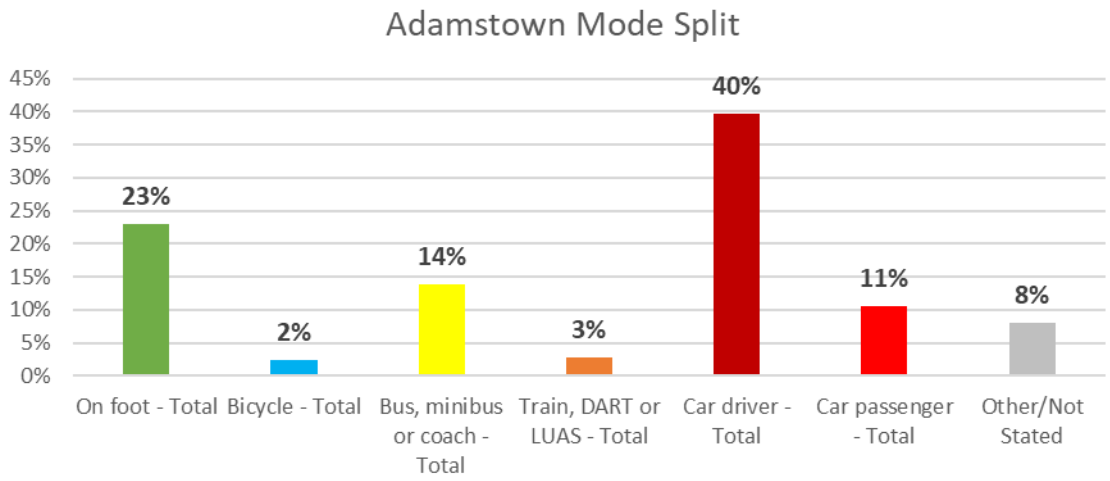


Figure 3-22: Observed mode split for Adamstown.

Pelletstown

Pelletstown is a large scale mixed use development located between the River Tolka and the Royal Canal and rail line, 4km west of Dublin City Centre. The commercial component is located around a new high quality public square which includes a series of multi-functional spaces including weekend markets, temporary events, cafes etc. immediately adjacent to the Royal Canal. It was selected for benchmarking due to its similar characteristics to Confey, being a new masterplan development with a direct rail link to Dublin.

Figure 3-23 presents the mode split in the area of Pelletstown according to Census 2016 data. Car mode share is estimated at 36% while public transport represents 34%, including both buses and train. 54% of households in the area own a car while 21% own two or more. The proportion of households which don't own a car is 18%.

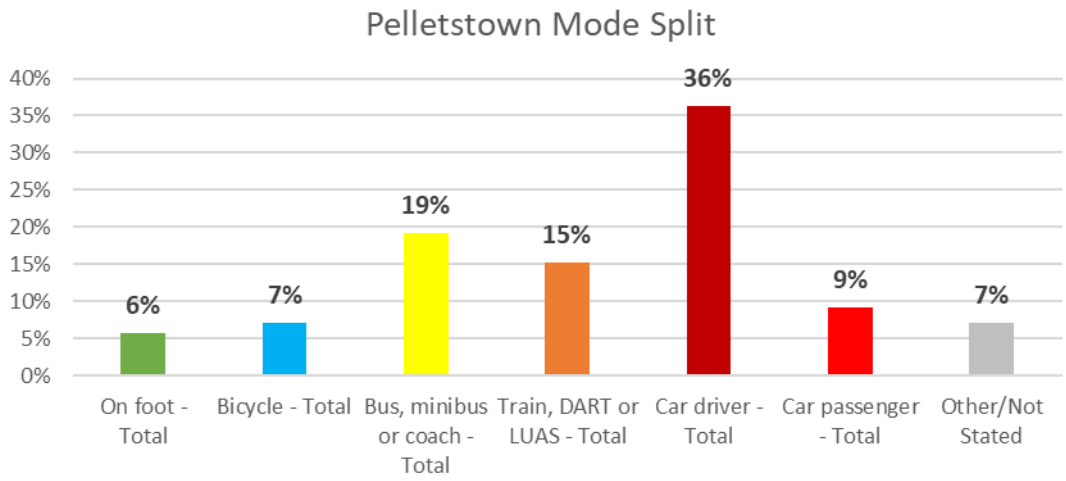


Figure 3-23: Observed mode split for Pelletstown.

3.9.2 Planned Developments

The mode split targets for planned development areas can provide a good example of the expected mode shift behaviour as a result of sustainable measures introduced in the planned districts.

Figure 3-24 shows the mode share target for Cherrywood which is a high density mixed use development to the south of Dublin with the Luas Green line serving its centre. The mode share target for car drivers at Cherrywood is 39%, while public transport is expected to constitute 32% and active modes 20%.

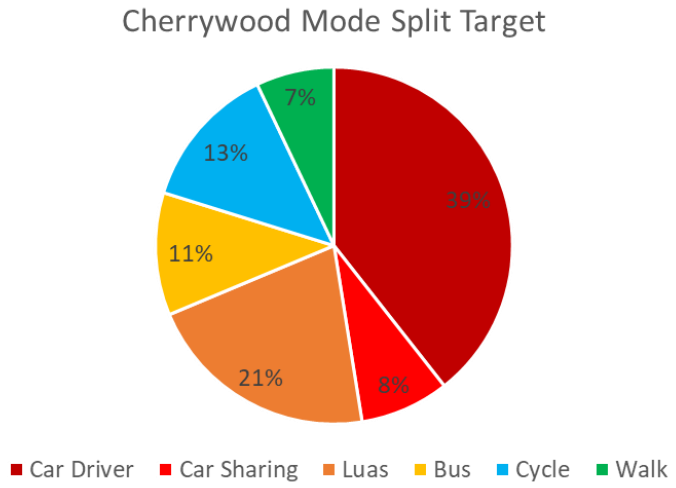


Figure 3-24 Mode Share Target for Cherrywood

Figure 3-25 presents the mode share target for Clonburris, a planned development to the west of Dublin. The mode share target for private car is 43%, while public transport represents 24% and active modes 34%.

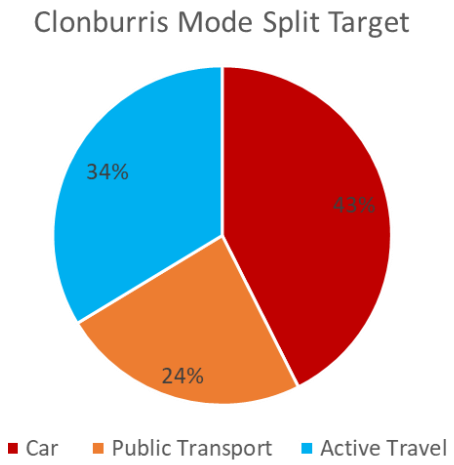


Figure 3-25: Mode Share Target for Clonburris

The above benchmarking provides an indication of the mode share that can be achieved if the right sustainable transportation elements is provided at the masterplan area.

4. Transportation Opportunities and Challenges

4.1.1 Introduction

Based on the review of the transportation planning policy documentation and the existing and proposed transportation infrastructure and services within the vicinity of the Confey Masterplan, the following opportunities and challenges was identified:

4.1.2 Opportunities

- National, regional and local transportation and planning policy sets the context, objectives and guidelines for the development of a sustainable development which promotes walking, cycling and public transport, aims to reduce the number of trips and trip lengths and to reduce the impact of car based travel.
- The new development located on a greenfield area presents the opportunity to develop a sustainable transportation oriented development unhindered by existing infrastructure oriented towards car based development.
- The zoning of the Confey Masterplan provides the opportunity to provide some mixed use development as well as community and educational facilities locally within the bounds of the development which will reduce the number of external trips and shorter travel distances. This provides the potential for greater uptake in active modes of travel.
- The proposed development is located adjacent to a railway station on a strategic railway line linking the masterplan directly to various locations within the Greater Dublin Area which offers a vast variety of employment, community, shopping and educational opportunities. This service is expected to be upgraded within the short term to provide more reliable services, higher frequency and higher capacity. In addition, the connections to existing facilities in Confey will promote the masterplan as part of the 15-minute city concept.
- BusConnects services terminate currently at River Forest Road and bus stops to 6 services are available on Captain's Hill, 600m from the Confey Masterplan. There is potential to extend these services into the Confey Masterplan and beyond to improve north-south connectivity and user comfort.
- The Royal Canal and associated greenway are a major asset to the Confey Masterplan development as it has the potential to connect the masterplan to other destinations within the area along a highly attractive route.

- Leixlip town offers a variety of community and social services that can be availed of by the future population of the Confey Masterplan. It is key that quality linkages and access between Confey and these services are provided.
- A high-quality access route from the M3 to Ongar exists and there is opportunity to connect the Confey Masterplan to this road and provide an additional access route to the future development, especially for north-south buses in the longer term, should the need arise.
- There is an already established road network within the Confey Masterplan which provided a framework for further developing the transportation network internally and externally;
- Intel provides a significant number of jobs close to the Confey Masterplan which provides the opportunity for short distance travel to places of work. This opportunity will be further enhanced by the potential development of the Area Q: Enterprise and Employment zoned land to the south of Intel.
- Train services on the Dublin to Maynooth line already operates at a high level of frequency. The DART + West upgrade of this line will improve service quality and frequency even further and increase the potential uptake in railway service use.
- Leixlip town offers a network of existing cycle infrastructure, cyclable pedestrian routes, quiet routes and routes along open space and within parks which provides a backbone for the development of a cycle friendly town into which Confey can be integrated. This network will be enhanced by the implementation of the CycleConnect initiative of the NTA and local authorities.
- The current mode split of Leixlip already shows the potential of achieving a sustainable transport oriented development and the strategic location of the Confey Masterplan, proposed public transport improvements and the opportunity to develop an enhanced active travel development integrated into the existing urban fabric of Leixlip already provides an expectation of achieving an even more sustainable oriented transport development. There is potential to further promote sustainable transport and reduce the potential for car based transport by introducing sustainable transport measures to the development.

4.1.3 Challenges

- Confey presents the significant opportunity to influence the car use culture and behaviour of the future population occupying the lands. This can be achieved by creating a development which is well integrated with existing urban areas, where high quality connections are available internally and externally accommodating all modes of transport and where the use of sustainable modes of transport is easy and comfortable.
- There is limited transportation infrastructure available within the Confey Masterplan. Existing roads such as the R149, the L1014 and L1015 needs to be reconfigured to accommodate a balanced transport mode share and additional connections are required to improve the accessibility of the development.
- Not all services will be able to be provided within the bounds of the Confey Masterplan and travel to employment opportunities will be external. It is important that connections to local educational, social and employment opportunities provide route choice, reduces travel distance, addresses potential obstacles and are of high quality.
- Although the railway station is located adjacent to the Confey Masterplan, access to it is indirect resulting in long walking distances. The accessibility to the railway station will however be improved by the upgrade of Cope Bridge by Irish Rail, however access to the station can be further improved by creating more direct access to it.
- The Royal Canal route is not currently a comfortable commuter route. However this route is being proposed to be developed as a greenway. While the section between Maynooth and Confey development has commenced, the section between Confey towards Dublin (Lock 12) is still in preliminary planning stage and could potentially take a long time to establish.
- Captain’s Hill is a congested road currently and reduces the quality of bus services using this route to travel to destinations in Dublin and elsewhere. This challenge can be overcome by reconfiguring of Captain’s Hill junctions and by providing bus priority where possible.

- Although the railway line and Royal Canal are assets to the development, they do segregate the Confey Masterplan from Leixlip town which impacts on accessibility by all modes of transport. This challenge can be overcome by optimising existing links and providing high quality additional links to connect to Leixlip.
- Cope Bridge is very narrow and presents accessibility challenges to all modes of transport. The reconstruction of this bridge will address these challenges to a very large extent.
- There are limited road connections to the Confey Masterplan leaving the area somewhat land locked. The opportunity must be taken to optimise the access to the development lands by limited upgrading of existing access routes to accommodate all modes of travel and to provide new strategic routes.
- Although Leixlip and the Confey Masterplan have the potential to become a cycle friendly town, there are areas within the potential network where road surface quality is poor, residential estates are impermeable, routes discontinues and network integration lacks. In addition, steep slopes within Leixlip presents challenges in the development of suitable cycle routes for all users.
- There is currently limited pedestrian infrastructure available within the Confey land and the routes currently providing access to it. This challenge will be overcome to a large degree which the introduction of new development within the area.

5. Proposed Masterplan

5.1 Summary Masterplan Description

The proposed development (shown in Figure 5-1) is a mixed-use masterplan, with a net developable area of 44.6ha. The masterplan is proposed to consist primarily of residential land use, with 1765 dwellings proposed. Approximately 68000m2 of open space is proposed, which makes up 15.3% of the net development area. In addition to residential uses, there are also commercial, community, and education land uses proposed, which are mostly centred around the central spine of the site. These uses form a continuation of the similar uses already existing along the Northern end of Captains Hill, resulting in the formation of a Confey 'Main Street' along this road, as illustrated in Figure 5-2.

Figure 5-1: Masterplan Overview

5.2 Sustainable Transport Approach

A key consideration for the development of the masterplan is the accessibility to sustainable transportation modes. In addition to the requirements for sustainable transport set out in legislation/guidance and good transport planning practice to provide for a variety of modes, the specific location and nature of the masterplan makes it extremely well primed for access by sustainable modes but also means that the minimisation of car trip generation is a particularly important element of the strategy.

The masterplan is relatively constricted from the perspective of car access, with the primary route to the national road network being the route to the M4 via Captains Hill and Leixlip Town to the south, a route that experiences high levels of congestion already. To the north, the existing roads on the masterplan are of rural character and are limited in their capacity to handle a large increase in additional traffic. There is however opportunity to link the Confey Masterplan to road links of high quality, such as the Barberstown road link.

As discussed in Section 2.3, the presence of the Confey Train Station immediately to the south of the masterplan, and the proposed upgrade of the line to a DART service, results in a high level of connectivity to Dublin in the east and nearby areas such as Maynooth in the west, and beyond to Longford and Sligo. The recent changes to the bus network as part of BusConnects have brought the C Spine routes to Leixlip, along with peak hour and local routes which terminate immediately to the south of Confey. The Royal Canal runs along the southern border of the masterplan, along which the Royal Canal Greenway is currently in planning/construction phase and will create strong east/west cycling links to Intel and Maynooth in the West, and Blanchardstown to the East, and beyond to Dublin City.

It is therefore important to enhance these existing opportunities of the masterplan through strong connections to these elements, but equally important to consider the local connections between the masterplan and Leixlip Town itself.

The creation of strong connections to the town for pedestrians and cyclists is outlined in the LAP/UDF, with proposals for two bridges across the canal and rail tracks at the eastern and western sides of the masterplan. Creating strong connections to these through an internal network of cycle routes is an important part of connecting the masterplan with Leixlip. Additionally, Captains Hill and Cope Bridge form a central connection between the central urban area of the masterplan and Leixlip town centre. Ongar and Lucan are also nearby potential trip attractors, particularly by bike, and connections to those areas should be strengthened.

Figure 5-2 below shows an overview of the masterplan in relation to Leixlip, Intel, and the wider area. From this it can be clearly seen that the core commercial area and community/education uses to the north form an extension to the existing commercial and community spine along Captains Hill.

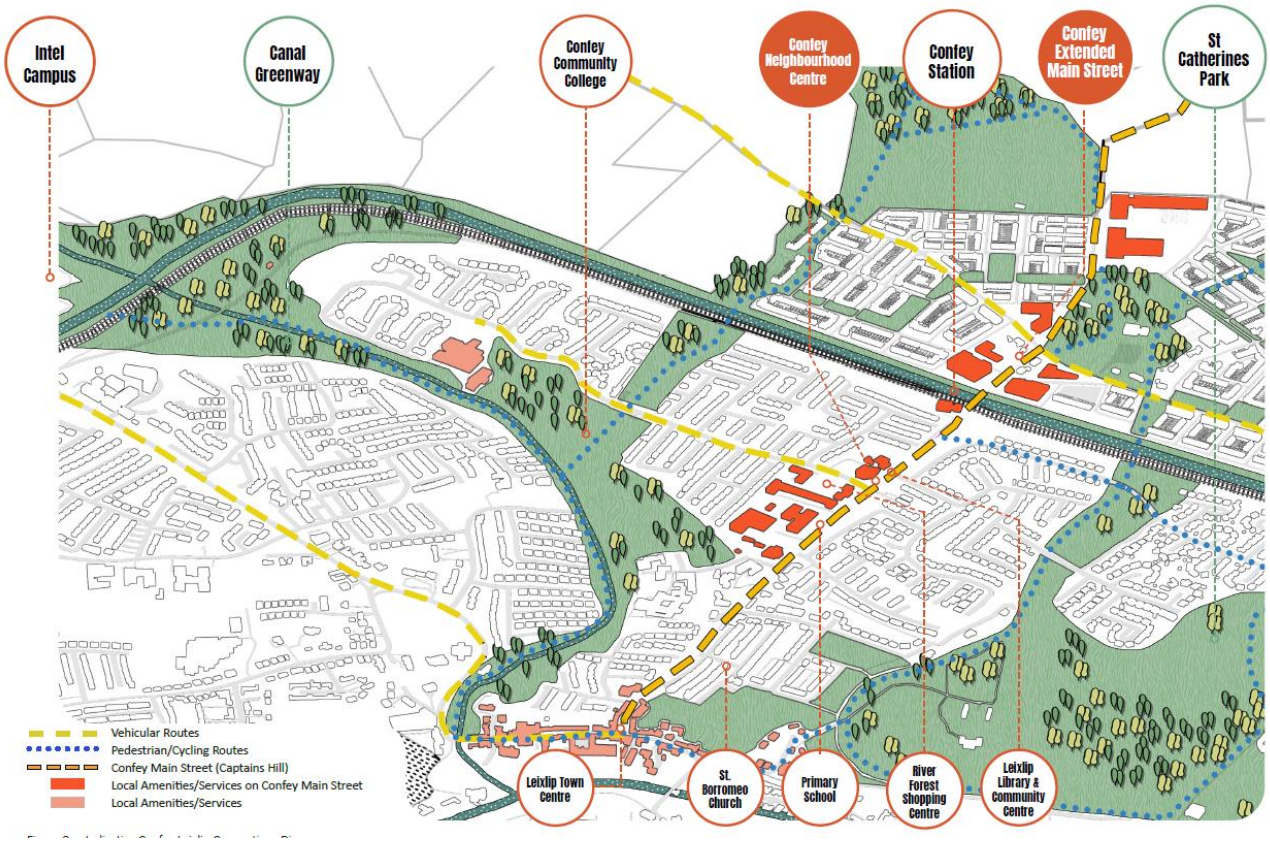


Figure 5-2: Overview of the masterplan and context

5.3 Masterplan Proposed Pedestrian Network

All internal roads will be provided with high quality continuous pedestrian facilities. In some cases, this is in the form of pedestrian priority shared spaces, while along larger streets with higher traffic volumes, it will take the form of high quality footpaths which continue across minor arms. Filtered permeability will be provided at many of the junctions across the masterplan, meaning that while car access will be restricted, pedestrian movement will be maintained. A key objective is to provide as much route choice to pedestrians as possible for them to be able to select the shortest possible route between local destinations within the Confey Masterplan and to nearby areas.

These measures will ensure that walking trips are as convenient and comfortable as possible to encourage walking trips. Figure 5-3 shows the proposed pedestrian routes through parks within the Confey masterplan. Footpaths will be provided along all internal roads which will be interconnected to the pedestrian routes through the parks and green open space. The R149 and L1015 Dunboyne Road traversing the masterplan area will be developed as a high street with active land uses adjacent, frequent pedestrian crossings, active route provision and design to ensure slow moving traffic.

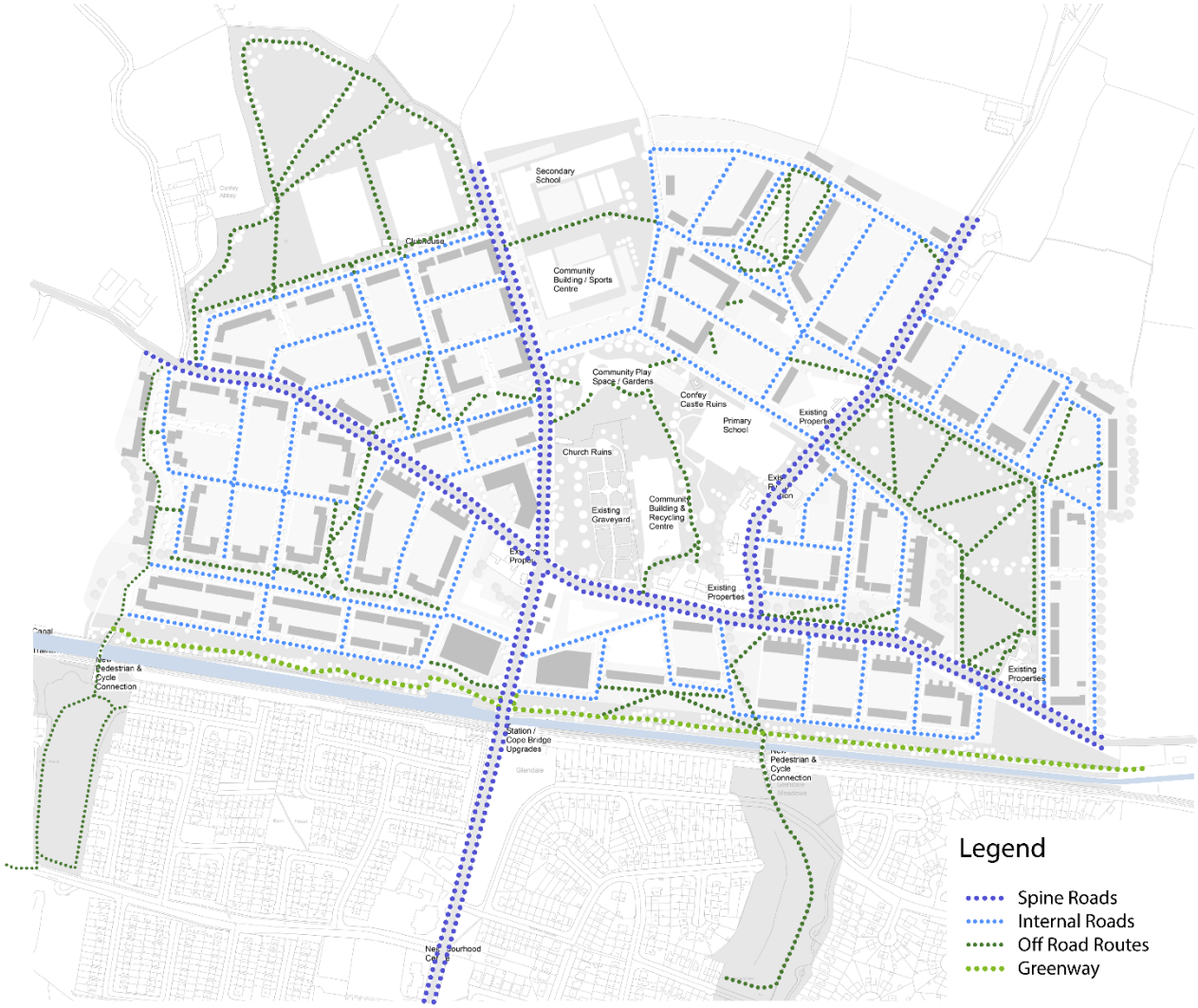


Figure 5-3: Proposed pedestrian routes in Confey Masterplan

5.4 Proposed Cycling Network

The Confey Masterplan proposes to provide high quality cycle infrastructure throughout the development, including a primary network of two-way cycle routes and additional secondary connecting routes, main road cycle infrastructure, and quiet street treatments. Routes will link to two Canal bridges, and the proposed Canal Greenway as shown in Figure 5-4.

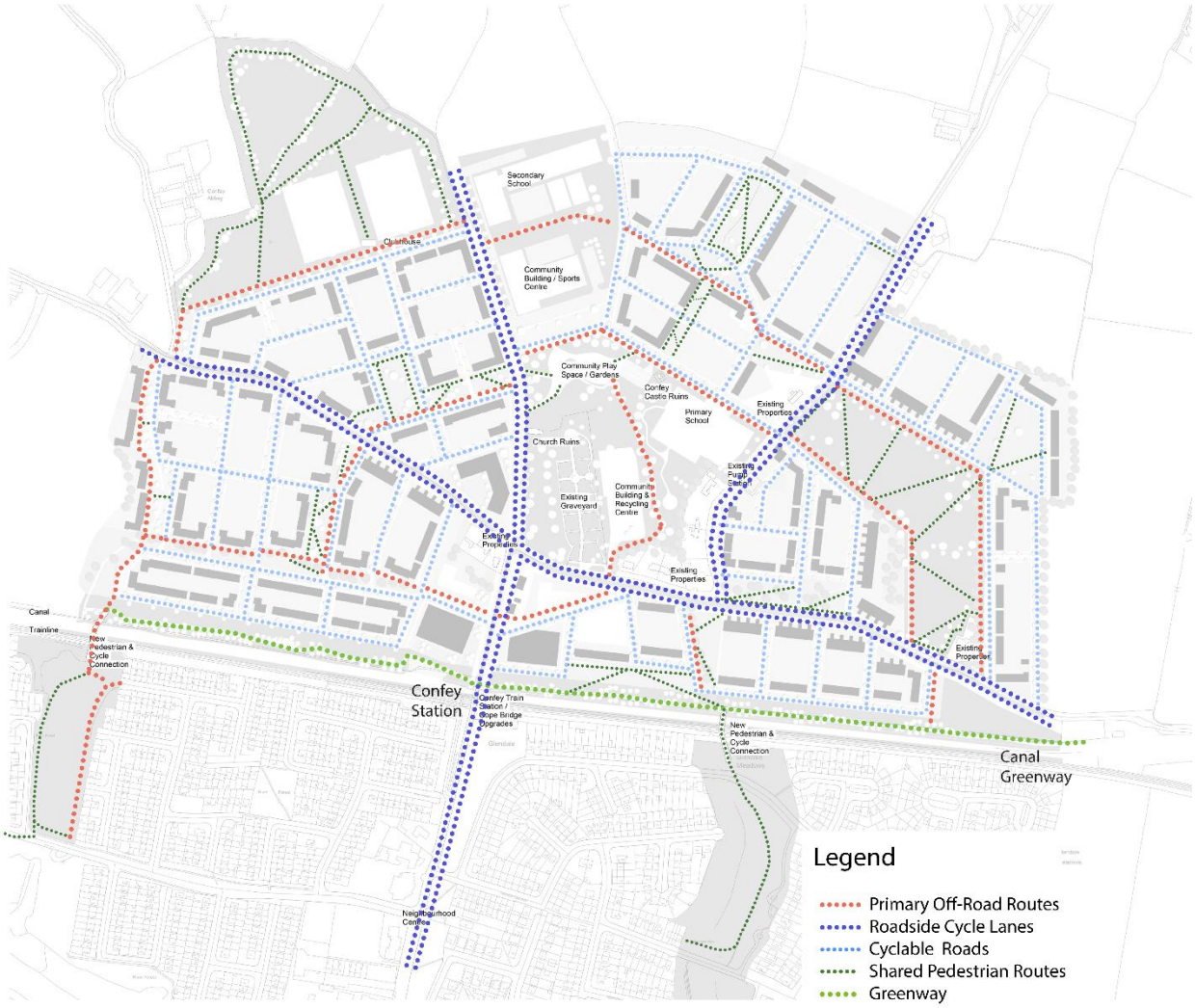


Figure 5-4: Proposed cycling network within the masterplan

5.5 Mobility Hubs

Mobility hubs are proposed to be located in key areas within the masterplan. A mobility hub is a centralised area that provide residents and employees with a suite of different mobility options. These mobility options will cater for first-mile and last-mile trips, providing options to get to Leixlip and to nearby towns. The mobility hubs provided will comply with the recently launched Cycle Design Manual (CDM) (September 2023) by the National Transport Authority overseen by the Department of Transport.

Some elements of these proposed hubs include:

- Shared rental bikes / e-bikes / cargo bikes
- Secure bike parking, including bike lockers and specialised bike parking spaces (Cargo, handcycle, tricycle etc.)
- Bike Maintenance/repair tools
- Other micromobility sharing (E-scooter, e-skateboards etc.)
- Car sharing options
- EV charging spaces
- Ancillary services such as shops, cafés, seating etc.

Figure 5-5 shows an example of a roadside mobility hub, with various elements which may or may not be provided depending on the location and desired function of the specific hub. Mobility hubs do not operate in isolation but form part of an interconnected network that links town centres and other land use nodes together as shown in Figure 5-6. Larger 'primary' hubs located in town centre areas would have a larger number of mobility sharing vehicles, along with certain ancillary services such as café's, information stands etc. The smaller 'secondary' hubs would be more basic, allowing for drop off-pick up of vehicles only, and possibly with a smaller number of vehicles, depending on the location and demand. These hubs can function both as local networks within each town, but also as part of a larger connected regional network allowing for easy travel between towns/areas.

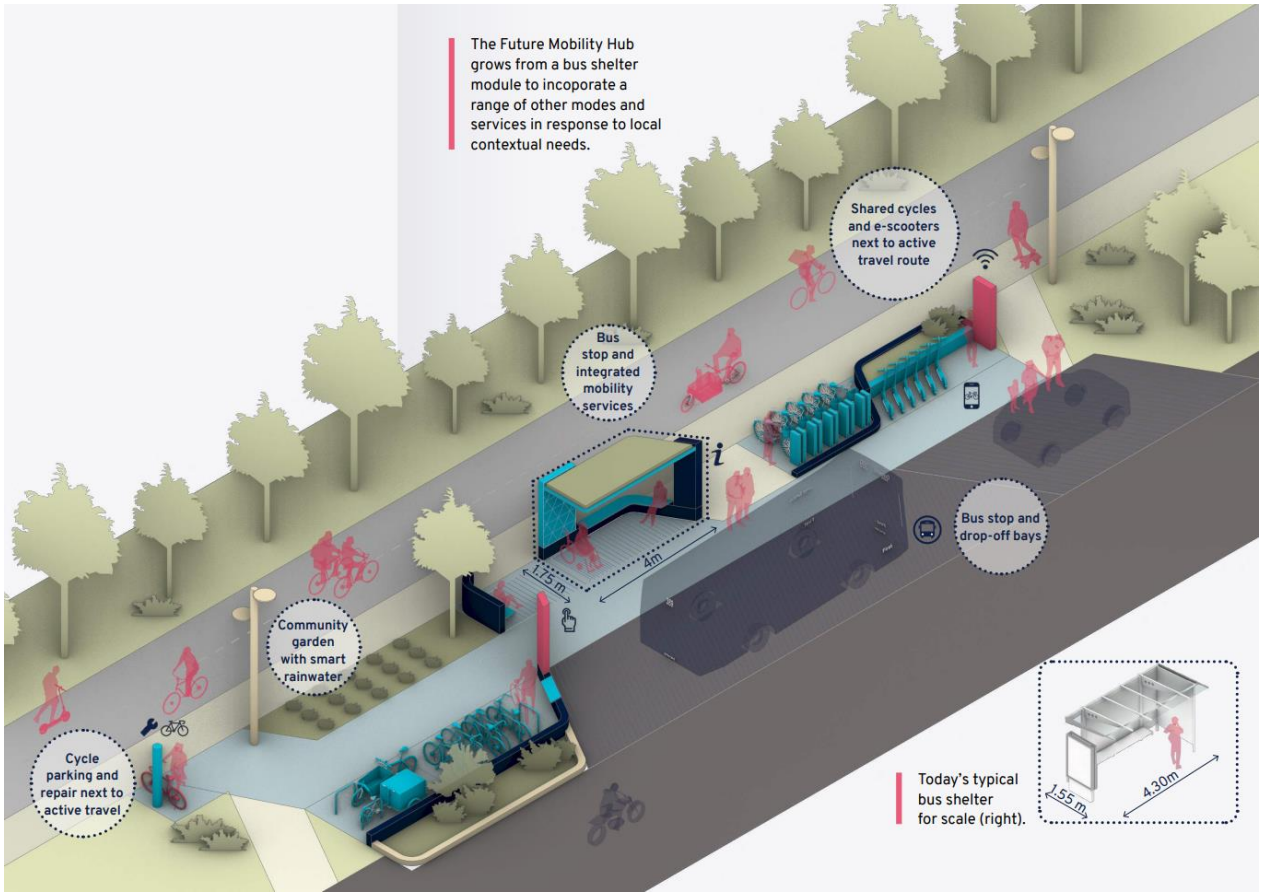


Figure 5-5: Possible Mobility Hub Functionality

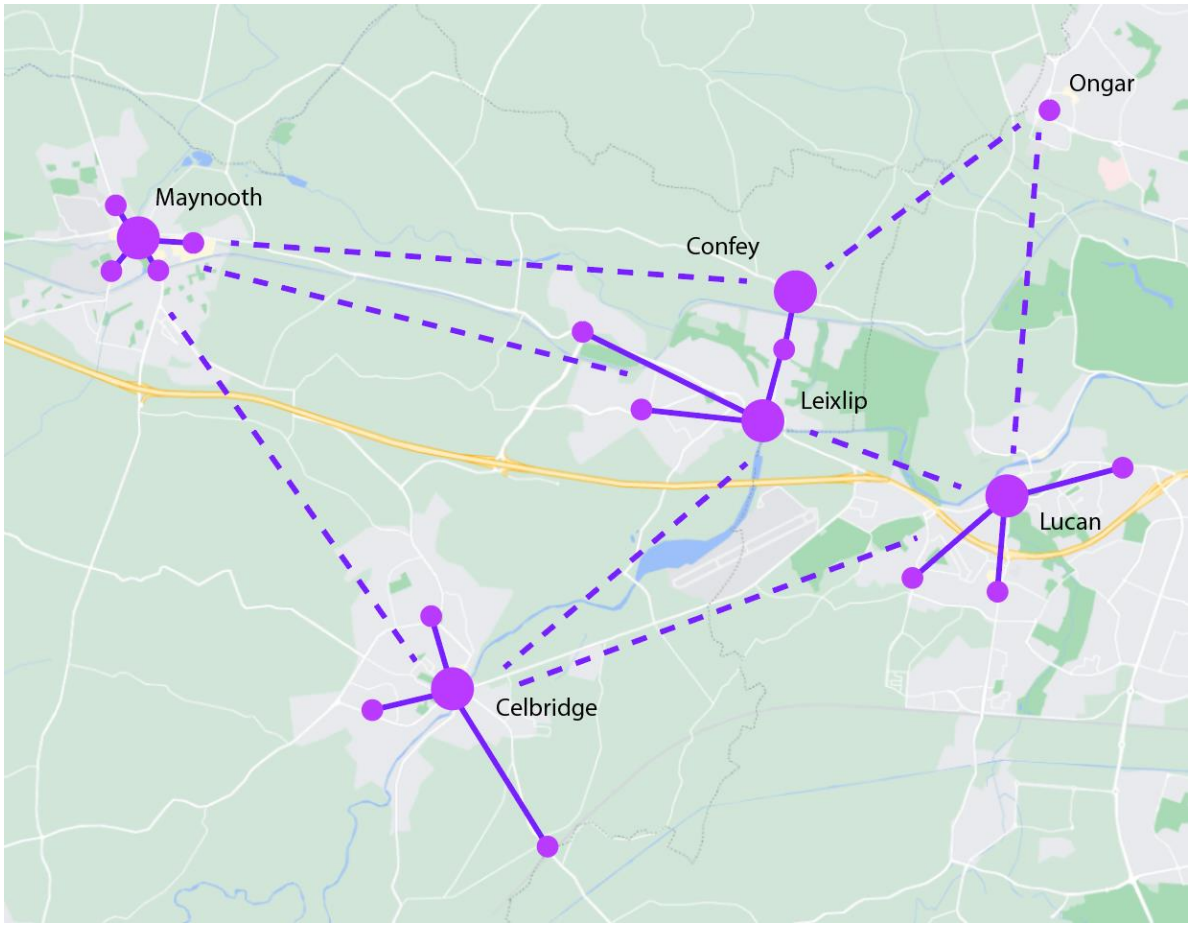


Figure 5-6: Example of Potential Mobility Node Network within the vicinity of Confey Masterplan

5.6 Bus Terminus

A new BusConnects terminus is proposed within the masterplan to facilitate existing routes terminating near Confey Station, and allow for additional C Spine routes to terminate within the masterplan. A proposed routing for the bus route terminating within the masterplan is shown in Figure 5-7. The routing is proposed to allow for bus turnaround within the masterplan with a catchment that serves the whole masterplan, along with providing bus stops directly adjacent to both the primary and secondary schools. Running in an anti-clockwise direction reduces the number of right-turning movements required for the bus, increasing reliability and safety. Where necessary, bus priority measures in the form of bus lanes and/or bus priority signals will be provided. The exact location and design of these measures will be developed in future stages.

Figure 5-7: Proposed Bus Route and Stops

Best practice in the BusConnects CBC design for Dublin proposes short bus lanes and bus priority signals at junctions to allow bus traffic to get ahead of vehicle queues. Figure 3 below shows the concept as demonstrated in an online video available at the BusConnects website (How Traffic Will Flow | Busconnects).

Figure 5-8: Bus priority signal example

Applying this concept to the Confey lands, the northbound and southbound approaches to the Confey Rd / R149 junction are the two key approaches where short bus lanes would likely be required as shown in **Error! Reference source not found.**. A longer bus lane is likely required on the northbound approach due to the volume of general traffic along this lane during the PM peak. At each of these stop lines, bus priority signals will be incorporated into the signal design.

Figure 5-9: Likely bus priority locations

Figure 5-10 below demonstrates the potential impacted land as a result of the provision of bus lanes on approach to the junction, with a road width of 17.75m.

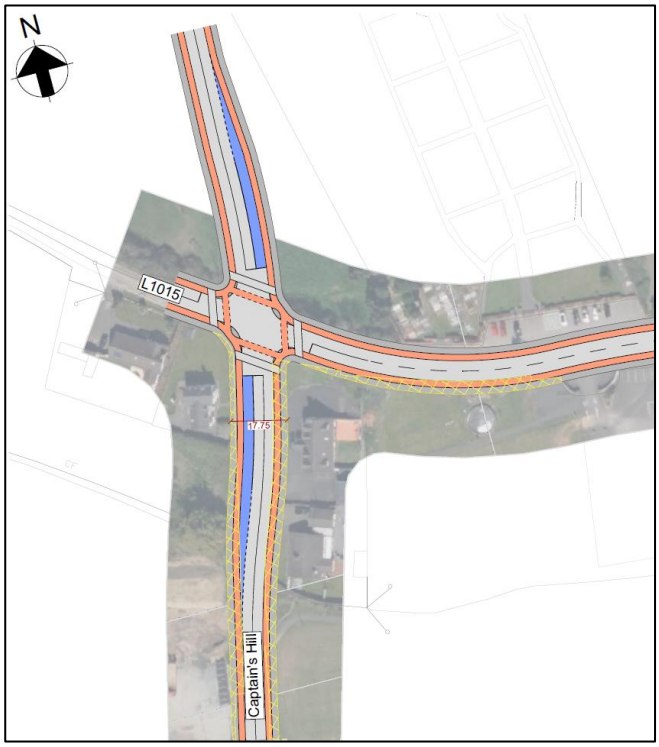


Figure 5-10: Likely bus priority locations

The bus priority design will be dependent on more detailed traffic studies to be carried out for the various development stages. However, based on existing and expected future traffic patterns it is likely that additional bus lanes will also be required on the approach to the R149 / Allenswood Lane junction, and along Allenswood Lane on approach to the internal junction at which point the bus route takes a left turn as shown in Figure 5-11. These are the most likely locations where traffic queueing is expected to occur.

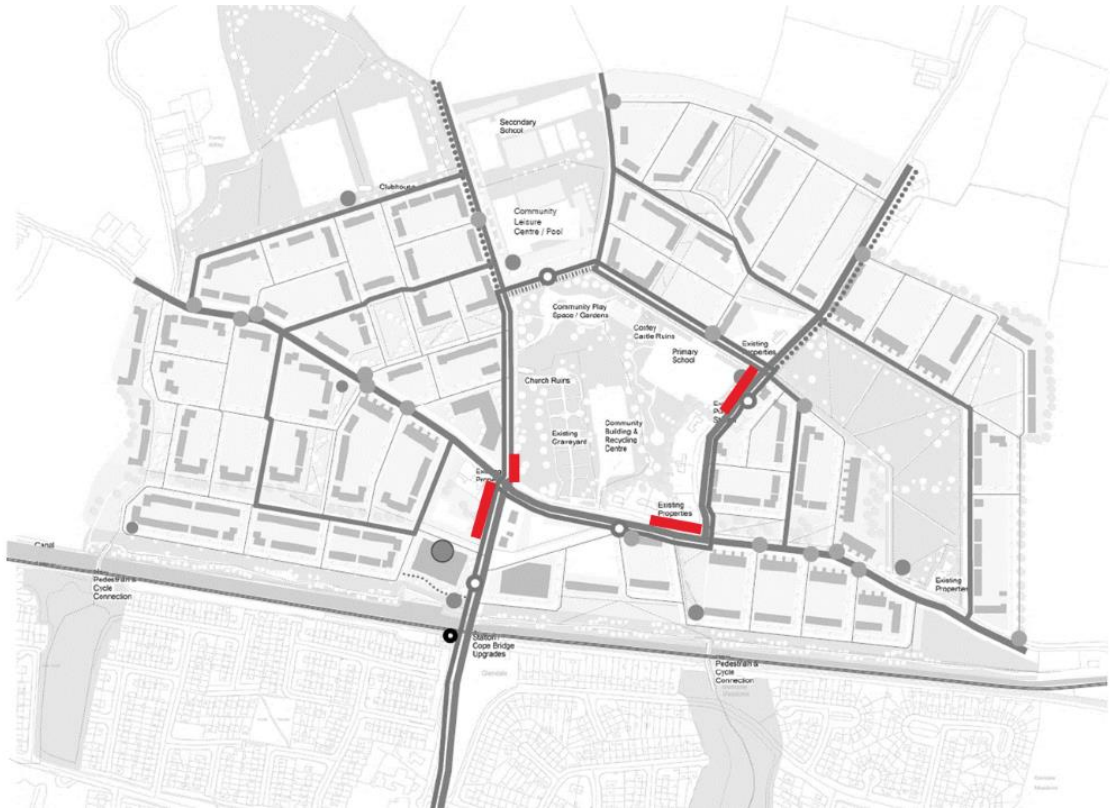


Figure 5-11: Potential additional bus priority locations

The development of the masterplan, along with the proposed new road infrastructure which will improve the connection to Ongar, would allow for further public transport connectivity between Leixlip and Ongar. At present, there are no bus routes which directly link Leixlip and Ongar, and none are planned as part of the proposed BusConnects Network Redesign, as shown in Figure 5-12 below. In addition to a potential extension of a C-spine Route, the improved connection could allow for a reconfiguration of the western orbital routes, with the W6 potentially running through the Confey masterplan and Ongar terminating in Blanchardstown which is already proposed as a key hub/terminus.

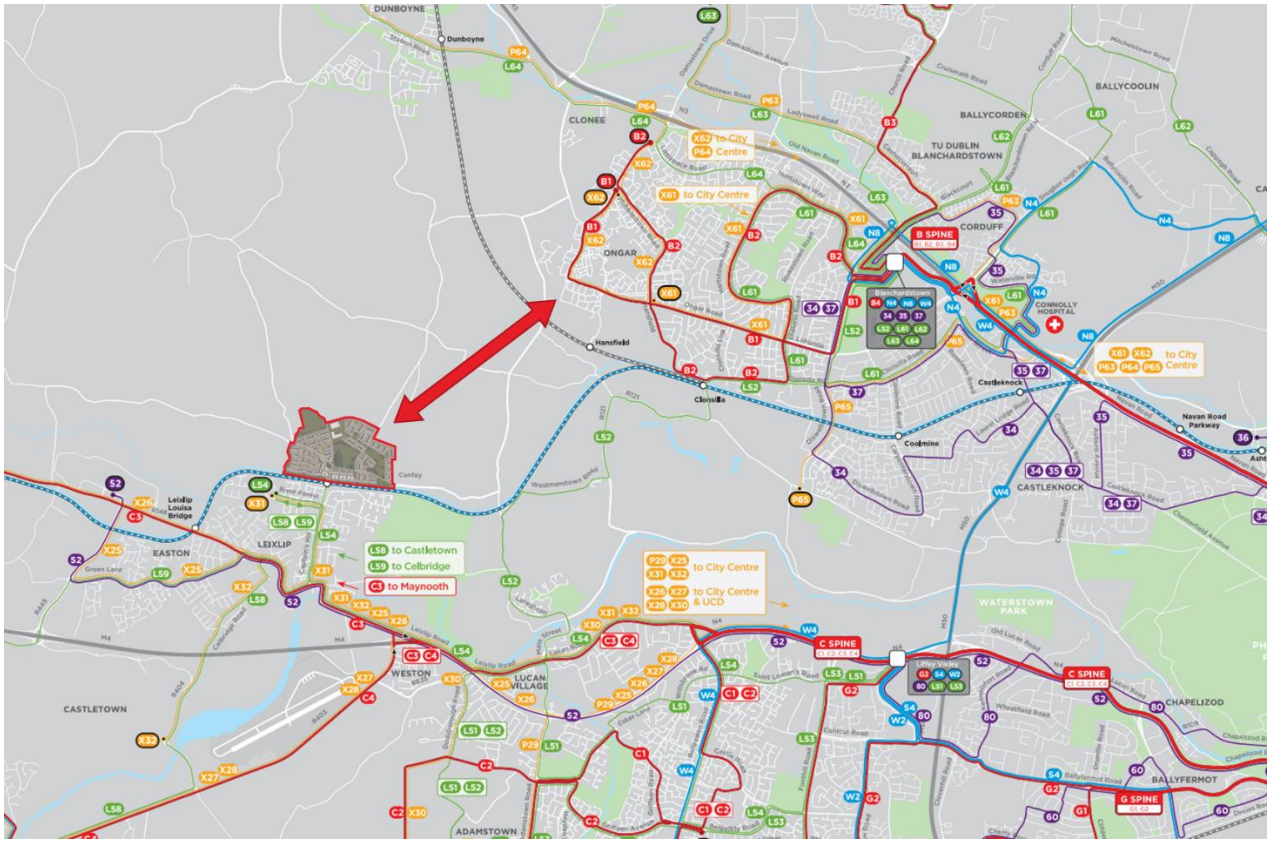


Figure 5-12: Proposed BusConnects Redesign with Confey Masterplan and Potential Additional Connections

5.7 Mix of Land Uses

The provision of mixed use, local community and educational land uses within the development will help to reduce the number of external trips to/from the masterplan. By locating these trip attractors within the masterplan in addition to residential units which are trip generators, there is a far higher likelihood that the trips will be made by walking or cycling as opposed to by car. The provision of a school in particular within the masterplan, along with the provision of safe walking and cycling infrastructure, will help ensure that children develop a pattern of travel by sustainable modes.

5.8 Public Realm and Street Design

High quality public spaces will be provided to create a lively activity node for Confey where people would prefer to use active modes of transport and where public transport is integrated into the urban fabric of the development. Local Streets and Homezones will be people focused streets which create a pleasant environment for residents, without being dominated by vehicular traffic, further encouraging use of sustainable modes. Public realm and street design principles that is employed in the masterplan is illustrated in Figure 5-13.

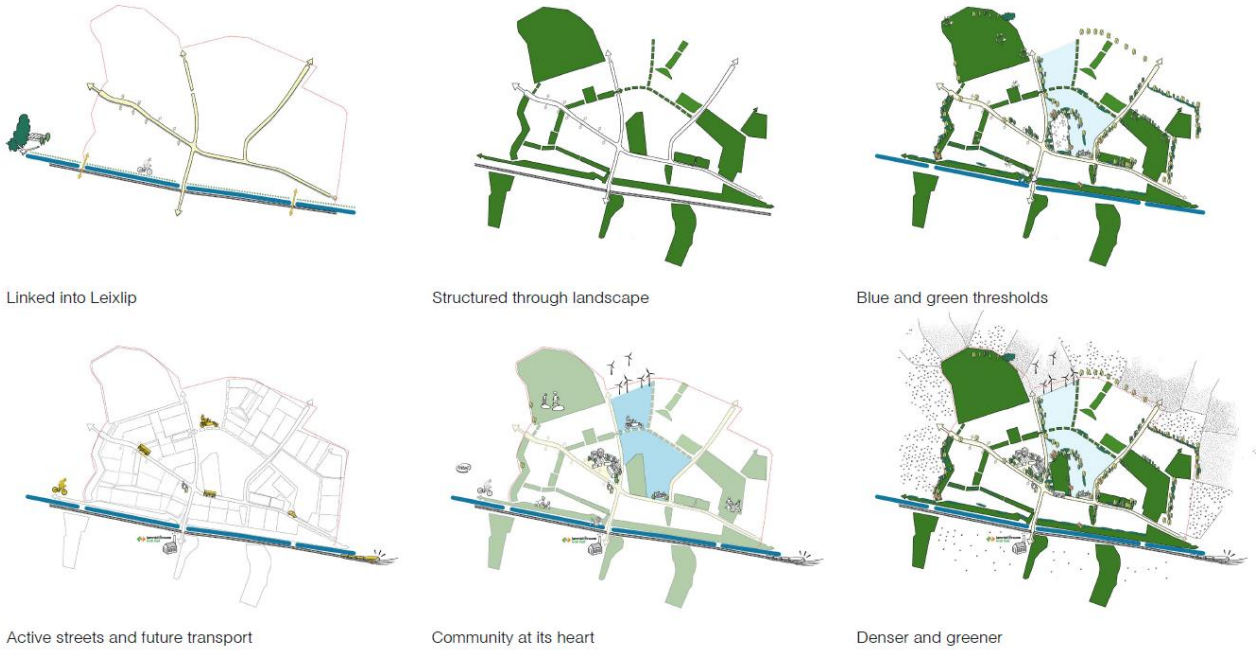


Figure 5-13: Public realm and street design principles

5.9 Proposed Street Layouts

Figure 5-14 demonstrates the street network hierarchy within the masterplan. This shows the main corridors within the masterplan area complemented by neighbourhood streets and smaller local street feeding into the main links.

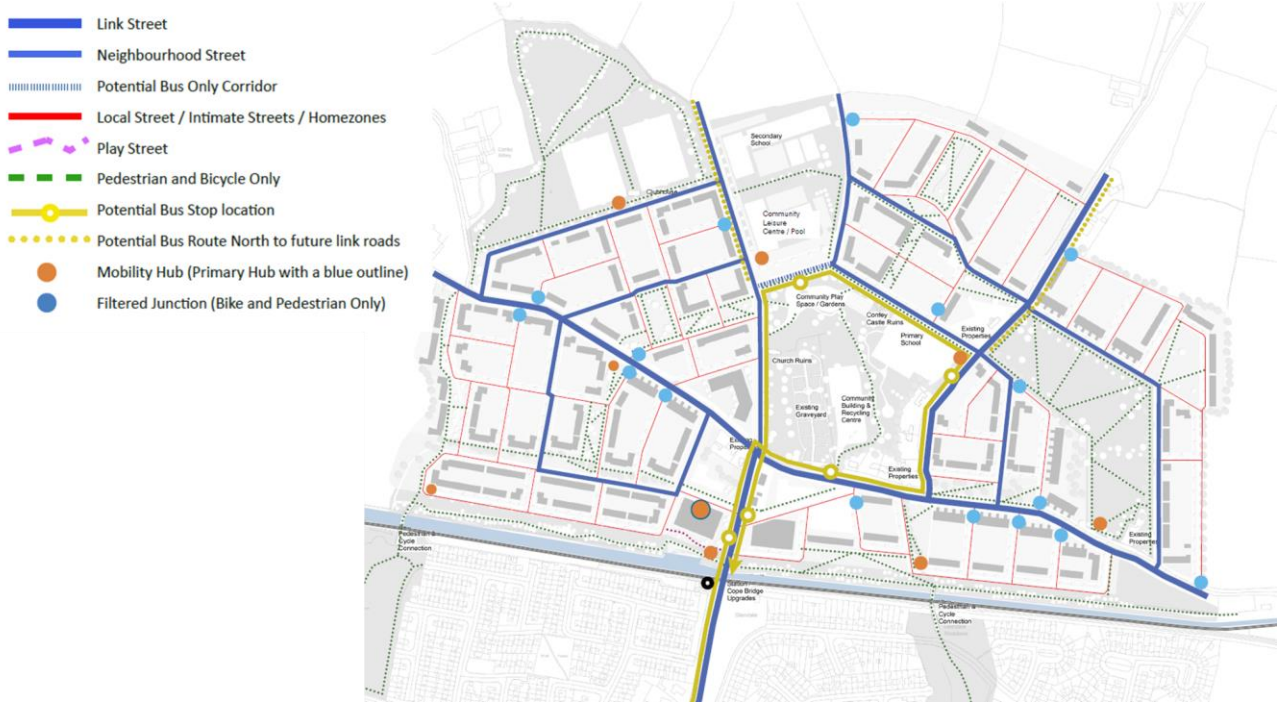


Figure 5-14: Proposed street layout

Link streets will comprise principal connectors between east and west of the masterplan, as well as linking the masterplan with the south of the Royal Canal. These streets will be equipped with continuous and segregated cycle and pedestrian infrastructure to enhance safety and comfort of pedestrian and cyclist movements. A side verge featuring street trees will also be provided along links (Figure 5-15).

Figure 5-15: Representation of link streets in the proposed masterplan area

Neighbourhood and local streets will constitute connectors between neighbourhoods and smaller roads feeding into the major links. These will have standard carriageway widths and side verge will be provided as swale to reduce maintenance and increase bio-diversity. An example representation of local street layout is presented in Figure 5-16.

Figure 5-16: Representation of local roads in the proposed masterplan area

Intimate streets will comprise low traffic streets with little to no vehicular through traffic, contrasting surface finish on carriageway and provision for on-street parking as shown in Figure 5-17. At intersections of these streets with neighbourhood street, raised tables will be provided to facilitate pedestrian movement.

Figure 5-17: Representation of intimate streets in the proposed masterplan area

5.10 Maximising the use of open space

There are open space zoning within the Confey Masterplan which will be incorporated in the urban design of the development as shown in Figure 5-18. Pedestrian and cycle networks have been developed to align to the propose open space and taken advantage of.

Figure 5-18: Proposed Open Space network within Confey Masterplan

6. Proposed External Improvements

6.1 Introduction

In addition to the sustainable transport measures provided within the masterplan, external improvements (outside of the Masterplan area) are also needed in order to enhance the connection between the masterplan and the surrounding area, most importantly with Leixlip itself. The following proposals are either partly or wholly located outside of the masterplan and will contribute to the sustainable transport characteristics of the masterplan by improving the accessibility to/from the masterplan by sustainable modes.

6.2 Captain's Hill Improvements

North south connectivity across the railway line and Royal Canal is paramount for to the development of Confey. The existing Captain's Hill is the first opportunity for improved linkage to consider. However secondary linkages as proposed in the UDF is also required to provide alternative route options and shorter distances to pedestrians and cyclists between the Confey Masterplan and Leixlip.

Cope Bridge is expected to be upgraded by Irish Rail. This upgrade will include the instatement of traffic lanes in both directions and the provision of segregated pedestrian and cycle bridges.

To accommodate the Confey Masterplan development, it is proposed to provide continuous pedestrian and cycle facilities adjacent to Captain's Hill and to upgrade junctions along the route as shown in concept in Figure 6-1. Space for pedestrian and cycle improvement is limited in the southern part of route and gradients are steep and therefore diverted parallel routes to Captain's Hill is proposed to accommodate active modes of transport. Gradients on these routes are less severe and these routes follow along green open space. Figure 6-2 provides photos of the existing cycle route along the eastern diversion.

The proposed upgrade is expected to present the following benefits:

- Safe, convenient and continuous active routes linking Confey Masterplan to Leixlip;
- Connecting Confey to existing schools, shops and other amenities within Leixlip;
- Pedestrian and cycle priority at junctions;
- Improved traffic operation along Captain's Hill including easier access off side roads into Captain's Hill;

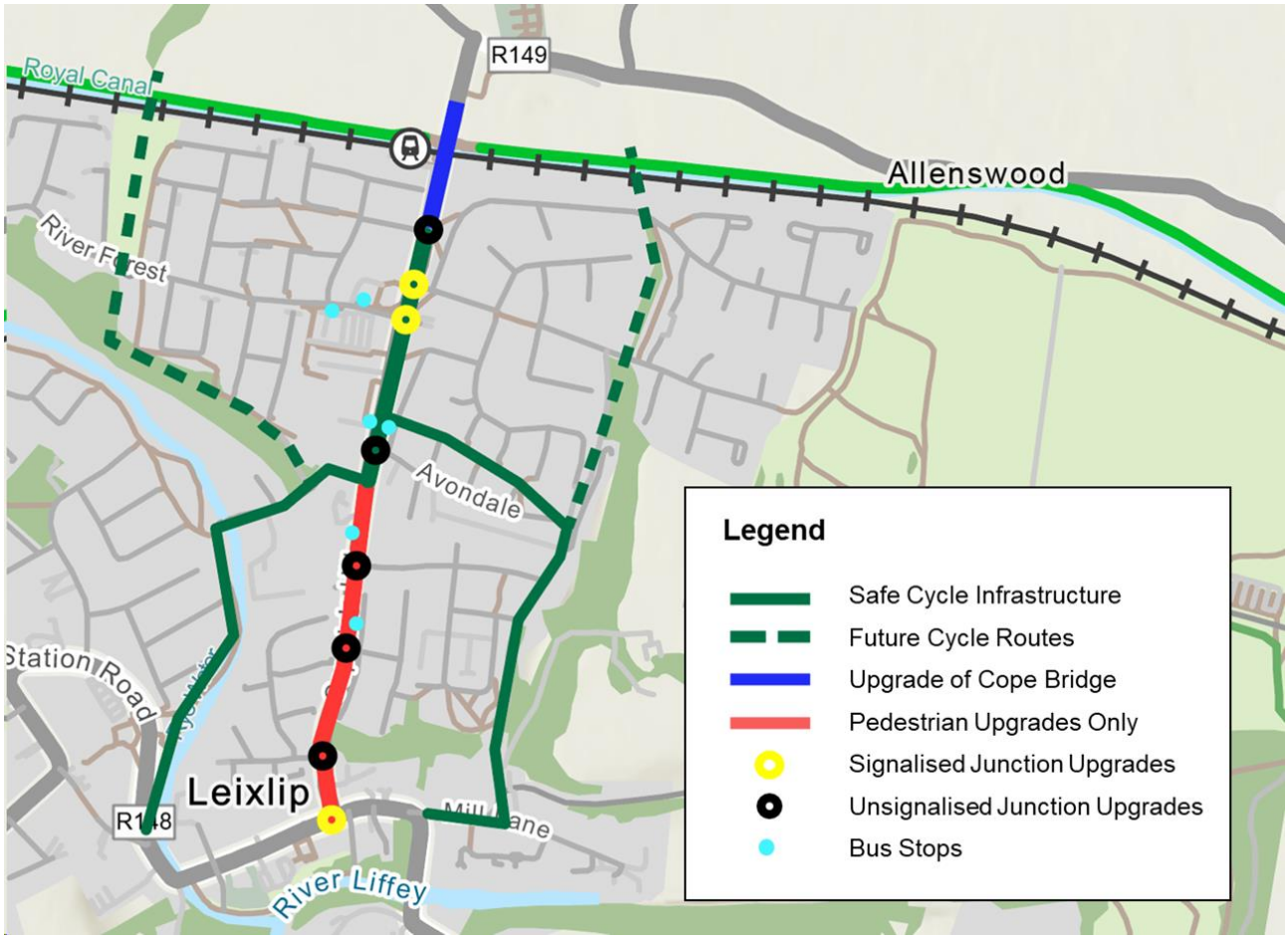


Figure 6-1: Proposed Captain's Hill Upgrade

Figure 6-2: Existing Cycle Route Along Eastern Diversion

Figure 6-3 to Figure 6-5 below show a proposed concept design for the pedestrian/cycle improvements along Captains Hill. The first insert of Captain's Hill Road on Figure 6-3 shows how the proposed Cope Bridge upgrades at the northern end of the road will be tied in the proposed upgrades by extending the cycle tracks and footpaths towards the south. Footpaths and cycle routes are proposed on both sides of the road at a width of 2.0m each, while a 6.0m wide two way carriageway is maintained. Therefore the general cross section of the road is 14m.

At the junctions with Newtown Glendale and River Forest, safe protected cycle infrastructure is provided in line with typical BusConnects junction design principles along with pedestrian crossings across all approaches. It is proposed to signalise these two junctions , to better regulate traffic flows and accommodate for vehicles attempting to exit from the minor arms, which is currently difficult due to high traffic volumes along the main arm in the peak hours. The expected improvements to the operation of these junctions is detailed in Section A.4.

Segregated cycle infrastructure is continues southwards of these junctions, where at the existing entrance to the San Carlo Senior School is reconfigured to a wide toucan crossing across Captian's Hill. South of the toucan crossing, only the footpath continues on the eastern side of Captain's Hill, while a two-way cycle route continues on the western side of the road to link to Distillery lane which is proposed to be a quiet lane, providing access across a bridge to the Ryevale Lawns Walkway and ultimately to Leixlip Main Street to the south.

Figure 6-5 shows the proposed two-way cycle route from the proposed toucan crossing on Captain's Hill Road towards the east through Avondale estate. This route follows the existing pedestrian path and links to St Mary's Park in the south, ultimately connecting to Leixlip Main St via the dedicated pedestrian/cycle route between St Marys Park and Cypress Springs. This route also ties into the proposed cycle route as outlined in the Leixlip LAP, connecting the new proposed bridge over the Royal Canal between Confey and Glendale Meadows. The majoriyt of this route is a two way cycle way (3.0m width) ana a 2.0m footpath. To improve permeability in Leixlip, links from nearby streets are proposed to connect into the primary route.

Figure 6-4 shows the continuation of Captain's Hill up to the junction with Main Street from the junction with Distillery Lane. There are limited space available on this section of the road to provide continuous pedestrian and cycle routes adjacent to the traffic lanes. For for section it is proposed to provide raised pedestrian crossings at the Riverdale and Rye River Mall junctions. In addition, it is proposed to reconfigure the Captain's Hill / Main Street junction by extending the left and right traffic lanes to allow more vehicle stacking space and to reconconfigure the signal operation. Traffic analysis outlined in Section A.4, shows that these alterations of the junction is expected to achieve an improved operation of the junction conpared to the existing operation.

Figure 6-3: Proposed pedestrian/cycle improvements along Captain's Hill

Figure 6-4: Proposed pedestrian/cycle improvements along Captain's Hill

Figure 6-5: Proposed pedestrian/cycle improvements along Captain's Hill

6.3 Enhanced Train Station Connection

As mentioned in Section 2.3, additional pedestrian and cycle facilities are proposed alongside Cope Bridge as part of the Dart+ West project. There is potential to improve the access from the Confey masterplan with the Dart/Train station, utilising this bridge to create a more direct connection into the station.

This section explores some options that could be considered to improve the station accessibility from the Confey Masterplan.

The most effective solution to provide access directly to the platforms from the bridge proposed Irish Rail Bridge, and create a more attractive, directly accessible and visible station to further encourage its use. Figure 6-6 below shows a possible layout for this solution. It shows that passengers will be able to directly access the existing connecting bridge between the two platforms via a new bridge from the proposed pedestrian and cycle route running adjacent to Captain's Hill.

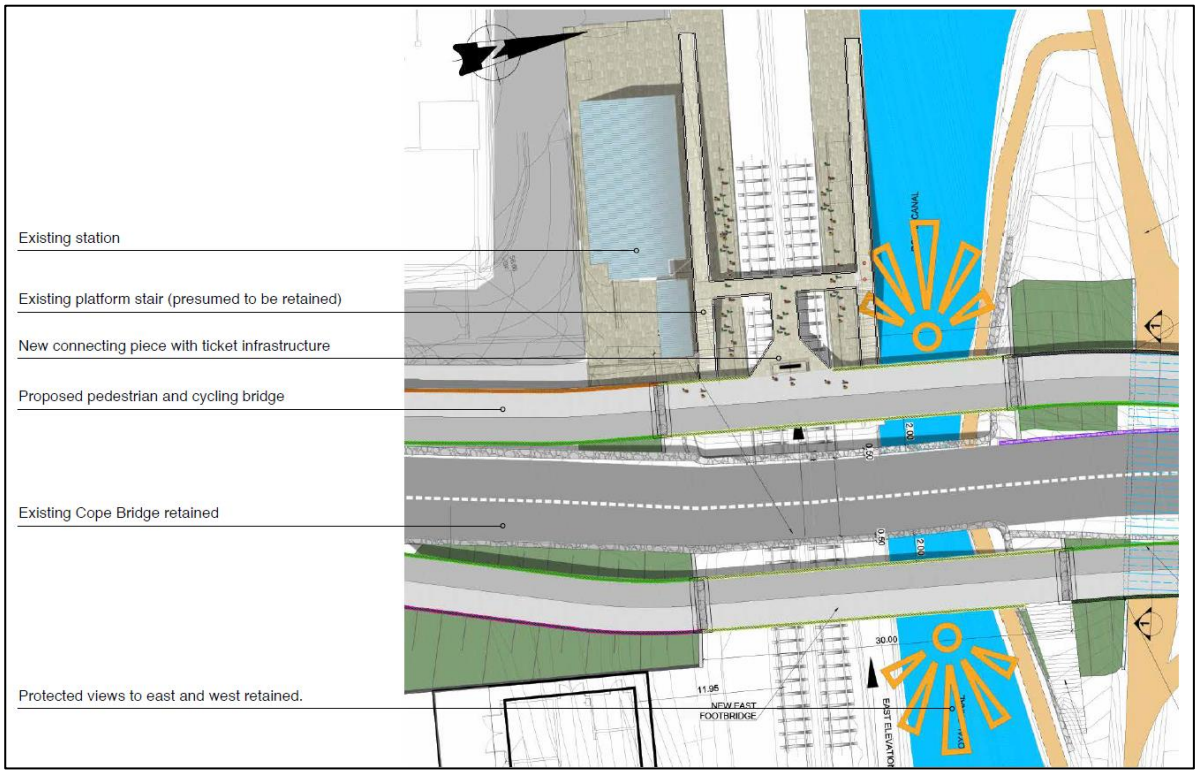


Figure 6-6: Station connection directly from bridge

An alternative solution is the creation of a set of steps to the south of the railway line leading directly from the proposed bridge by Irish Rail proposals to the front courtyard of the station as shown in Figure 6-7 below.

This option will provide a more direct access from the Confey masterplan area to the station and reduce the walking distance considerably. However, the route is still somewhat indirect and passengers from Confey travelling in the direction of Dublin will be forced to both use this set of stairs down to the station and the internal station stairs to reach the northern platform.

This option could be considered as aa shorter term interim solution to improve connectivity before the permanent direct-access solution is delivered.

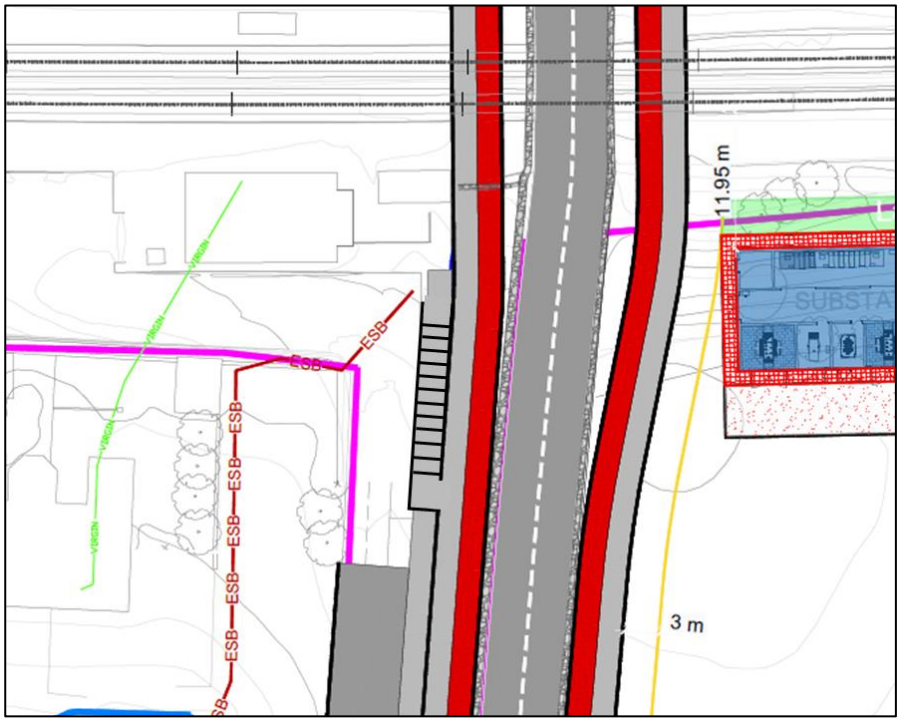


Figure 6-7: Short term station connection solution

6.4 Greenway Pedestrian and Cycle linkage

Intel, along with the proposed Collinstown enterprise and employment zone (Area Q) south of it is a key potential workplace destination for potential Confey residents. This area is directly linked to Confey via the Royal Canal Greenway which is expected to be fully operational when the masterplan area is developed. It is the most convenient and direct route between Confey and Intel and takes approximately 30-minutes to walk or 10-minutes to cycle.

Beyond Intel to the west, the canal continues to Maynooth, which is a key trip attractor for students in particular due to the presence of the University. To the east, the Greenway links the masterplan to the Ongar/Blanchardstown, and onwards to Dublin City. Figure 6-8 provides an overview of the greenway route through the masterplan and surrounding areas. Figure 6-9 and Figure 6-10 show illustrations of the greenway and its integration into the masterplan, linking to uses along the southern edge of the masterplan.

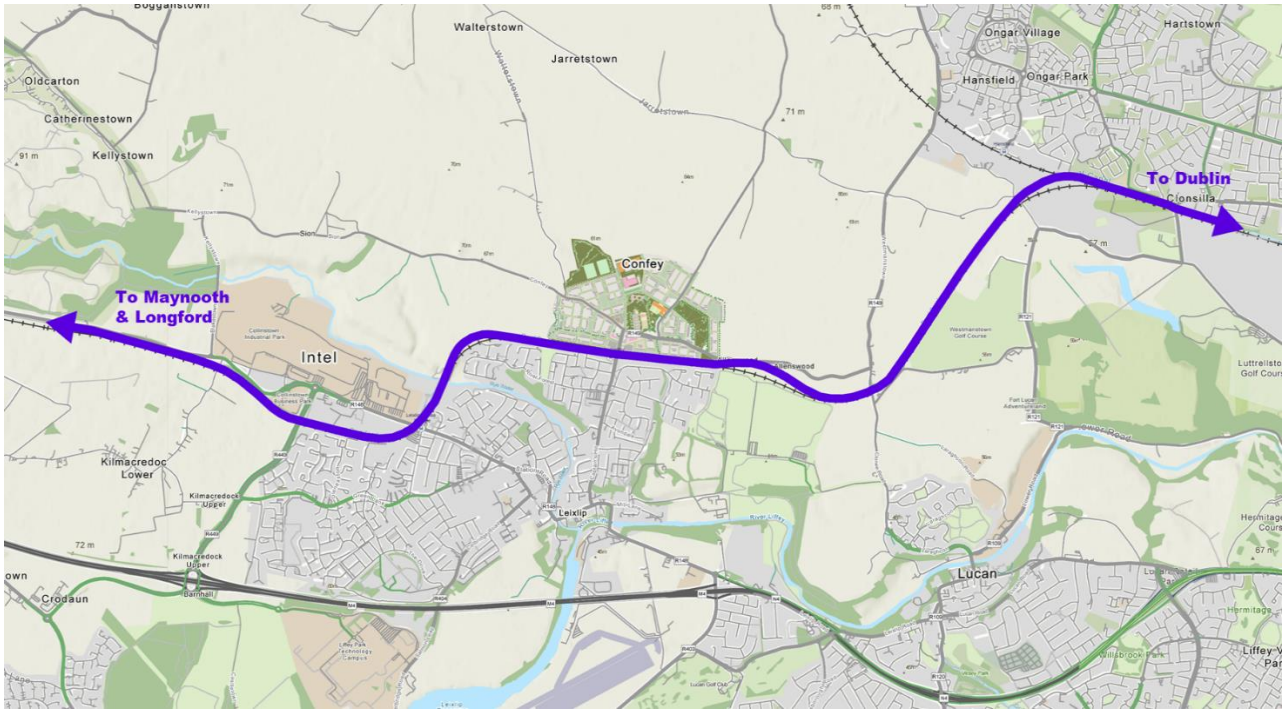


Figure 6-8: Royal Canal Greenway Route Overview

Figure 6-9: Royal Canal Greenway Sketch

Figure 6-10: Illustrations of the proposed Greenway integration and Bridge

6.5 Proposed River Forest Bridge

As per the LAP, a pedestrian/cycling bridge is proposed to connect the southwestern corner of the masterplan to the River Forest residential area on the southern side of the canal, and beyond into Leixlip. The construction of this bridge and associated cycle routes will create a continuous off-road connection from the masterplan to Leixlip, enhancing connectivity to Confey Community College to the west and St Catherine's Park to the east, creating an alternative route to Captains Hill.

Figure 6-11 below shows a potential solution for the River Forest Bridge, which rises by 6m over a length of 95m to clear the railway line with a slope of approximately 6%.

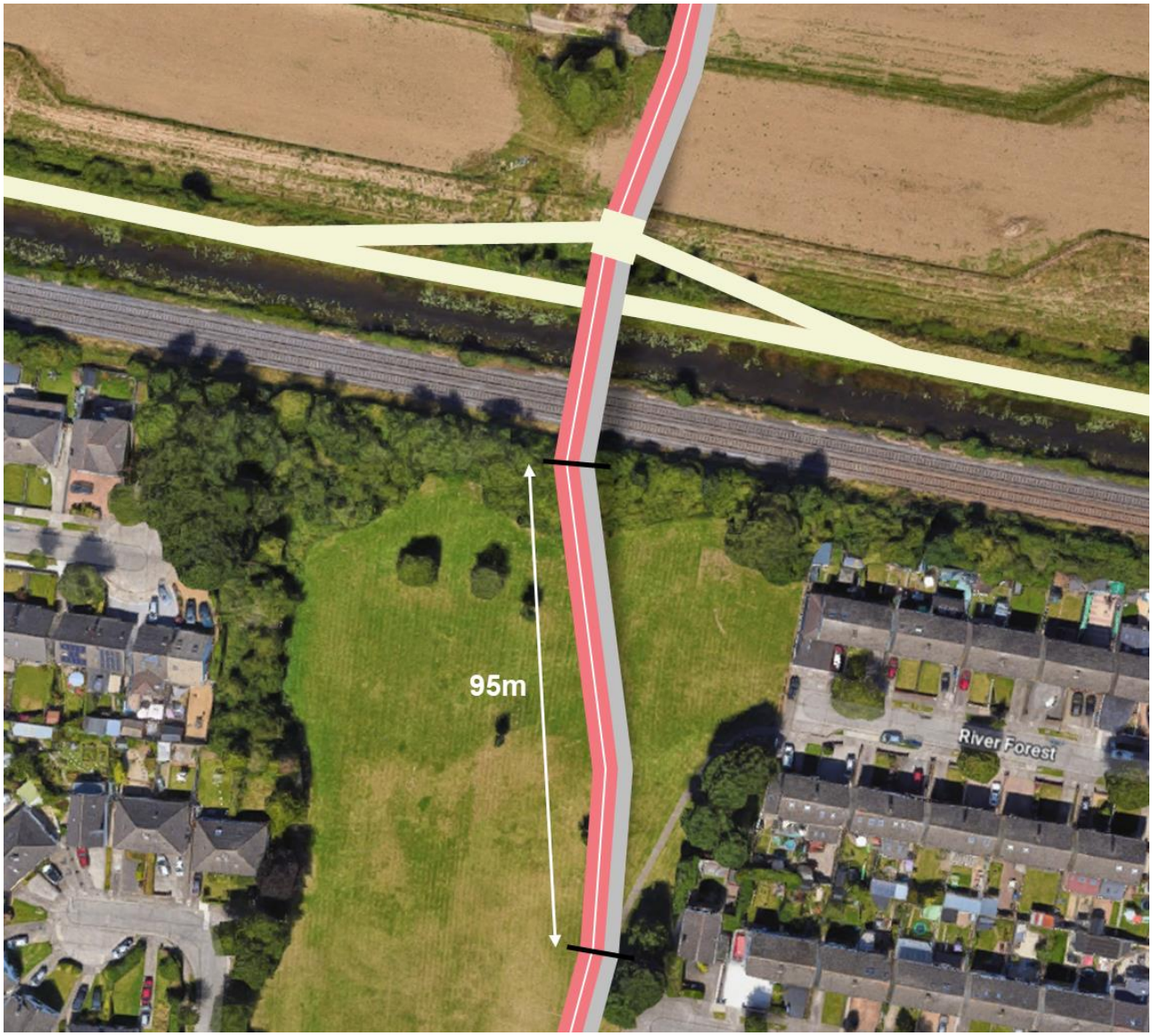


Figure 6-11: Potential River Forest Bridge Alignment

6.6 Proposed Newtown Glendale Bridge

As per the LAP, in addition to the River Forest pedestrian/cycling bridge to the west, an additional pedestrian/cycle bridge is proposed to connect the south-eastern corner of the masterplan to the Newtown Glendale residential area on the southern side of the canal, also continuing into Leixlip. The construction of this bridge and associated cycle routes will create a continuous off-road connection from the masterplan to Leixlip, creating an alternative route to Captains Hill.

Figure 6-12 shows a potential solution for the Newtown Glendale bridge, which first rises by 4m over 60m to give appropriate clearance for the road, and then a further 3m over 50m to clear the railway line, with a slope of approximately 6%.

Figure 6-12: Potential Newtown Glendale Bridge Alignment

6.7 Proposed Link Road

Table 5.4 of the Kildare Development Plan 2023 – 2029 lists proposed road and bridge projects, one of which is to "Examine options in consultation with South Dublin County Council, Fingal County Council, Meath County Council, TII and other statutory agencies for the delivery of a M50 resilient outer orbital link road connecting the M3 to the M4."

The delivery of this link is proposed to be implemented as part of the development of the masterplan, with a proposed connection between the Ongar - Barnhill Distributor Road to the northeast of the masterplan, and the R148 to the west of the masterplan, passing approximately 1km north of the centre of the masterplan (as shown in Figure 6-13).

In addition to meeting the requirements of the KCC development plan and TII M50 resilience study, this road will result in two key outcomes in terms of traffic distribution. One outcome is that traffic travelling between Ongar and areas to the west of the masterplan such as Maynooth and Intel will likely travel via the new road, resulting in a reduction of through traffic through the masterplan and along Captains Hill. Another key outcome is the improvement of the link between the masterplan and Ongar, making it a more attractive route for trips generated by the masterplan, as an alternative route to Captains Hill for trips to the M50 for example. The impact of this infrastructure on traffic patterns will be monitored on an ongoing basis, and further measures may be identified and implemented as needed particularly in order to further limit unnecessary through traffic through the masterplan for example.

Figure 6-13 shows the indicative route for the proposed road and its connection to the proposed roads as part of the Fingal Development Plan 2023-2029, along with a proposed bus priority route linking to the Masterplan and Captains Hill.

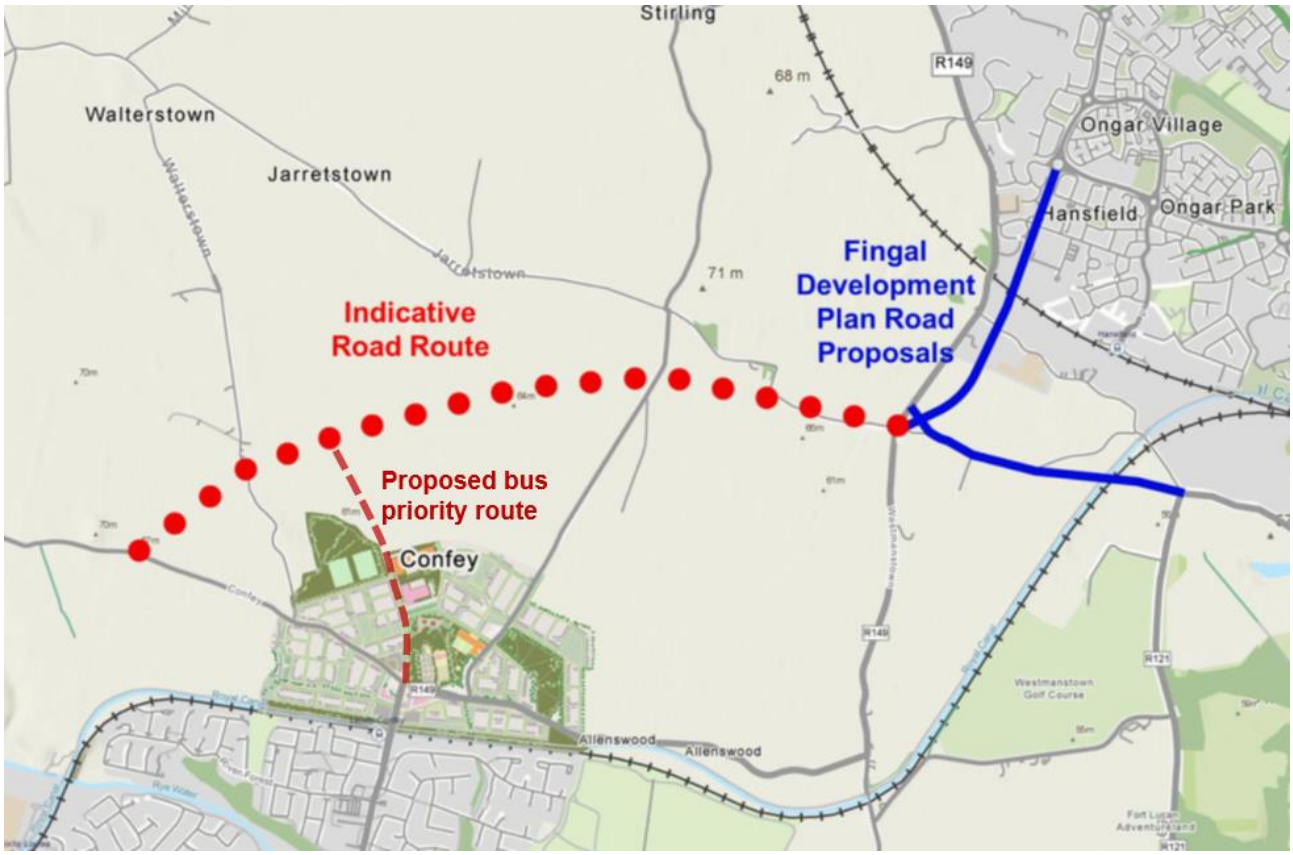


Figure 6-13: Indicative New Road Infrastructure Route

6.8 Western Road Upgrades

As discussed in Section 2.3.2, as a result of the route through Intel becoming unfeasible, the western 'Route Option 1' is the preferred option for infrastructural upgrades to the west of the site, which consists of minor upgrades to the existing L1015 and L1014 roads. These upgrades may include safety improvements such as realignment of the road and provision of active travel infrastructure, along with the upgrading of the L1014/L1015 junction to reorient the mainline along the eastern/southern arms, along with potential improvements to Kellystown Bridge such as signals, or widening of the bridge. These upgrades will improve this route as an alternative means of accessing the M4 to the Captains Hill route. In addition, along with the proposed Orbital Road to the north of the Confey Masterplan, and the additional roads proposed as part of the Fingal Development Plan, will form a continuous link between the M3 and M4, which aids in the requirement for an M50 resilience link as discussed in Section 3.8.2. Figure 6-14 below shows the proposed extent of the western road upgrades, along with the overall context illustrating the M3-M4 link route.

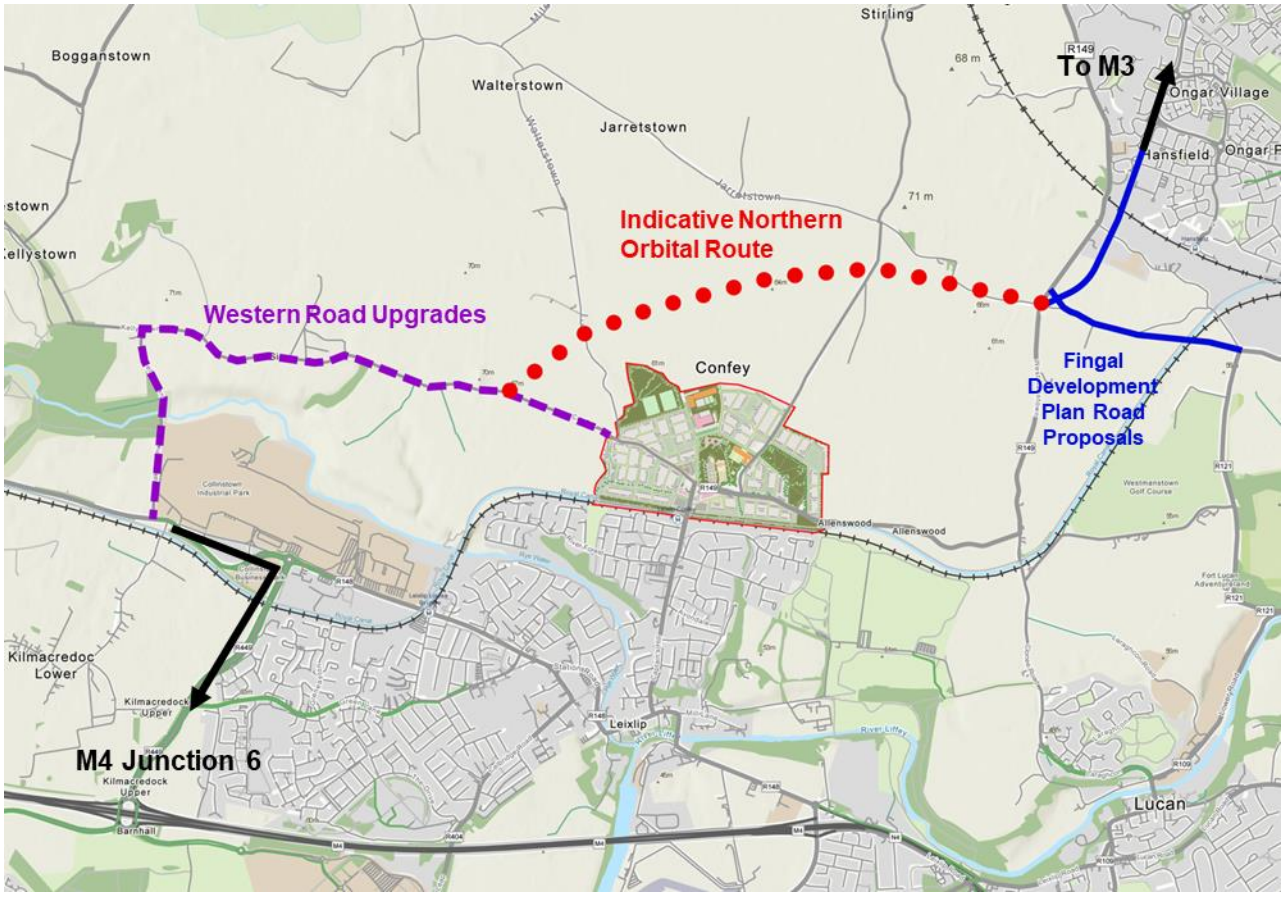


Figure 6-14: Western Road Upgrades Context

7. Proposed Strategic Transport and Mobility Strategy

7.1 Overview

The development of the Confey Masterplan presents some opportunities and challenges from a transportation point of view as outlined in Section 4 in this report. Although the railway line and the Royal Canal segregates the lands from Leixlip, these two linear elements also improve transportation to Confey. The existing railway services and the future DART + West facilitates medium and long distance commuting and will improve significantly within the short to medium term, while the Royal Canal proposed greenway connects the masterplan to local educational, employment and town centre nodes in close proximity.

It is recognised that the successful development of the Confey Masterplan will involve integration to Leixlip and the services that it provides. The upgrade of Captain's Hill and the DART + West upgrade of Cope Bridge will provide a strong building block to promote integration and focusses especially on active modes of transport. This improvement will also address a lot of the existing issues experienced by residents living in estates adjacent to Captain's Hill. The upgrade of this road as proposed will provide the opportunity to provide a sustainable transportation solution for the short term when the first development phases are rolled out.

However additional integration of the Confey Masterplan into Leixlip is required and the proposed two active modal bridges to link both the east and the western parts of the development to Leixlip is welcomed and will encourage active travel by providing more route choice, quality connections and shorter travelling distances. The role out of later development phases in this development is critically dependent on the proposed bridges. High level analysis of the topography within the vicinity of these bridges have shown that solutions are available to realise these bridges.

The sustainable development of the Confey Masterplan is also dependent on directing bus services into the Confey Masterplan and the analysis of a proposal for an internal bus route with proposed bus stop locations

have indicated that the walking catchment from anywhere in town to proposed public transport hubs is within a comfortable 5 minute radii. The proposed upgrade of Captain's Hill is also expected to benefit bus services along this route by addressing current delay experienced on this road.

Although the DART + West upgrade of Confey Railway Station and Cope Bridge is expected to improve walking and cycling to the station, it was also demonstrated that there are solutions available to provide more direct linkage to the station platforms which is recommended as part of the strategy to ensure that the attractiveness of rail transport is improved.

The Confey Masterplan which is being developed parallel to the STA is built on principles of sustainable transport in terms of the transport networks proposed, the street layouts the placement of internal land uses and connection to existing and future surrounding areas. Pedestrian and cycle priority and routes are provided throughout the development to promote internal integration, route choice and shortening walking distances. Space is also provided for the development of a mobility hub which will provide additional travel options which will form part of a network of mobility hubs located in nearby town centres, employment and educational hubs.

All of the above infrastructure, as graphically indicated on Figure 7-1 is required to create a sustainable base for transport within Confey and to overcome its challenges and it recommended that this infrastructure forms part of the transportation strategy. The strategy also includes road capacity upgrades and the analysis of roads capacity is outlined in Section 4 below.

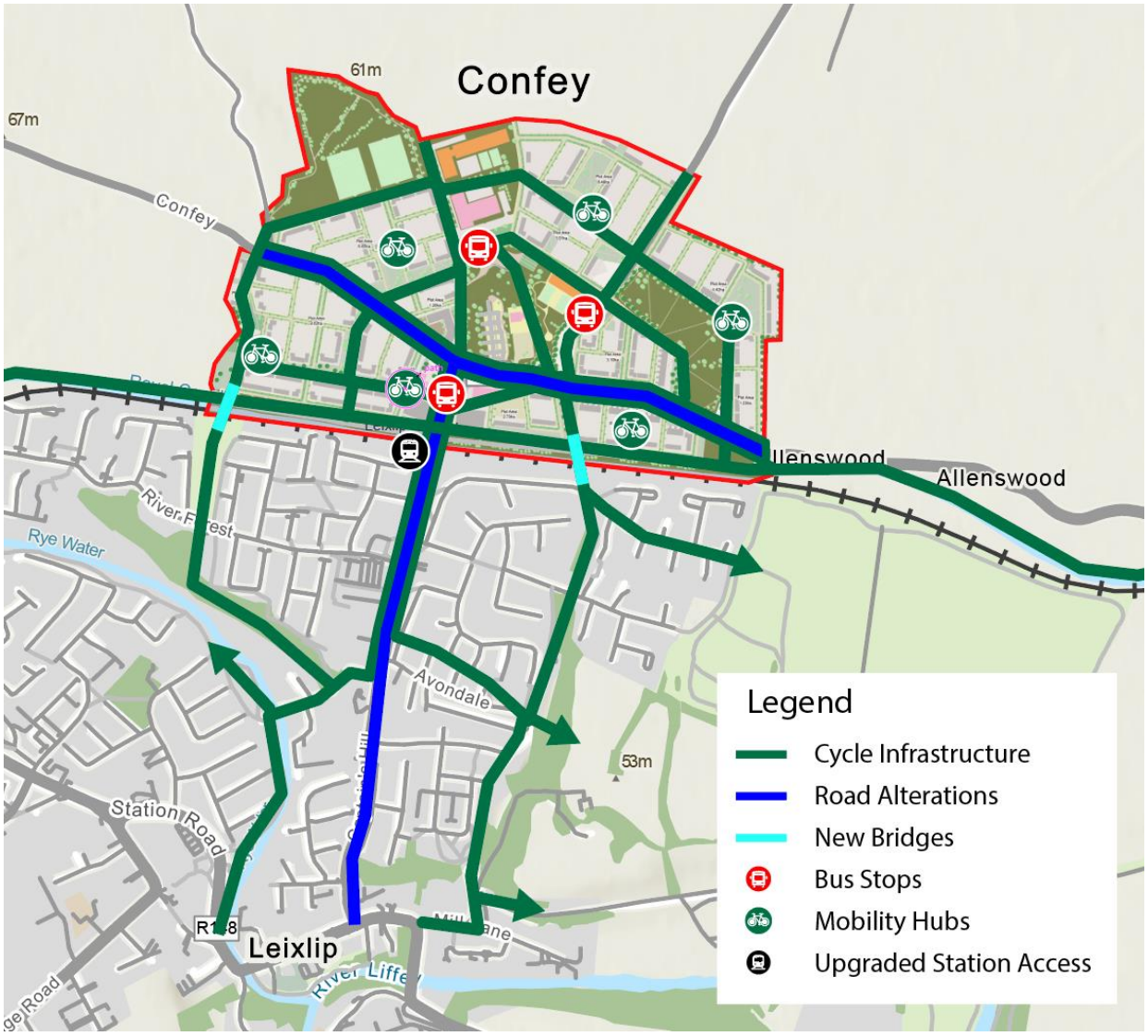


Figure 7-1: Overview of transport infrastructure at Confey

7.2 Expected Outcomes of Sustainable Measures

Figure 7-2 shows an estimated future modal split for trips in Confey. It is expected that the proposed measures will significantly change travel patterns in the area of Confey, which will be reflected in the mode share through an increase in use of public transport and active modes and a subsequent reduction in car-based travel. The future mode split is expected to differ in the following aspects.

- The proposed development in the Confey Masterplan will be designed to promote active travel modes. Significant internal walking and cycling infrastructure will be provided and the primary links to Leixlip and surrounding areas will be via these modes of transport. Therefore, the future on foot travel is estimated to be at 14% while the cycle trips are expected to increase to 10% which equals to a 24% total active travel mode share, compared to a combined 20% share for all trips at Leixlip and 7% for work trips.

- The public transport mode split is also expected to be higher as a result of the proposed improvements and the enhanced connection to bus and rail services. The close proximity of the Confey railway station and the improved access to it is expected to result in a high train usage of 17% compared to 11% in Leixlip, and a 15% for Confey in the 'Status Quo' scenario. The bus mode share is also expected to be higher than the current 11% in Leixlip, at 15%, due to BusConnect improvements which is not reflected in the Leixlip modal share as shown, since it was not operational in 2016, when the Census was undertaken.

- Therefore, the resulting car travel mode share is estimated at 32% in the future scenario in comparison with the 40% of Leixlip as the sustainable transport advantages outlined above is expected to have an impact on typical travel patterns.
- The sustainable measures explored within this report, as outlined in Sections 5 and 6 will promote a high sustainable transport mode share and reduce potential car trips. The potential future mode split for the Confey masterplan area takes cognisance of measures proposed.

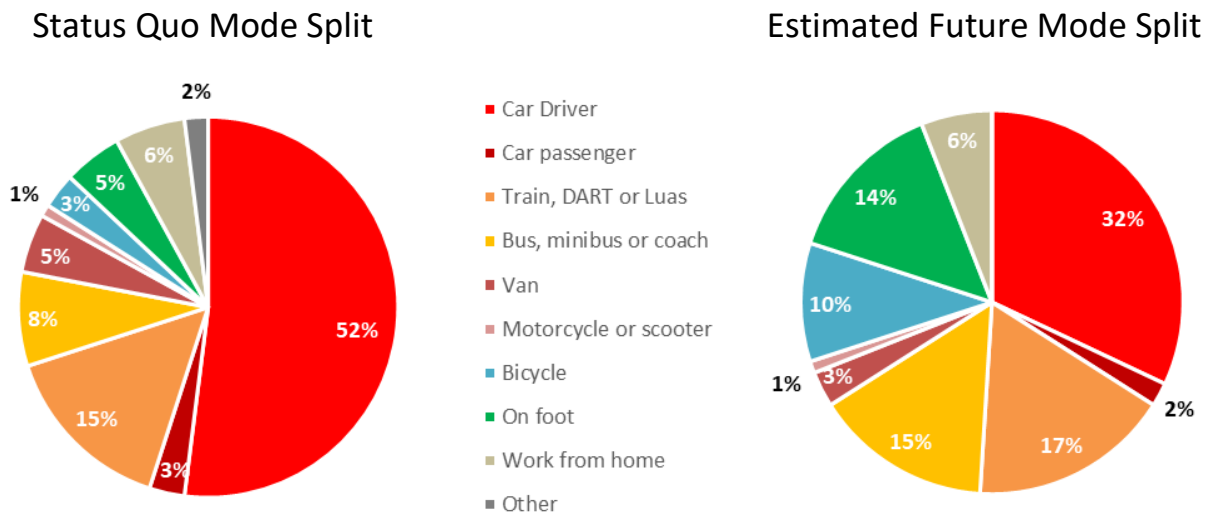


Figure 7-2: Comparison of 'Status Quo' mode split and Estimated future mode split for Confey

The proposed mode split target for the masterplan area is ambitious but achievable due to the expected future transportation infrastructure available and the proposed sustainable transportation measures to be undertaken. As presented in the benchmarking analysis in Section 3.9 in this report, the target mode share for cars in Confey is lower than in the planned developments at Cherrywood and Clonburris. However, this can be explained by the additional provision of public transport services in close proximity of the masterplan, such as the availability of BusConnect services.

7.3 Traffic Capacity Analysis Summary

As outlined in previous sections, the primary transport strategy for the masterplan is to cater for and encourage as much as possible, active travel and public transport. The masterplan location, and the suite of proposed internal and external measures will result in Confey being a sustainable transport oriented development, with a low car trip mode share of approximately 32%. This ensures that the number of vehicular trips generated by the masterplan is as low as possible.

The masterplan location and conditions of the surrounding road network, means that an assessment and management of the impact of even this relatively low level of car trips being generated by the masterplan is an important part of the masterplan strategy, and the determination of the levels of development possible on the masterplan.

Upgrades to Cope bridge are planned as part of the DART+ West programme, which is due to be fully operational in 2027, and therefore it can be reasonably assumed that the structural enabling works will be completed in the earlier phases of the programme and is expected be operational prior to the operation of the initial phase of the masterplan which is expected for 2026. Should these upgrades not be complete prior to the initial stages of the masterplan, the individual developments will be subject to a TTA submitted as part of their application.

The proposed upgrades to Captains Hill from Cope Bridge to Leixlip Main St are proposed to be completed alongside or in advance of the Cope Bridge upgrades, and therefore will also be completed prior to operation

of the masterplan. This will help to ensure that high quality pedestrian and cycle infrastructure link Confey and Leixlip from the start, while also improving traffic conditions for vehicles and buses along Captains Hill.

In order to assess the impacts of the proposed masterplan on the road network, along with the benefits of the proposed Captains Hill interventions, a junction analysis was conducted on 10 junctions in the vicinity, the full results of which are provided in Appendix A.

It was determined that with the construction of the new road to the north of the masterplan, along with the proposed upgrades to Captain Hill, all junctions examined on the local road network can operate within capacity after the construction of the full masterplan.

8. Conclusion

This report has provided an overview of the strategic transport and policy context for the Confey masterplan and the associated transport elements, as well as providing an analysis of the sustainable transport elements and transport strategy for the masterplan.

Policy, Guideline and Transport Context Review

National, regional and local policy all demonstrate the need for development of the masterplan as a whole, and inform the requirement for the sustainable transport elements of the masterplan. The Local Area Plan and Urban Design Framework specifically outline the nature and layout of the proposed lands, while the Confey Masterplan Transport & Mobility Policy Review and Access Strategy sets out the transport conditions for the masterplan and informs the development of this report.

Transport Context

The masterplan is strategically well located to avail of key active travel and public transport infrastructure, both existing and proposed. They Royal Canal Greenway, which will be finished construction prior to operation of the masterplan, runs along the southern edge of the side, providing both a recreation and transport infrastructure, connecting Confey with nearby areas such as Intel, Maynooth, and Ongar/Blanchardstown. The location of the current train station, proposed to be upgraded to a high frequency commuter line under the DART+ West project, immediately to the south of the masterplan provides a frequent, reliable, and high-quality connection with Dublin City which is the largest trip attractor for work trips. The recent BusConnects network redesign has resulted in the 'C Spine' also connecting Leixlip with Dublin, along with a number of local routes connecting to nearby towns/areas. These local routes, along with peak hour routes to Dublin currently terminate just to the south of the masterplan in River Forest, allowing for a simple transition of this terminus location to within the Confey Masterplan to serve masterplan directly.

Sustainable Accessibility

In order to maximise the sustainable transport potential for the masterplan, a suite of sustainable transport measures is proposed for the masterplan area itself, along with a number of external improvements that help to compliment the masterplan, enhance connections and fully integrate Confey with Leixlip and the surrounding area.

A number of internal measures are proposed within the masterplan itself, which are as follows:

- High quality connected pedestrian network throughout the masterplan
- Segregated, direct cycle infrastructure within the masterplan will ensure that movement throughout the masterplan by sustainable means is attractive, safe and easy.
- The provision of mobility hubs throughout the masterplan ensure that a range of mobility options are available to residents, and can act as a catalyst for more permanent active travel choices, allowing people to trial things e-bikes, e-cargo bikes, scooters etc. without the need to commit to a purchase. The potential to link to a wider Mobility Hub network in nearby areas further improves sustainable connections.
- Extension of existing bus terminus into the core of the masterplan, with potential for further expansion of bus routes towards Ongar.
- Provision of a mix of land uses including retail, community, and education uses in various locations around the masterplan in addition to the residential uses.

External improvements to sustainable transport infrastructure compliment the proposals within the masterplan, and ensure that connections are strengthened.

- Proposed upgrades to pedestrian and cycle infrastructure along Captains Hill will ensure that the masterplan is fully integrated with the land uses along the north end of Captains hill such as San

Carlo School and the Riverforest Shopping Centre, while providing high quality connections to Leixlip Main Street.

- New road infrastructure bypassing the masterplan to the north which removes a portion of potential through traffic through the masterplan and along captains hill, while also providing an easier connection to Ongar.
- Integration of the Royal Canal Greenway into the masterplan, with active frontage along the canal.
- Construction of two pedestrian and cycle bridges across the Royal Canal and train line at River Forest and Newtown Glendale will provide alternative pedestrian and cycle only entrances to the eastern and western sides of the masterplan, and enhance connection to the proposed Greenway.
- Enhancing the connection between the masterplan and the Train station will ensure that it is an attractive option for residents and its utilisation will be maximised.

Traffic Capacity Analysis

A transport modelling exercise was conducted in order to determine the capacity for development in this location, dependent on the implementation of additional road infrastructure/upgrades. It was found that if the suite of sustainable measures is implemented, resulting in a 32% mode share for cars, along with the new northern road and captains hill upgrades are constructed, then the junctions within the local road network can still operate within capacity.

Conclusion

This report outlines a framework for both external and internal transport requirements to accommodate the development of full Confey masterplan area. This transport strategy provides the framework within which the masterplan area can develop. The masterplan area will be developed in phases likely over a 5 to 10 year period. Within this timeframe, the transportation environment, travel behaviour and the role out of planned infrastructure can vary and therefore the assumptions made in this report may need to be updated at a later stage to reflect these changes.

Individual planning applications will be supported by a Traffic and Transport Impact Assessment (if required) to demonstrate capacity of the existing transport network and services to support the proposed development. The Planning Authority may set aside any infrastructure requirement identified where it is demonstrated that the infrastructure in question is not in itself essential for the development being proposed.

Appendix A

Full Traffic Capacity Analysis

A.1 Methodology

In order to analyse traffic conditions in the vicinity of the Confey Masterplan, a sub-consultant was commissioned to conduct traffic surveys at key-junctions in the surrounding area of the masterplan. These surveys were used to assess the existing traffic conditions and estimate the effect of the traffic generated by the development of the Confey Masterplan on the local road network.

Traffic surveys were carried out on Tuesday 7 March 2023 from 07:00 to 19:00 at 27 junctions. Turning count surveys were conducted at all 27 junctions and queue length surveys were conducted at the junctions along Captain's Hill and a number of junctions to the east of the masterplan area (red colour in Figure 8-1).

The impact of the development of Confey Masterplan has been assessed by comparing the projected future traffic volumes on junctions and links for the AM and PM peak period both with and without the proposed development. Future scenarios refer to the Full Masterplan horizon, which is expected to be completed by 2030. Traffic in all future scenarios has been adjusted using appropriate growth rates, as per the Transport Infrastructure Ireland Project Appraisal Guidelines 2016. Taking into account the sustainable measures planned for the wider area and the proposed improvements described in the context of this report, it is expected that a more sustainable transport mode share is likely to be achieved in the future years and therefore, traffic in future scenarios has been adjusted using low growth rates, as per the Transport Infrastructure Ireland Project Appraisal Guidelines 2016.

The impact of the proposed development on the junction operation was assessed using Junctions 9 software for modelling priority junctions and LinSig software for modelling signalised junctions in the vicinity of the masterplan. Junctions were assessed in terms of operating capacity, degree of saturation, delay and queue.

The following sections present the process of estimating the trip generation of the proposed development which was added to the background traffic in all future scenarios, as well as the trip distribution profile used to allocate the expected trips on the local road network. Then, Section A.4 presents the junction assessment summarising the results of the modelling for key-junctions in the vicinity of the masterplan.

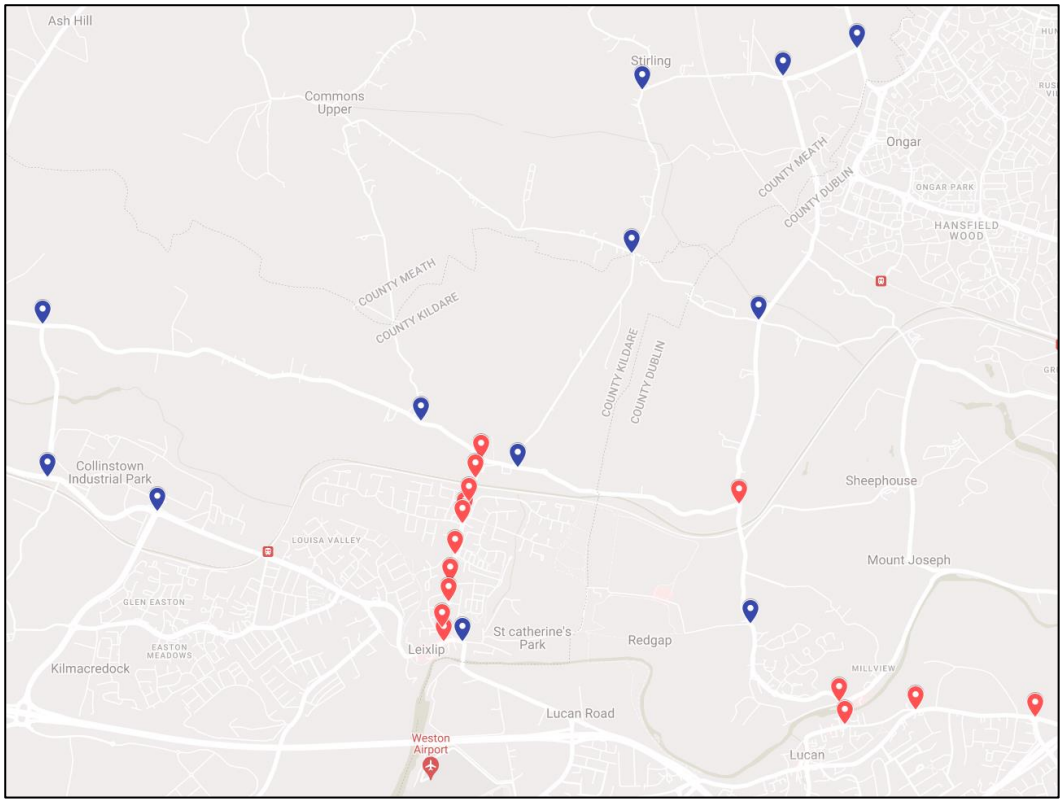


Figure 8-1: Traffic survey locations.

A.2 Trip Generation

The expected peak period traffic generated by the development of Confey Masterplan has been calculated applying the trip rates contained in the "Transport & Mobility Policy Review and Access Strategy" report to the proposed development. These rates are presented in the following Table A.2-1.

Table A.2-1: Trip generation rates (RoD Report).

	ARRIVALS	DEPARTURES	TOTALS
Time Range	Trip Rate	Trip Rate	Trip Rate
07:00-08:00	0.098	0.433	0.531
08:00-09:00	0.245	0.839	1.084
09:00-10:00	0.248	0.316	0.564
10:00-11:00	0.178	0.197	0.375
11:00-12:00	0.194	0.218	0.412
12:00-13:00	0.246	0.233	0.479
13:00-14:00	0.233	0.261	0.494
14:00-15:00	0.203	0.227	0.430
15:00-16:00	0.559	0.343	0.902
16:00-17:00	0.449	0.291	0.740
17:00-18:00	0.489	0.267	0.756
18:00-19:00	0.504	0.265	0.769
19:00-20:00	0.413	0.249	0.662
20:00-21:00	0.275	0.132	0.407

By applying the above trip rates to the total number of proposed dwellings in the masterplan, the overall number of expected person trips was calculated. Total traffic expected to be generated by the development was then calculated based on the trip rates above, the proposed units for each horizon, and the potential car mode split of the area.

The potential car mode split for the masterplan was determined by carrying out an origin-destination analysis. This analysis was based on POWSCAR data which provide the number of commuting trips between a specific zone, in this case Leixlip, and the surrounding zones. This information was used to determine how many trips can be expected between the development and each of the surrounding zones, as well as estimate a percentage of potential car traffic based on the travel distance and availability of public transport for each of the surrounding areas. The resulting car mode share used for the purpose of this analysis is 32%.

Based on this information and using the trips rates for the AM and PM peak hour in the road network, it is expected that the Full Masterplan will give rise to 1,930 person trips in the AM peak and 1,346 person trips in the PM peak. These constitute total person trips by all modes.

The person trips generated by the development across the day, split by arrival trips and departure trips are shown in Table A.2-2 while the vehicle trip generation is shown in Table A.2-3.

Table A.2-2: Person trip generation

	ARRIVALS	DEPARTURES	TOTALS
Time Range	**Trip Rate**	**Trip Rate**	**Trip Rate**
07:00-08:00	174	771	945
08:00-09:00	**436**	**1493**	**1930**
09:00-10:00	441	562	1004
10:00-11:00	317	351	668
11:00-12:00	345	388	733
12:00-13:00	438	415	853
13:00-14:00	415	465	879
14:00-15:00	361	404	765
15:00-16:00	995	611	1606
16:00-17:00	799	518	1317
17:00-18:00	**870**	**475**	**1346**
18:00-19:00	897	472	1369
19:00-20:00	735	443	1178
20:00-21:00	490	235	724

Table A.2-3: Vehicle Trip Generation

	ARRIVALS	DEPARTURES	TOTALS
Time Range	**Trip Rate**	**Trip Rate**	**Trip Rate**
07:00-08:00	56	247	302
08:00-09:00	**140**	**478**	**617**
09:00-10:00	141	180	321
10:00-11:00	101	112	214
11:00-12:00	111	124	235
12:00-13:00	140	133	273
13:00-14:00	133	149	281
14:00-15:00	116	129	245
15:00-16:00	318	195	514
16:00-17:00	256	166	422
17:00-18:00	**279**	**152**	**431**
18:00-19:00	287	151	438
19:00-20:00	235	142	377
20:00-21:00	157	75	232

A.3 Trip Distribution

Trip distribution for the proposed development was determined by reviewing origins and destinations within the surrounding area deriving information from the POWSCAR data from Census 2016. Using information for the number of trips between the electoral district of Leixlip where the masterplan belongs, and the surrounding districts, it was possible to derive a regional trip distribution profile which was used to calculate a more local trip distribution for the proposed masterplan.

Trips generated from the development were then split between 9 key-origin/destinations as shown in Figure 8-2. Table A.3-4 shows the trip distribution profile used for the purpose of this analysis. Using this profile, trips were then assigned to the local road network.

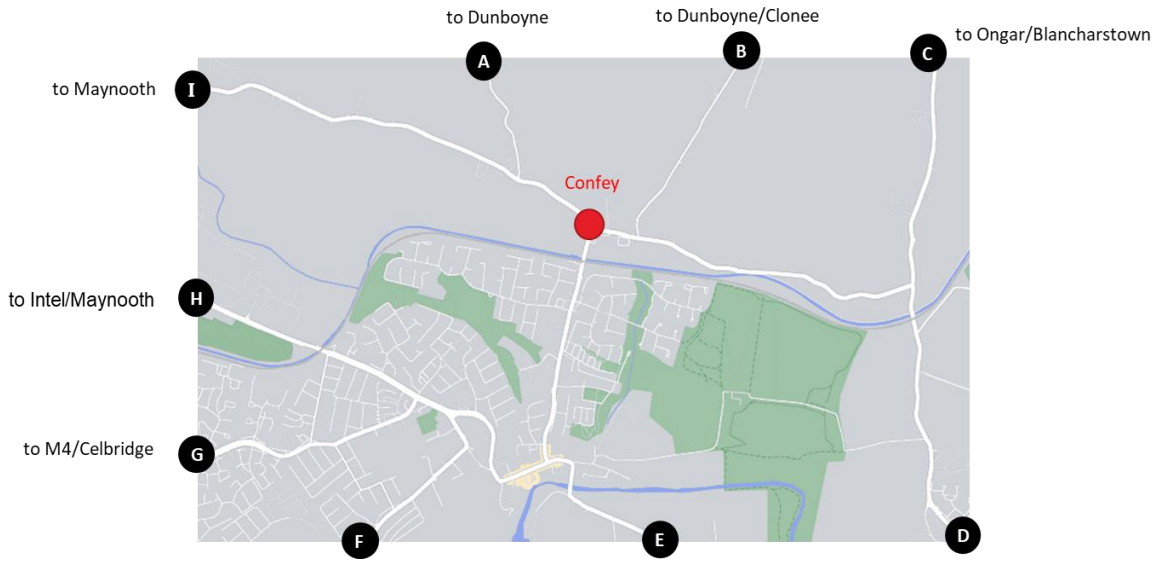


Figure 8-2: Key origins/destinations for the distribution of trips to/from the proposed development.

Table A.3-4: Trip distribution for the proposed development.

Location	Trip Distribution AM Peak	Trip Distribution PM Peak
A	2%	2%
B	10%	3%
C	7%	10%
D	4%	4%
E	60%	70%
F	3%	3%
G	4%	4%
H	4%	4%
I	7%	2%

A.4 Junction Assessment

A total of 10 key-junctions in the vicinity of the masterplan have been modelled using Junctions 9 and LinSig software, based on the most critical expected impacts of the additional trip generation. These were assessed both for the existing operation at AM and PM peak, and the future scenarios referring to the Full Masterplan horizon (2030). These junctions are shown in Figure 8-3 below.

Figure 8-3: Key-junctions assessed in the vicinity of the masterplan.

At present, 9 of the 10 junctions are priority junctions, with the exception of Captain's Hill and R148 Main Street, which is signalised. As part of the proposed masterplan and associated improvements along R149 and Captain's Hill, the following junctions are proposed to be converted to signalised junctions:

- L1015 Dunboyne Road/R149
- R149/Unnamed Road
- Captain's Hill/Newtown Glendale
- Captain's Hill/River Forest
- R149 towards Lucan

The following section outlines the operation of these junctions in the base year (2023) and the future year (2030, when it is assumed that the full development is in place. The proposed signal improvements are included in the assessment of the traffic conditions for future scenarios. Future scenarios for the Full

Masterplan horizon consider a 5% general reduction in base traffic on the network and a 10% reduction in traffic along Captain's Hill due to the planned improvements in public transport such as DART+ West and BusConnects.

Future scenarios for the Full Masterplan horizon also consider that the new road connection between Hilltown and Dunboyne Road will be in place by the time of completion of the Full Masterplan, providing an alternative route to Intel/Maynooth. As a result, a certain proportion of traffic from Ongar or M3 currently passing through the Confey Masterplan and Captain's Hill to access Intel/Maynooth from Main Street are expected to use this alternative route. This proportion was assumed to be 50%.

In addition, a certain level of strategic redistribution was assumed in the future horizon for eastbound traffic though Leixlip Main Street, with a reduction of 30% assumed for the future scenarios. This was assumed as a result of prioritisation of the traffic along Captains Hill arriving at the Captains Hill/Main St junction, giving a longer green time to that northern arm to the detriment of the western arm. Vehicles passing through this junction in the eastbound direction all head to the M4, with the exception of the few vehicles entering St Catherines park. Therefore all of these vehicles have an alternative route to the M4 as shown in Figure 8-4 below, which, if queue lengths are long enough on the Western arm of the main street junction, becomes a quicker route, and so a certain proportion of vehicles are expected make that diversion, which was assumed to be 30%.

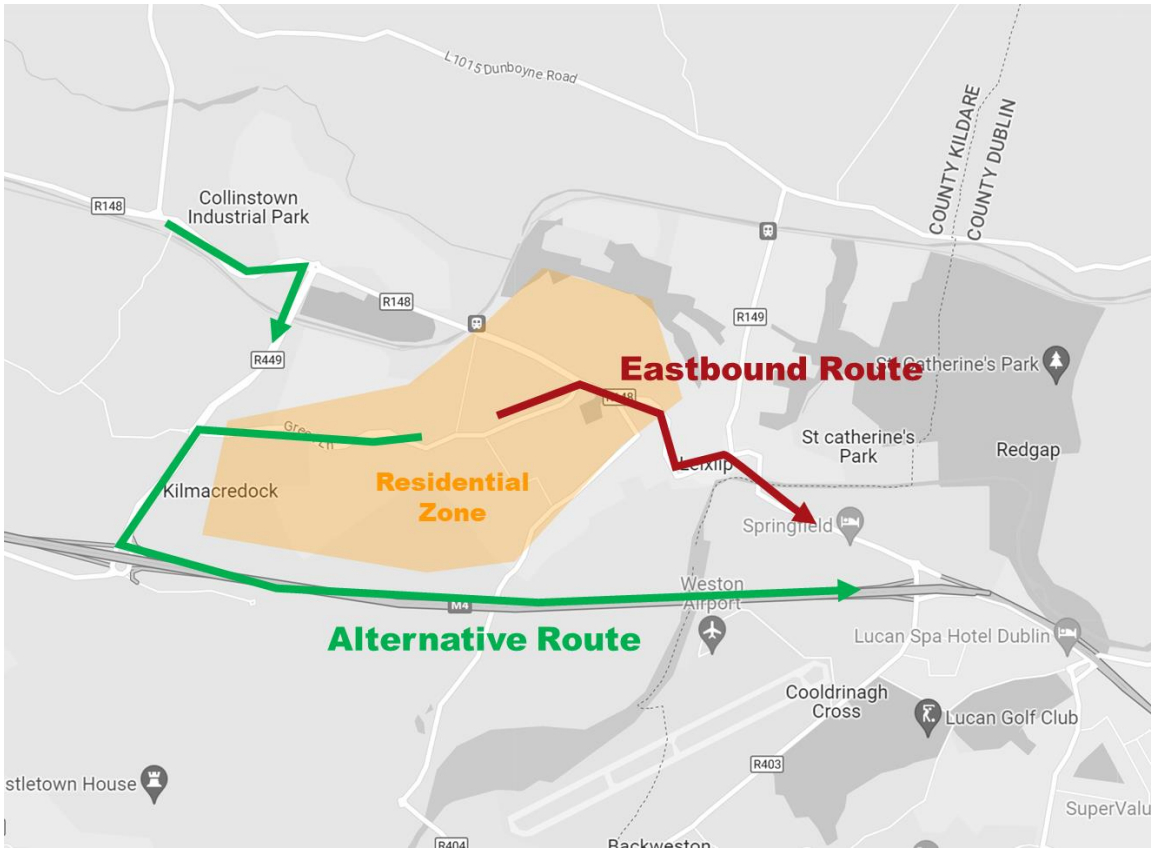


Figure 8-4: Eastbound Alternative Route to M4

A.4.1 L1015 Dunboyne Road/R149

Table A.4-5 to Table A.4-7 present the results of the assessment of the junction at L1015 Dunboyne Road and R149 for the base year scenario (2023) and the future Full Masterplan scenario (2030) at AM and PM peak. This junction is within the Confey Masterplan and is currently a three-arm priority junction which will be converted to a four-arm signalised junction with the development of Confey Masterplan.

Table A.4-5 presents the result of the assessment of the existing junction in terms of projected ratio of flow to capacity (RFC), mean max queue and delay.

Table A.4-5: L1015 Dunboyne Road/R149 junction assessment results at AM and PM peak in the base year scenario (2023).

Junction Arm	AM Peak (07:30 -08:30)			PM Peak (16:45 -17:45)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
R149 South Left	0.12	0.1	10.7	0.26	0.3	11.81
R149 South Right	0.56	1.2	19.74	0.53	1.1	18.43
L1015 Dunboyne Ahead Right	0.34	0.6	8.65	0.17	0.3	7.09

Results show that at present there are no capacity issues in the junction. The highest RFC value is observed in the right movement from the southern arm of the junction. No significant queues are observed in any of the arms, while the delay is also low, with the highest being less than 20 seconds.

With the development of the Confey Masterplan, the junction will be converted to a four-arm signalised junction, and is modelled as such in the future scenarios. The following assumptions were made for the modelling of the junction in the Full Masterplan scenarios:

- Right short lane in the southern arm entry lane controlled by an indicative arrow
- Left short lane in the eastern arm entry lane controlled by a filter arrow
- Cycle time is 130 seconds.

Table A.4-6 and Table A.4-7 present the results of the modelling of the junction in the future scenario. The assessment is made in terms of the degree of saturation, mean max queue and delay.

Table A.4-6: L1015 Dunboyne Road/R149 junction assessment results for the Full Masterplan horizon at AM peak.

Junction Arm	AM Peak (07:30 -08:30) – without development			AM Peak (07:30 -08:30) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
L1015 Dunboyne Right Ahead Left	44.6%	8.9	34.2	65.6%	15.6	37.2
R149 East Left Right Ahead	44.1%	6.7	37.5	64.6%	10.7	47.7
R149 South Ahead Left Right	23.6%	2.1	9.1	39.8%	3.3	9.3
Northern arm Right Ahead Left	-	-	-	24.1%	1.8	64.9

Table A.4-7: L1015 Dunboyne Road/R149 junction assessment results for the Full Masterplan horizon at PM peak.

Junction Arm	PM Peak (16:45 -17:45) – without development			PM Peak (16:45 -17:45) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
L1015 Dunboyne Right Ahead Left	33.8%	6.1	35.7	56.4%	9.3	49.3
R149 Left Right Ahead	40.0%	5.9	31.6	56.0%	10.5	27.9
R149 Ahead Left Right	39.7%	3	14.3	56.1%	4	18.3
Northern arm Right Ahead Left	-	-	-	12.9%	0.6	75.5

Results show that with the upgrade of the junction, it is expected that the development will not cause any capacity issues. The development of the Confey Masterplan will naturally increase traffic levels at the junction, which is reflected as an increase in the degree of saturation at all arms in the future Full Masterplan scenarios, however the junction is expected to continue to operate within capacity with the proposed improvements.

A.4.2 R149/Unnamed Road

Table A.4-8 to Table A.4-10 present the results of the assessment of the junction at R149/Unnamed Road for the base year scenario (2023) and the future Full Masterplan scenario (2030) at AM and PM peak. This junction is located east of the L1015 Dunboyne Road/R149 junction within the Confey Masterplan and is currently a three-arm priority junction which will be upgraded to a signalised junction.

Table A.4-8 presents the result of the assessment of the existing junction in terms of projected ratio of flow to capacity (RFC), mean max queue and delay.

Table A.4-8: R149/Unnamed Road junction assessment results at AM and PM peak in the base year scenario (2023).

Junction Arm	AM Peak (07:30 -08:30)			PM Peak (16:45 -17:45)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Northern arm Left Right	0.29	0.4	13.62	0.17	0.2	11.39
R149 East Ahead Right	0.01	0	5.17	0.01	0	5.08

Results show that at present the junction presents low traffic levels, which is reflected in the low RFC values and low delays, as well as queue values close to zero.

Table A.4-9 and Table A.4-10 present the results of the modelling of the junction in the future scenarios at AM and PM peak as a signalised junction. A cycle time of 130 seconds was considered for these scenarios. The assessment is made in terms of the degree of saturation, mean max queue and delay.

Table A.4-9: R149/Unnamed Road junction assessment results for the Full Masterplan horizon at AM peak.

Junction Arm	AM Peak (07:30 -08:30) – without development	AM Peak (07:30 -08:30) – with development

	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
Northern arm Left Right	43.9%	4	65.1	57.3%	9.1	52
R149 East Right Ahead	18.6%	3.3	11	44.2%	7.6	29.6
R149 West Left Ahead	31.7%	2	5	47.2%	9.9	20.5

Table A.4-10: R149/Unnamed Road junction assessment results for the Full Masterplan horizon at PM peak.

Junction Arm	PM Peak (16:45 -17:45) – without development			PM Peak (16:45 -17:45) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
Northern arm Left Right	32.4%	2.3	68.5	45.2%	4.1	65.5
R149 East Right Ahead	25.6%	4.6	9.6	38.3%	7.9	17.5
R149 West Left Ahead	27.1%	1.4	3.8	38.0%	4.6	5.9

Results show that with the development in place, traffic levels at the junction will increase as expected, which is reflected in higher degree of saturation at all arms in the "with development" scenarios. However, with the proposed improvement of the junction, results show that it will continue to operate within capacity.

A.4.3 R149/R149

Table A.4-11 to Table A.4-13 present the results of the assessment of the junction at R149, to the east of the masterplan, which serves traffic to/from Lucan. This junction is currently a three-arm priority junction which will be upgraded to signalised. First, an assessment of the existing junction is made in terms of ratio of flow to capacity (RFC), mean max queue and delay for the peak hours in the base year scenario (2023). Then the impact of the development is explored modelling the junction as a signalised one in the future Full Masterplan scenario (2030) at AM and PM peak.

Table A.4-11 presents the results of the assessment of the existing junction at AM and PM peak.

Table A.4-11: R149/R149 junction assessment results at AM and PM peak in the base year scenario (2023).

Junction Arm	AM Peak (07:30 -08:30)			PM Peak (16:45 -17:45)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
R149 West Right Left	0.82	3.9	48.74	0.65	1.8	26.76
R149 North Ahead Right	0.49	1.4	8.79	0.39	0.9	8.7

Results show that the junction operates within capacity, however a high ratio of flow to capacity is observed for the right and left movement from the western arm. Queues are low while the highest delay is 49 seconds which is observed at this movement in the AM peak hour. Adjustment of the future traffic levels for the year

2030 showed that the junction will experience capacity issues even in the "without development" scenario, if no improvements of the existing junction are implemented.

Table A.4-12 and Table A.4-13 present the results of the assessment of the impact of the development in the Full Masterplan scenarios. In these scenarios the junction is modelled as a signalised one based on the assumption that an upgrade of the junction will take place. A cycle time of 90 seconds was considered for these scenarios.

Table A.4-12: R149/R149 junction assessment results for the Full Masterplan horizon at AM peak.

Junction Arm	AM Peak (07:30 -08:30) – without development			AM Peak (07:30 -08:30) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
R149 West Left Right	45.1%	6.2	27.1	49.4%	7.2	26.4
R149 North Right Ahead	45.6%	7.3	15.7	48.6%	7.9	17.6
R149 South Left Ahead	32.6%	4.7	13.4	34.5%	5.1	14.8

Table A.4-13: R149/R149 junction assessment results for the Full Masterplan horizon at PM peak.

Junction Arm	PM Peak (16:45 -17:45) – without development			PM Peak (16:45 -17:45) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
R149 West Left Right	46.1%	5.4	33.3	47.1%	5.7	32.5
R149 North Right Ahead	41.6%	5.4	13.7	46.1%	7.4	16
R149 South Left Ahead	47.2%	7.7	11.5	48.9%	8.1	12.3

Results show that the operation of the junction will be improved with the proposed upgrades and that the development of the Confey Masterplan will not cause any capacity issues. Particularly, the right and left movement from the western arm is expected to experience lower delays in the future scenarios compared to the existing situation at AM peak.

A.4.4 Captain's Hill/Newtown Glendale

The tables below present the results of the assessment at the Captain's Hill/Newtown Glendale junction in the base year scenario (2023) and the Full Masterplan scenario at AM and PM peak hour. This is currently a three-arm priority junction, which will be upgraded to signalised and is modelled as such in the future scenarios.

Table A.4-14 presents the results of the assessment of the existing junction in terms of ratio of flow to capacity (RFC), mean max queue and delay at peak hours.

Table A.4-14: Captain's Hill/Newtown Glendale junction assessment results at AM and PM peak in the base year scenario (2023).

Junction Arm	AM Peak (07:30 -08:30)	PM Peak (16:45 -17:45)

	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Newtown Glendale Left Right	0.32	0.5	11.08	0.23	0.3	8.89
Captain's Hill South Ahead Right	0.1	0.2	5.95	0.38	0.9	7.64

Results show that the junction does not experience any capacity issues at present. The low RFC values show that there is ample reserve capacity in both peak hour scenarios, and low delay is observed in both cases.

Table A.4-15 and Table A.4-16 present the results of the assessment of the impact of the development at AM and PM peak in terms of degree of saturation, mean max queue and delay. Signal timings were adjusted to optimise delay in the minor arm.

Table A.4-15: Captain's Hill/Newtown Glendale junction assessment results for the Full Masterplan horizon at AM peak.

Junction Arm	AM Peak (07:30 -08:30) – without development			AM Peak (07:30 -08:30) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
Captain's Hill Left Ahead	36.4%	8.1	17.3	76.5%	23.2	34.1
Newtown Glendale Right Left	45.4%	5.2	58.6	31.4%	4.6	45.5
Captain's Hill Ahead Right	26.7%	2.5	14	45.8%	3.4	17.9

Table A.4-16: Captain's Hill/Newtown Glendale junction assessment results for the Full Masterplan horizon at PM peak.

Junction Arm	PM Peak (16:45 -17:45) – without development			PM Peak (16:45 -17:45) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
Captain's Hill Left Ahead	29.3%	6	13.4	49.0%	11.6	26.4
Newtown Glendale Right Left	47.7%	4.3	67.4	22.7%	3.4	42.3
Captain's Hill Ahead Right	40.1%	1.7	4.5	79.2%	23	31.1

Results show that the development of the Confey Masterplan will increase traffic levels at the junction, which is reflected in higher degree of saturation at the main arms. However, with the proposed improvements, the junction is expected to continue operating within capacity, and delay at the minor arm could be reduced.

A.4.5 Captain's Hill/River Forest

Table A.4-17 to Table A.4-19 present the results of the assessment at the Captain's Hill/River Forest junction in the base year scenario (2023) and the Full Masterplan scenario (2030) at AM and PM peak hour. This is currently a three-arm priority junction, which will be upgraded to signalised and is modelled as such in the

future scenarios. A cycle time of 130 seconds was considered for these scenarios. Signal timings were optimised to minimise delay in the minor arm.

Table A.4-17 presents the results of the assessment of the existing junction in terms of projected ratio of flow to capacity (RFC), mean max queue and delay at peak hours.

Table A.4-17: Captain's Hill/ River Forest junction assessment results at AM and PM peak in the base year scenario (2023).

Junction Arm	AM Peak (07:30 -08:30)			PM Peak (16:45 -17:45)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
River Forest Left	0.16	0.2	9.57	0.33	0.5	13.22
River Forest Right	0.73	2.5	40.82	0.79	3.3	52.65
Captain's Hill North Ahead Right	0.14	0.4	4.68	0.29	0.6	7.31

Results show that the junction operates within capacity at present. However, the right movement from River Forest presents a relatively high RFC value and delay is on average 40 seconds in the AM peak and 52 seconds in the PM peak.

Table A.4-18 and Table A.4-19 present the results of the assessment of the impact of the development at AM and PM peak in terms of degree of saturation, mean max queue and delay.

For comparison, presents the respective results for the "Base + Development" scenario in the future Full Masterplan horizon in the scenario where the junction was not upgraded to signalised.

Table A.4-18: Captain's Hill/River Forest junction assessment results for the Full Masterplan horizon at AM peak.

Junction Arm	AM Peak (07:30 -08:30) – without development			AM Peak (07:30 -08:30) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
Captain's Hill Ahead Right	51.7%	6.8	21.1	87.2%	10.7	27.5
Captain's Hill Ahead Left	40.7%	9.2	23	51.6%	12.5	25.8
River Forest Left	15.6%	2.1	44.7	15.3%	2.1	43.8
River Forest Right	51.6%	7.7	52	49.9%	7.6	50.6

Table A.4-19: Captain's Hill/River Forest junction assessment results for the Full Masterplan horizon at PM peak.

Junction Arm	PM Peak (16:45 -17:45) – without development			PM Peak (16:45 -17:45) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
Captain's Hill Ahead Right	39.8%	4.9	20.6	84.1%	6.7	33.6
Captain's Hill Ahead Left	67.5%	18.5	30.9	77.2%	24.9	29.3
River Forest Left	27.8%	4	44.9	38.7%	4.5	55.9
River Forest Right	68.2%	8.8	66.5	68.2%	8.8	66.5

Table A.4-20: Captain's Hill/ River Forest priority junction assessment results for the Base+Development scenario in the Full Masterplan horizon (2030).

Junction Arm	AM Peak (07:30 -08:30)			PM Peak (16:45 -17:45)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
River Forest Left	0.2	0.2	11.55	0.43	0.7	18.98
River Forest Right	1.11	18.7	264.23	1.18	25.2	348.84
Captain's Hill North Ahead Right	0.26	1.1	3.98	0.41	1.3	8.13

Results show that the proposed upgrade of the junction will assist the mitigation of the future impact of the development. Even though traffic levels will naturally increase in the future "with development" scenarios, the junction is expected to continue to operate within capacity. Compared to the scenario where the junction remains priority in the future Full Masterplan horizon, the results show that the upgrade to signalised will significantly mitigate the negative impact at River Forest.

A.4.6 Captain's Hill/Avondale

Table A.4-21 to Table A.4-23 present the results of the assessment at the Captain's Hill/Avondale junction in the base year scenario (2023) and the Full Masterplan scenario (2030) at AM and PM peak hour. This is a three-arm priority junction and is assessed in terms of projected ratio of flow to capacity (RFC), mean max queue and delay.

Table A.4-21 presents the results of the assessment of the junction in the base year scenario (2023) at AM and PM peak hour.

Table A.4-21: Captain's Hill/Avondale junction assessment results at AM and PM peak in the base year scenario (2023).

Junction Arm	AM Peak (07:30 -08:30)			PM Peak (16:45 -17:45)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Avondale Left Right	0.18	0.2	11.54	0.19	0.2	11.57
Captain's Hill South Ahead Right	0.09	0.2	5.45	0.19	0.5	4.83

Results show that the junction presents ample reserve capacity at present, which is reflected in low RFC values, as well as queue values close to zero and low delays.

Table A.4-22 and Table A.4-23 present the results of the assessment of the impact of the development in the Full Masterplan horizon at AM and PM peak hour.

Table A.4-22: Captain's Hill/Avondale junction assessment results for the Full Masterplan horizon at AM peak.

Junction Arm	AM Peak (07:30 -08:30) – without development			AM Peak (07:30 -08:30) – with development		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Avondale Left Right	0.18	0.2	10.88	0.25	0.3	16.56
Captain's Hill South Ahead Right	0.09	0.2	5.25	0.12	0.3	5.28

Table A.4-23: Captain's Hill/Avondale junction assessment results for the Full Masterplan horizon at PM peak.

Junction Arm	PM Peak (16:45 -17:45) – without development			PM Peak (16:45 -17:45) – with development		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Avondale Left Right	0.21	0.3	12.57	0.26	0.3	16.13
Captain's Hill South Ahead Right	0.22	0.7	4.8	0.29	1.1	4.58

Results show that the development of the Confey Masterplan is not expected to impact negatively the operation of the junction. It is observed that the development will only cause minor increases in the RFC values and queue at the arms of the junction. A small increase in delay for the minor arm is also observed, however the operation of the junction is not expected to deteriorate as a result of the development.

A.4.7 Captain's Hill/St Mary's Park

The tables below summarise the results of the assessment at the Captain's Hill/St Mary's Park junction in the base year scenario (2023) and the Full Masterplan scenario (2030) at AM and PM peak hour. This is a three-arm priority junction and is assessed in terms of projected ratio of flow to capacity (RFC), mean max queue and delay.

Table A.4-24 presents the results of the assessment of the junction in the base year scenario (2023) at AM and PM peak hour.

Table A.4-24: Captain's Hill/St Mary's Park junction assessment results at AM and PM peak in the base year scenario (2023).

Junction Arm	AM Peak (07:30 -08:30)			PM Peak (16:45 -17:45)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
St Mary's Park Left Right	0.09	0.1	12.7	0.07	0.1	12.81
Captain's Hill South Ahead Right	0.02	0	4.91	0.07	0.1	4.19

Results show that the junction presents ample reserve capacity at present, which is reflected in very low RFC values, as well as queue values close to zero and low delays.

Table A.4-25 and Table A.4-26 present the results of the assessment of the impact of the development in the Full Masterplan horizon at AM and PM peak hour.

Table A.4-25: Captain's Hill/St Mary's Park junction assessment results for the Full Masterplan horizon at AM peak.

Junction Arm	AM Peak (07:30 -08:30) – without development			AM Peak (07:30 -08:30) – with development		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
St Mary's Park Left Right	0.09	0.1	12.07	0.14	0.2	18.43
Captain's Hill South Ahead Right	0.02	0	4.72	0.03	0	4.74

Table A.4-26: Captain's Hill/St Mary's Park junction assessment results for the Full Masterplan horizon at PM peak.

Junction Arm	PM Peak (16:45 -17:45) – without development			PM Peak (16:45 -17:45) – with development		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
St Mary's Park Left Right	0.08	0.1	13.6	0.1	0.1	17.25
Captain's Hill South Ahead Right	0.08	0.2	4.14	0.11	0.2	3.81

Results show that the junction will not be impacted negatively by the development and all arms continue to have ample reserve capacity in the "with development" scenarios. A small increase in delay at the minor arm is observed but the queue values continue to be close to zero in both future scenarios.

A.4.8 Captain's Hill/Riverdale

Table A.4-27 to Table A.4-29 show the results of the assessment at the Captain's Hill/Riverdale junction in the base year scenario (2023) and the Full Masterplan scenario (2030) at AM and PM peak hour. This is a three-arm priority junction and is assessed in terms of projected ratio of flow to capacity (RFC), mean max queue and delay.

Table A.4-27 presents the results of the assessment of the junction in the base year scenario (2023) at AM and PM peak hour.

Table A.4-27: Captain's Hill/ Riverdale junction assessment results at AM and PM peak in the base year scenario (2023).

Junction Arm	AM Peak (07:30 -08:30)			PM Peak (16:45 -17:45)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Riverdale Left Right	0.07	0.1	13.94	0.06	0.1	12.5
Captain's Hill South Ahead Right	0.02	0	5.23	0.05	0.1	4.31

Results show that at present all arms of the junction present ample reserve capacity and low delays.

Table A.4-28 and Table A.4-29 summarise the results of the assessment of the impact of the development in the Full Masterplan horizon at AM and PM peak hour.

Table A.4-28: Captain's Hill/ Riverdale junction assessment results for the Full Masterplan horizon at AM peak.

Junction Arm	AM Peak (07:30 -08:30) – without development			AM Peak (07:30 -08:30) – with development		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Riverdale Left Right	0.07	0.1	12.8	0.11	0.1	20.33
Captain's Hill South Ahead Right	0.02	0	5.02	0.03	0	4.99

Table A.4-29: Captain's Hill/ Riverdale junction assessment results for the Full Masterplan horizon at PM peak.

Junction Arm	PM Peak (16:45 -17:45) – without development			PM Peak (16:45 -17:45) – with development		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Riverdale Left Right	0.07	0.1	13.41	0.08	0.1	16.97
Captain's Hill South Ahead Right	0.05	0.1	4.22	0.07	0.1	3.84

Results show an increase in delay at the minor arm especially in the AM peak. However, RFC values remain very low in the "with development" scenarios, which shows that there will not be considerable negative impacts in the overall operation of the junction as a result of the development.

A.4.9 Captain's Hill/Rye River Mall

Table A.4-30 to Table A.4-32 summarise the results of the assessment at the Captain's Hill/Rye River Mall junction in the base year scenario (2023) and the Full Masterplan scenario (2030) at AM and PM peak hour. This is a three-arm priority junction and is assessed in terms of projected ratio of flow to capacity (RFC), mean max queue and delay.

Table A.4-30 presents the results of the assessment of the junction in the base year scenario (2023) at AM and PM peak hour.

Table A.4-30: Captain's Hill/ Rye River Mall junction assessment results at AM and PM peak in the base year scenario (2023).

Junction Arm	AM Peak (07:30 -08:30)			PM Peak (16:45 -17:45)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Rye River Mall Left Right	0.12	0.1	13.18	0.13	0.2	13.77
Captain's Hill South Ahead Right	0.03	0	3.82	0.06	0.1	5.1

Results show that at present the junction presents low RFC values, which shows that there is ample reserve capacity at all arms. The observed delays are also low, with the highest being 13 seconds at the Rye River Mall arm.

Table A.4-31 and Table A.4-32 summarise the results of the assessment of the impact of the development in the Full Masterplan horizon at AM and PM peak hour.

Table A.4-31: Captain's Hill/ Rye River Mall junction assessment results for the Full Masterplan horizon at AM peak.

Junction Arm	AM Peak (07:30 -08:30) – without development			AM Peak (07:30 -08:30) – with development		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Rye River Mall Left Right	0.13	0.1	13.1	0.17	0.2	18.31
Captain's Hill South Ahead Right	0.03	0	4.04	0.05	0.1	3.42

Table A.4-32: Captain's Hill/ Rye River Mall junction assessment results for the Full Masterplan horizon at PM peak.

Junction Arm	PM Peak (16:45 -17:45) – without development			PM Peak (16:45 -17:45) – with development		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Rye River Mall Left Right	0.15	0.2	14.97	0.2	0.2	20.96
Captain's Hill South Ahead Right	0.07	0.1	5.04	0.09	0.2	4.87

Results show that the development will cause an increase in delay at the minor arm, but the queues are expected to remain very low and the low RFC values show that the arms will continue to have ample reserve capacity in the future "with development" scenarios. Overall, the impact at the junction is expected to be minor.

A.4.10 Captain's Hill/Main Street

Table A.4-33 to Table A.4-35 present the results of the assessment at the Captain's Hill/Main Street junction in the base year scenario (2023) and the Full Masterplan scenario (2030) at AM and PM peak hour. Assessment was made based on the degree of saturation, mean max queue and delay.

This is a three-arm signalised junction where improvements of the layout are proposed as described in Section 6.2. Existing signal timings are variable, and therefore optimised signal timings were used for the purpose of this analysis for the assessment of the operation of the junction at present.

Table A.4-30 presents the results of the assessment of the existing junction in the base year scenario (2023) at AM and PM peak hour.

Table A.4-33: Captain's Hill/Main Street junction assessment results at AM and PM peak in the base year scenario (2023).

Junction Arm	AM Peak (07:30 -08:30)			PM Peak (16:45 -17:45)		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
Main St West Ahead Left	74.8%	13.3	43.2	61.9%	10.6	32.4
Captain's Hill Right Left	74.3%	17.5	26.4	63.1%	9.2	34.2
Main St East Ahead Right	69.0%	7	42	62.9%	10.1	27.2

Results show that at present the junction operates within capacity with the higher degree of saturation observed at the western arm of Main Street and Captain's Hill. The queue in the morning peak at Captain's Hill is approximately 17 pcu, while the highest delay is observed at Main St West, which is 43 seconds.

Table A.4-34 and Table A.4-35 summarise the results of the assessment of the impact of the development in the Full Masterplan horizon at AM and PM peak hour.

Table A.4-34: Captain's Hill/Main Street junction assessment results for the Full Masterplan horizon at AM peak.

Junction Arm	AM Peak (07:30 -08:30) – without development			AM Peak (07:30 -08:30) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
Main St West Ahead Left	71.1%	16.4	49.4	84.20%	19.2	64.9
Captain's Hill Right Left	71.4%	13.5	34.2	85.5%	28.5	39.2
Main St East Ahead Right	68.0%	8.2	44.5	42.8%	8.1	22

Table A.4-35: Captain's Hill/Main Street junction assessment results for the Full Masterplan horizon at PM peak.

Junction Arm	PM Peak (16:45 -17:45) – without development			PM Peak (16:45 -17:45) – with development		
	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Delay (s)
Main St West Ahead Left	73.4%	19.2	45	72.10%	19.3	42.1
Captain's Hill Right Left	72.0%	10.7	47.6	83.4%	12.9	52.4
Main St East Ahead Right	72.6%	13	35.2	83.1%	20	36.9

Results show that in the "with development" scenarios the traffic levels at the junction will increase, which is reflected in higher degree of saturation. However, with the proposed improvements in the junction layout, and under the assumption that the new road to Ongar will be in place by the time of completion of the full masterplan, the junction is expected to continue to operate within capacity. In addition, the eastern arm at Main Street is expected to experience lower delays at AM peak compared to the "without development" scenario.