New Network Plan

JANUARY 2025

BUS CONNECTS WATERFORD

SUSTAINABLE TRANSPORT FOR A BETTER CITY.

Prepared by Jarrett Walker & Associates and SYSTRA on behalf of the National Transport Authority

Table of Contents

1 Summary 3

What is BusConnects Waterford? 4
What is the Network Redesign? 5
Focus Area. 6
How to Read the Network Maps 7
Maps of the New Network Plan 8
Maps of the 2023 Existing Network 10
More Service Investment 13
Higher Frequencies 14
Services to More Areas 15
More Access to Opportunity 16
How to Learn About the New Network Plan. 17

2 Route & Network Design Principles 18

What Makes a Useful Network? 19
Frequency 20
Radial and Orbital Services 23
Connections or Complexity? 24

3 The New Network 26

How to Read the Network Maps 27
Maps of the New Network Plan 28
Services to More Areas 30
Higher Frequencies 31
Implementing WMATS 32
Route Descriptions 33

4 Summary of Public Feedback 38

Overview of the Consultation 39
Analysis of Feedback 41
General Themes from Feedback 45
Feedback by Area 50

5 Comparing the Existing and New Networks 60

Public Transport and Access to Opportunity 61
Access Gains Citywide 63
Improved Access from Example Locations 65
Proximity to Services of Various Frequencies 73

Appendix A 78

Existing 2023 Network Frequencies and Spans (Text) 79
New Network Frequencies and Spans (Text) 80

1 Summary

What is BusConnects Waterford?

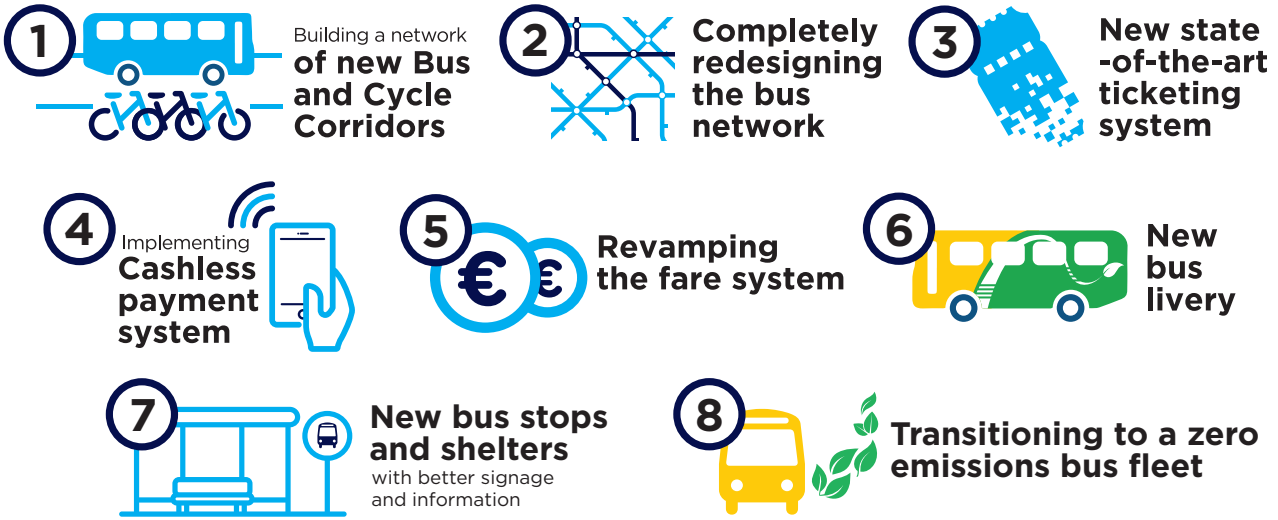
BusConnects is a programme of public transport investment in Ireland's major urban centres. It is developed and managed by the National Transport Authority (NTA), and funded by Project Ireland 2040.

BusConnects includes many elements:

- Redesigning the bus network
- Building new bus corridors and cycle lanes
- Implementing a state of the art ticketing system
- Implementing a cashless payment system
- Simpler fare structure
- New bus livery
- New bus stops and shelters
- Transitioning to a new zero emissions bus fleet

BusConnects Waterford will help realise these local and Government strategies and plans:

- Waterford Metropolitan Area Transport Strategy (WMATS)
- Regional Spatial and Economic Strategy for the Southern Region
- Waterford City and County Development Plan 2022-2028



This redesign of the Waterford bus network is one of the eight strategies that make up the BusConnects programme.

- National Development Plan 2021-2030
- National Sustainable Mobility Policy
- Climate Action Plan

WMATS foresaw this major investment in bus service, infrastructure and priority measures. WMATS planned for approximately 63 kms of bus lanes and bus priority measures alongside new cycling routes and greenways. The new bus network will incorporate the relocation of Plunkett Station to a new site in the North Quays, and the available pedestrian and cycling connections over the new active-travel bridge. Finally, BusConnects will increase the number and quality of bus vehicles in service, as planned in WMATS, and will deploy new zero-emission buses.

What is the Network Redesign?

The Waterford bus network has evolved with the growth of the city. Recent improvements to bus frequencies, weekend service levels and reliability have improved the usefulness of public transport in the city.

The Waterford Metropolitan Area is expected to grow 50% more populous by the year 2040. In order to accommodate this growth whilst maintaining a high quality of life, a step-change in the level of use of public transport will be needed. There is an urgent need to build on recent success in Waterford by restructuring the Waterford urban bus network and making greater investments in useful, reliable bus services.

This network redesign is one step in that process of restructuring and reinvestment. It is a collaboration among:

- National Transport Authority
- Waterford City and County Council
- Kilkenny County Council

The bus network redesign is a review of where and how often the bus should come. This includes which roads buses run on, times and days of service, frequencies, stop locations, and how people will interchange between routes.

The network has been reinvented from a blank slate, rather than adjusted from the current network. There is no assumption that inherited patterns of bus service must be maintained for the sake of tradition or to avoid change.

Redesign Process

This report concludes a public consultation process. The planning team began with an assessment of existing services, then presented a Draft New Network to the public, collected feedback on that Draft, and then refined the Draft to produce this final New Network Plan.

This report includes:

- Key principles and choices in redesigning the bus network.
- The New Network Plan.
- A summary of public feedback and how it influenced the New Network Plan.

Every detail of the existing network is something somebody relies on. Any large change to a bus network will result in inconvenience for some people, even if it benefits most people.

This New Network Plan will benefit large numbers of Waterford residents, visitors and workers. Reasonable efforts and expenditures have been included to reduce (but not eliminate) disruptions to existing bus users in the city.

Implementation of route changes is expected to begin in 2026. As conditions evolve the routes may be modified from what is shown in this Plan, and the changes may be made in phases rather than all at once.

Routes Under Review

The network redesign was focused on the urban portions of Counties Waterford & Kilkenny (as shown on the next page). This urban area is currently served by PSO routes:

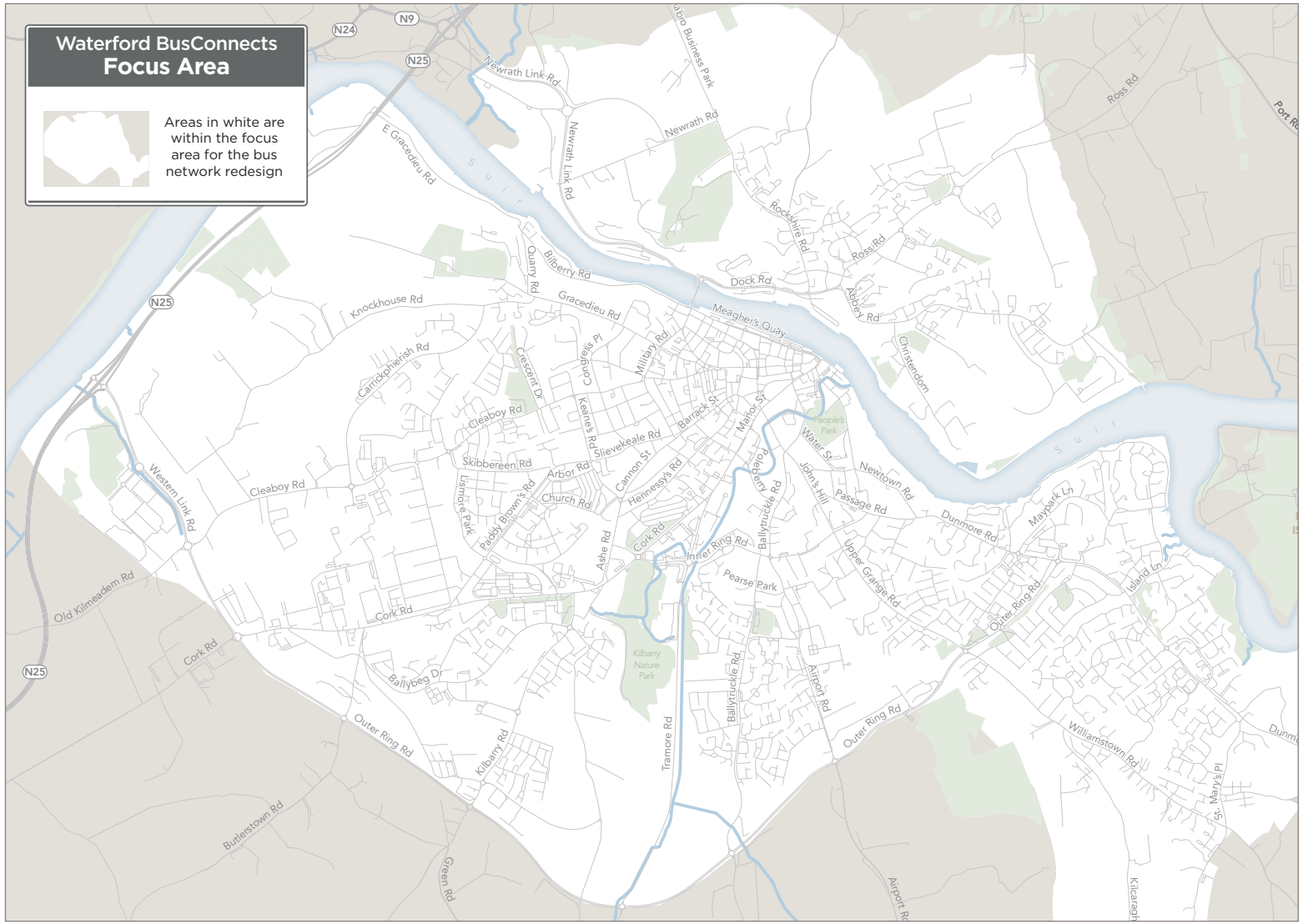
- W1: Clock Tower - SETU Cork Road - Merchants' Quay
- W2: Clock Tower - SETU Cork Road - Meagher's Quay
- W3: Clock Tower - St. John's Park - Meagher's Quay
- W4: Peter Street - Carrickphierish - Browns Road

Focus Area

- W5: Oakwood - Waterford Hospital

This focus area is also served by the urban commercial Routes 607, 617 and 627, operated by J.J. Kavanagh, and by long-distance routes (such as Route 360 from Tramore and 40 from Wexford).

Services among smaller towns and villages, outside of this urban area, are not part of BusConnects. They are addressed through the Connecting Ireland Rural Mobility Plan, a national programme to improve public transport between cities and towns, and within rural areas.



How to Read the Network Maps

New Route Numbers

For this planning process, all of the planned routes have been given new numbers, without the "W" prefix, to differentiate them from existing routes.

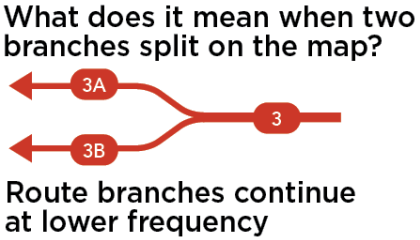
Ireland has a new national system for assigning bus route numbers, which helps online and phone-based journey planners work well for journeys among Irish cities and towns. That new system will include Waterford. The numbers for each route in this plan are therefore likely to change again, to integrate with the national system, when the network is put in place.

Line Width Shows Frequency

In the maps on the next two pages **the thickness of the lines represent the route frequency.** Thicker lines are routes coming every 15 minutes, Monday through Sunday, whilst thinner lines are routes coming every 30 minutes.

Route Branching

Some routes in the New Network will branch, shown on the maps with this diagram:



These are not interchanges. The buses on the less frequent "branches" run together to form the more frequent "trunk."

This is proposed for:

- Route 3 at Pearse Park
- Route 4 in Ferrybank and at the Outer Ring Road
- Route 5 at Ballybeg

No interchange is necessary between the two segments of the route, but the inner segment would offer shorter waits for a bus than the outer segment.

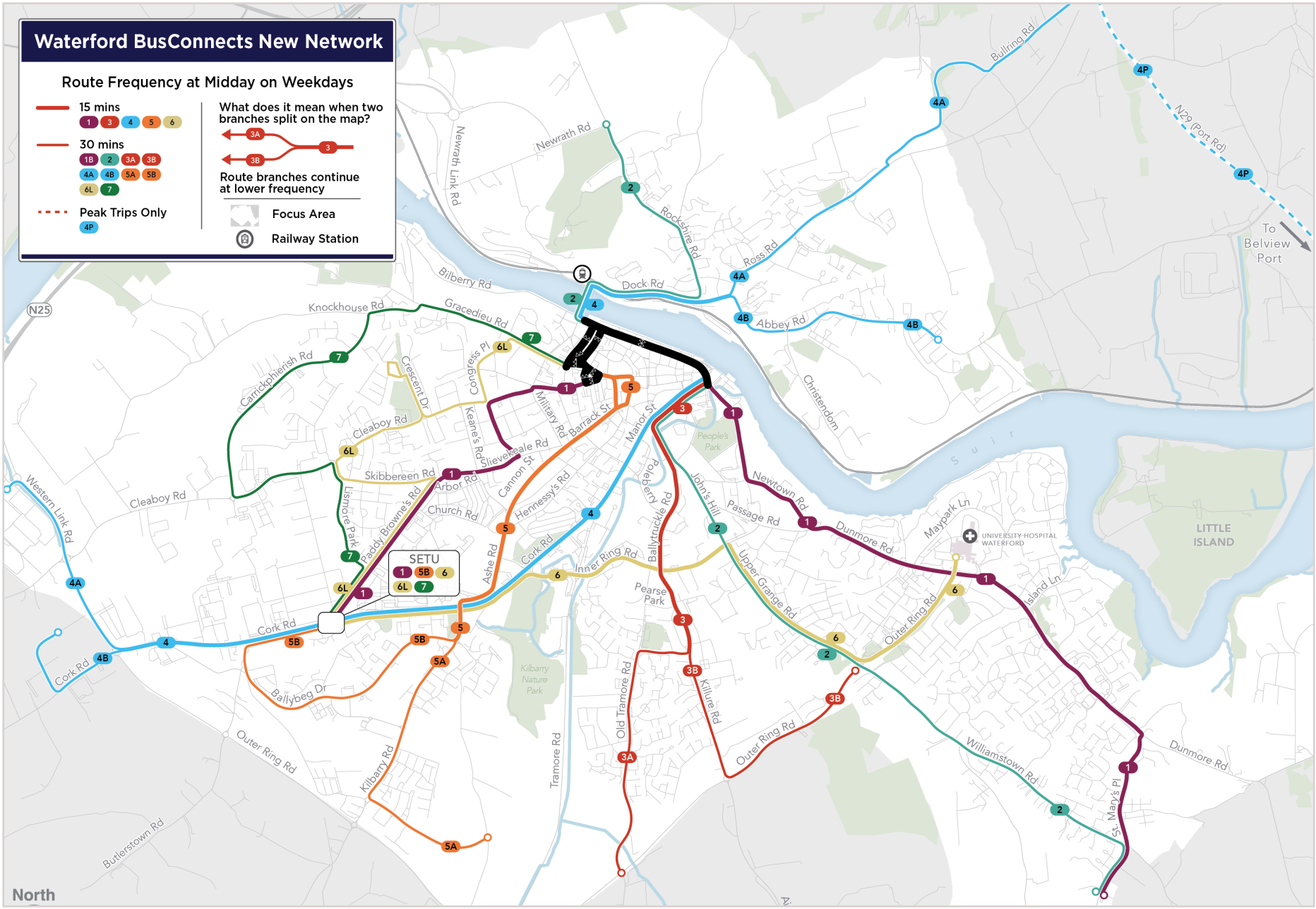
Route 6 is proposed to have a similar structure, but with only one branch. A high frequency will operate between University Hospital Waterford and SETU Cork Road (every 15 minutes), and this segment is marked "6" on the map on the next page. A lower frequency continues on through Skibbereen and Cleaboy, terminating at the Quays, and this segment is marked "6L" (for "long") on the map. Essentially, every second bus will continue past SETU Cork Road towards Cleaboy, with no interchange needed.

Route Descriptions

Street-by-street descriptions of each proposed route are provided starting on page 33.

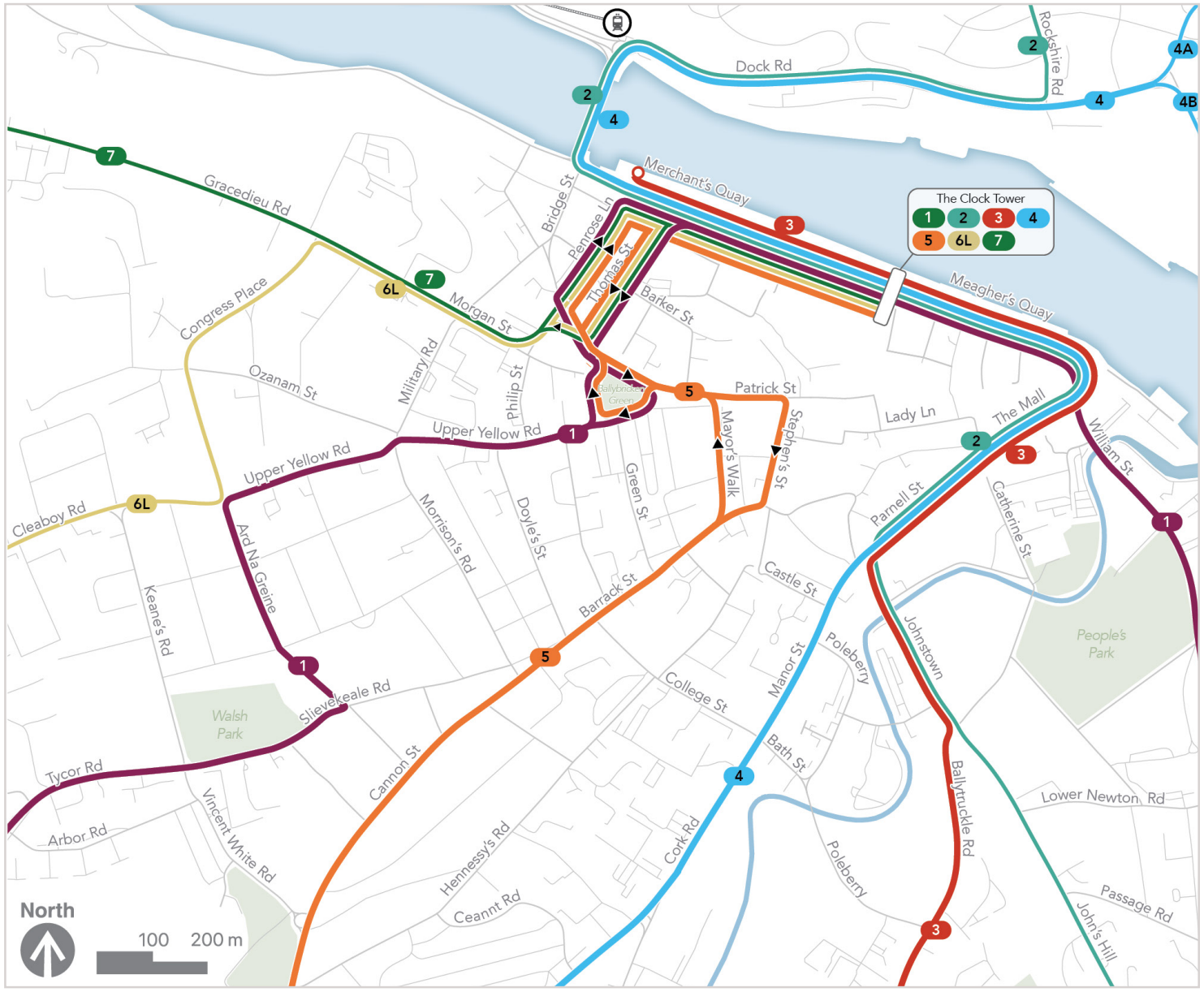
Text descriptions of proposed frequencies are given in the appendix starting on page 78.

Maps of the New Network Plan



For a closer look at the New Network Plan, please visit busconnects.ie and the online map linked there.

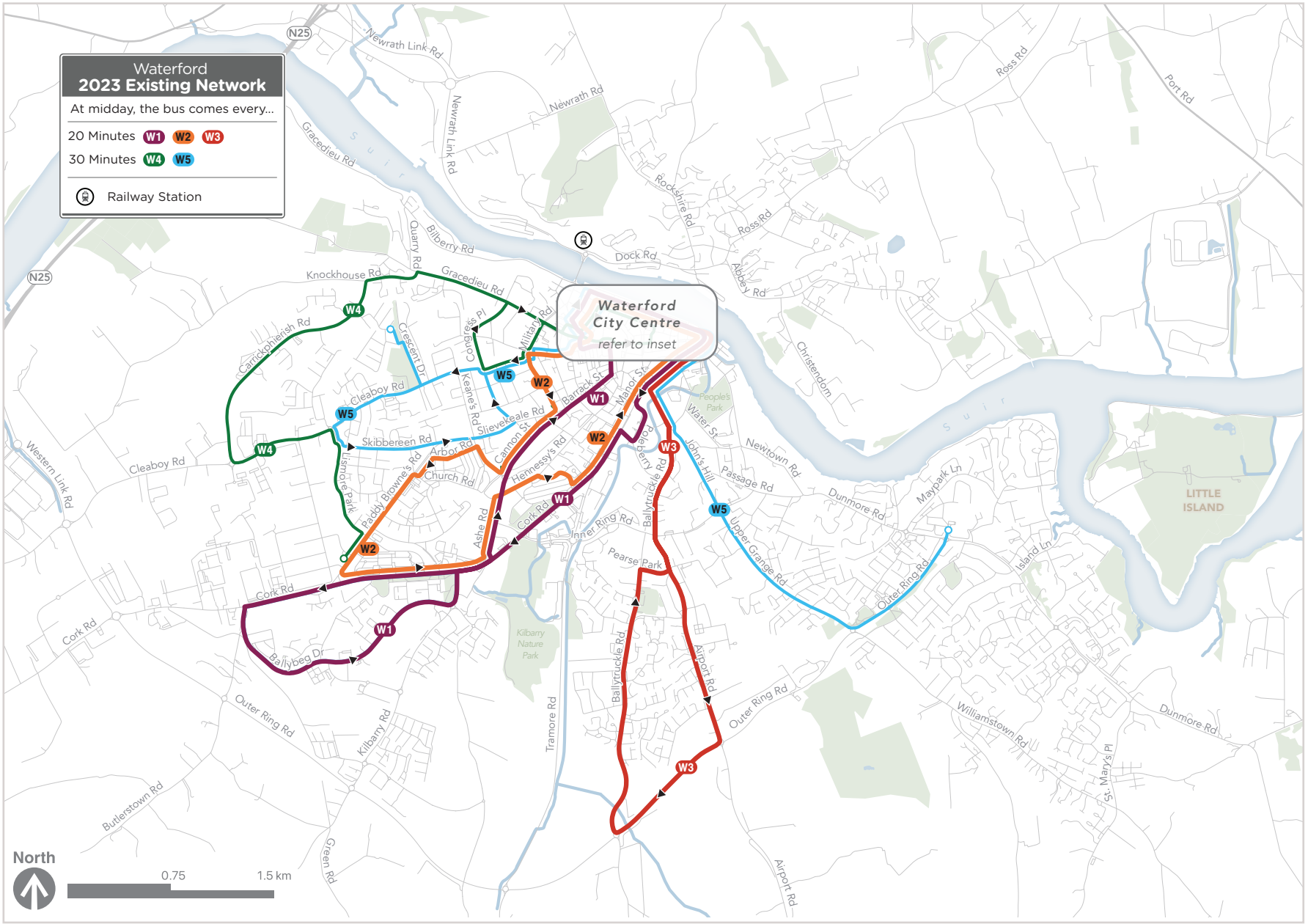
City Centre



For a closer look at the city centre in the New Network Plan, please visit busconnects.ie and the online map.

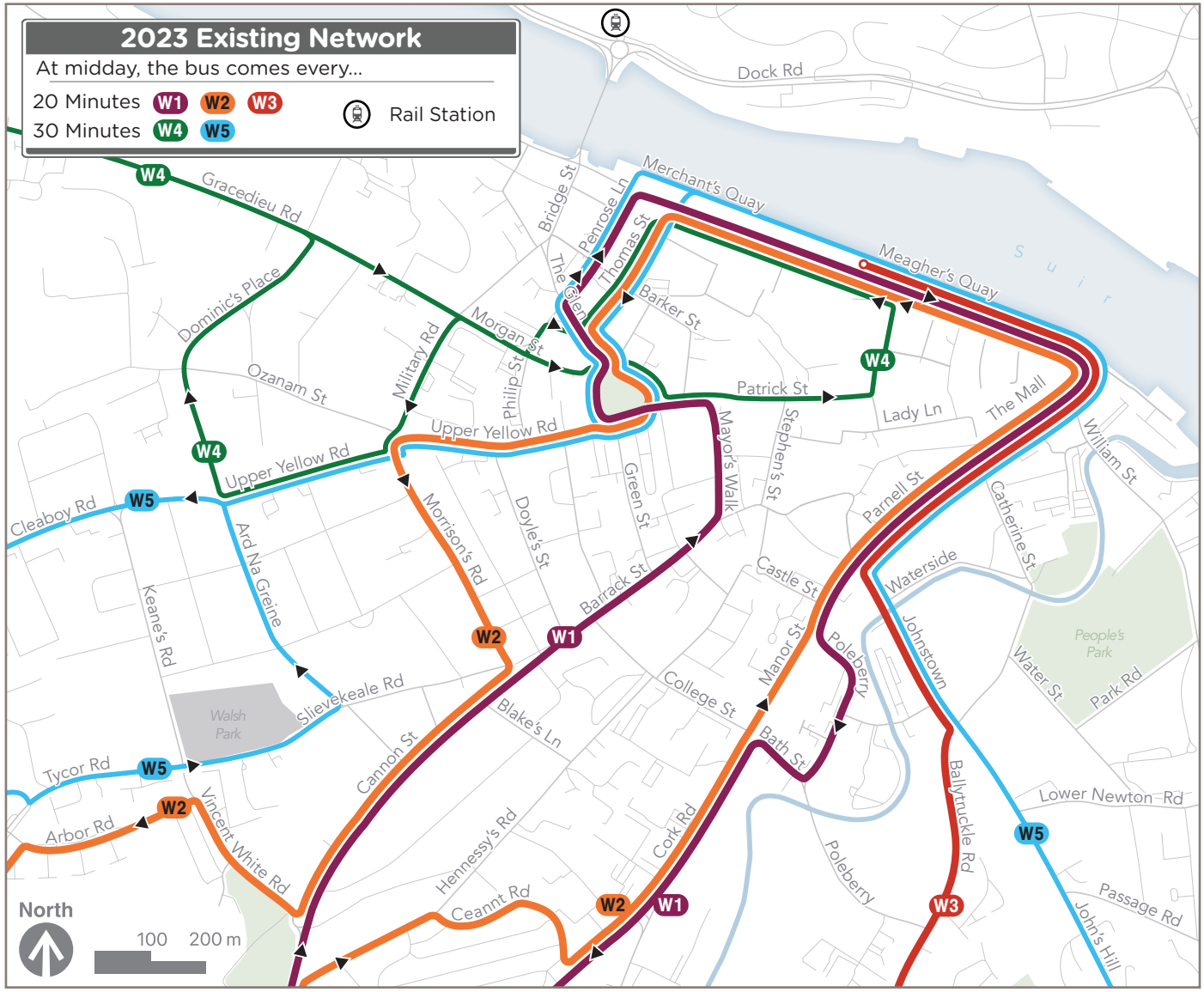
Maps of the 2023 Existing Network

PSO Services



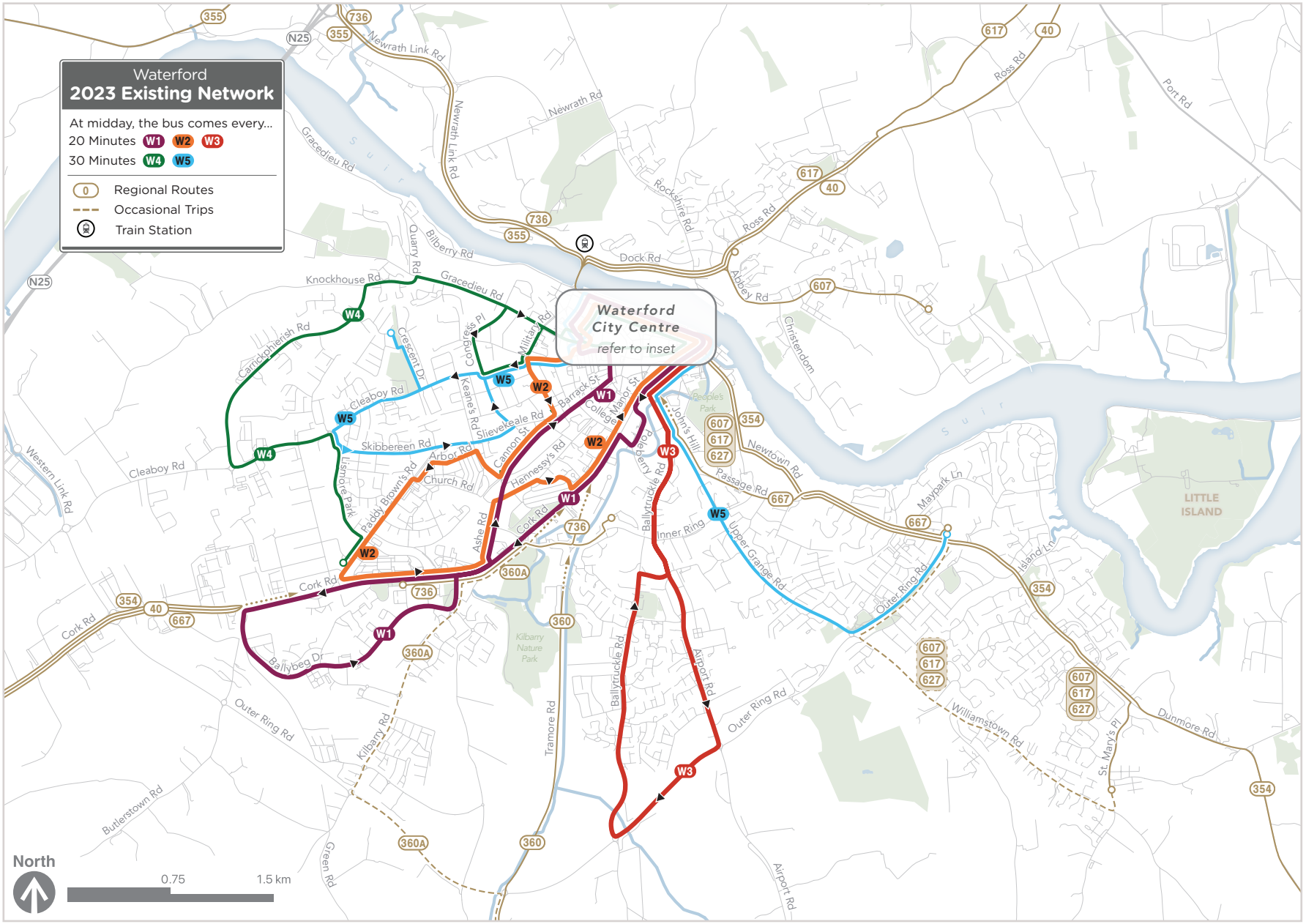
This map shows the existing urban PSO routes in the focus area as of autumn 2023.

2023 PSO Services in the Centre



This map shows the existing urban PSO routes in Waterford city centre as of autumn 2023.

2023 All Services



This map shows all routes (PSO, Expressway, commercial, etc.) that offered day-long services in the focus area as of autumn 2023.

More Service Investment

Added Services

The existing PSO bus network does not adequately address local or national goals for growth, quality of life and sustainability. The NTA is planning a major increase in services through BusConnects Waterford.

This plan will *more than double* the amount of service in the Waterford Public Service Obligation (PSO) bus network. This increase includes some service that can be seen on a map – such as new route segments – and some service that appears in timetables:

- New routes covering new areas.
- Better frequencies where the most people are travelling.
- Earlier morning starts on all routes.
- Higher frequencies on Sundays, and for more hours of each day.
- Two-way services in areas that are today served in one direction only.

Patronage vs. Coverage

One of public transport's main goals is high patronage. High patronage is necessary to meet climate, growth and liveability goals. High patronage generally results when places with many people are connected by frequent, fast and linear services.

But patronage is not public transport's *only* goal. Public transport is also expected to provide services to all urbanised areas, even where few people live or work, and even where patronage is low. The purpose of such services is to prevent isolation and support people's needs for mobility no matter where they live.

These two goals are in tension. The more buses are concentrated into frequent, all-day routes, in the areas where the large numbers of people live and work, the less they can spread out to cover all areas.

Not all of the routes planned in the New Network are expected to attract high patronage. Some of them cover areas where patronage will likely be low, but inclusion is important nonetheless.

What is the value of high patronage?

- Make public transport relevant for more people
- Support dense and walkable development
- Improve access to jobs, education and other opportunities for large numbers of people
- Encourage people to switch from car to public transport
- Combat traffic congestion
- Reduce carbon emissions

What is the value of coverage?

- Promote social and economic inclusion, regardless of where people live
- Prevent isolation for people who live in less-populated areas
- Include everyone in the benefits of public transport

Higher Frequencies

The New Network Plan will improve the frequencies offered across the city as well as the hours of operation.

The graphic below uses colour to describe each route's proposed frequency by time and day. Text tables with the same information, for the Existing and New Networks, are provided in the appendix starting on page 78.

15-Minute Frequency

In the existing network, the best frequency is offered on just three routes, and it is a 20-minute frequency.

In the New Network Plan, ***five routes*** will offer ***all-day 15-minute frequency***, and these routes cover much more of the busiest parts of the city. A sixth route will offer 15-minute frequency during weekday peaks.

Routes with frequencies of 15 minutes or better not only shorten waiting time, they also make it easier for people to interchange and thereby access more of the city.

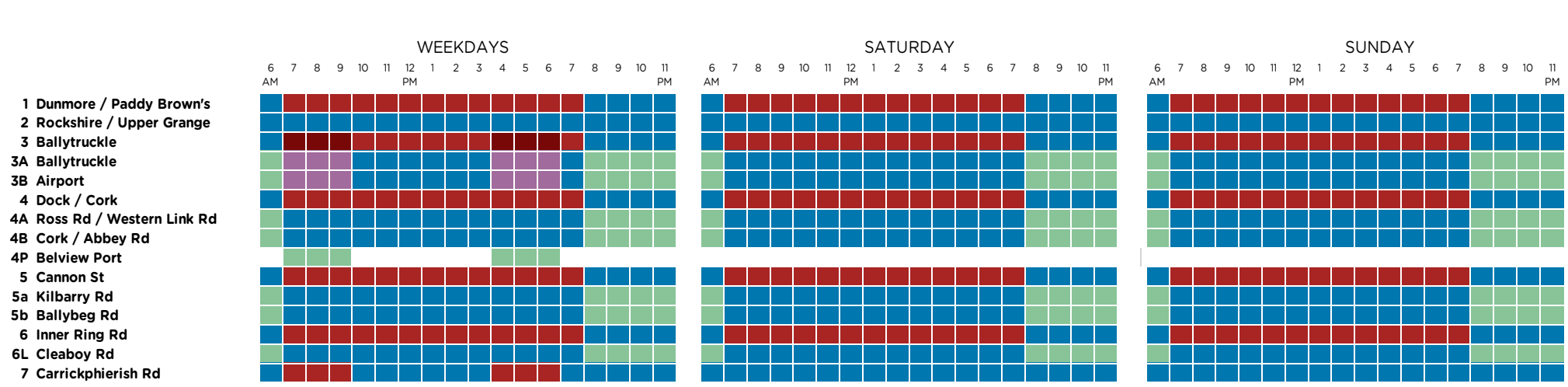
Every-day Frequency

In the existing network, frequency is worse on Sundays than on other days of the week. In the New Network Plan, the all-day frequencies on weekdays will be provided on Saturdays and Sundays as well – which means five routes will offer buses every 15 minutes all weekend.

Earlier Morning Services

In addition to frequency improvements, some routes would offer a longer span of daily service by starting earlier in the morning, especially on Saturdays and Sundays.

Waterford BusConnects Network: Frequencies and Spans of Service

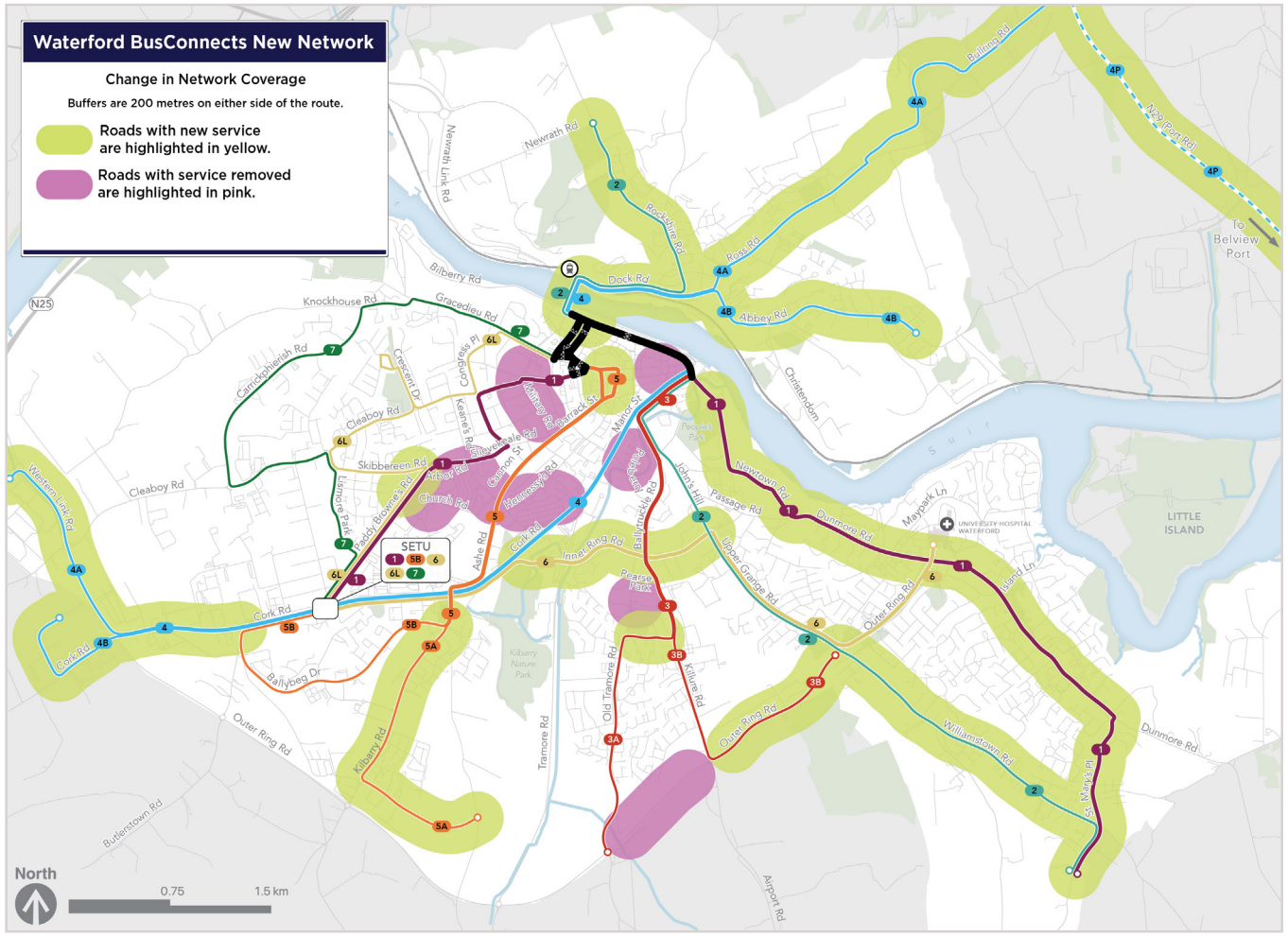


Services to More Areas

The New Network Plan will provide PSO services in certain areas which are not served today. They are marked in yellow on the map to the right. Some of these areas (such as Dunmore Road and Slieverue) are currently served by non-PSO, commercial routes.

The New Network Plan will also remove services on a few streets, which are marked in pink on the map below. In these cases, the total number of people affected will be small, and improved services will be provided within a short walk of all existing bus stops. Removing these few, small segments has a benefit to a large number of people: it allows bus routes to be more linear and direct, more frequent, and makes the network simpler.

Overall the share of residents within 400 metres of a bus stop (about a five minute walk) will increase from 67% to 74% (measuring on weekdays at midday). Across every demographic group measured, the proportion near a service will increase with the New Network Plan. The percent of jobs and school enrolments near a service will also increase.

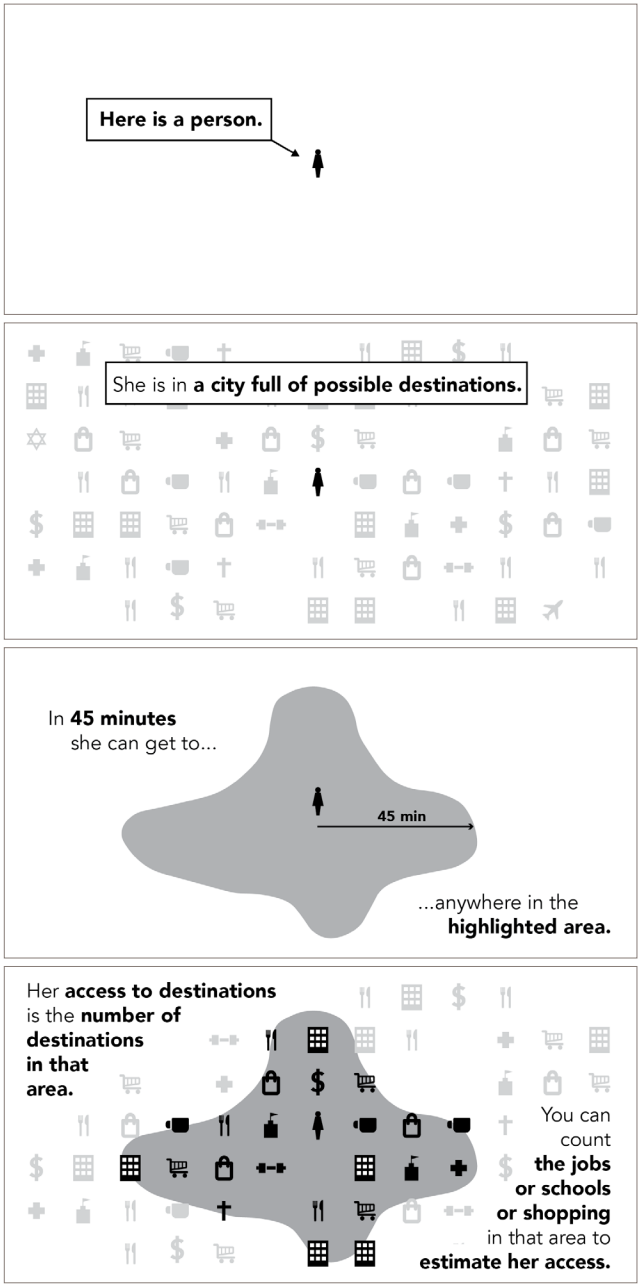


More Access to Opportunity

It's impossible to predict how many people will use an improved bus network. The future is inherently unpredictable, as our recent experience with the Covid-19 pandemic demonstrated. Models can be used to forecast future public transport patronage, but they require myriad assumptions about the future, at least some of which will turn out to be wrong.

At the individual level, it is also hard to predict public transport patronage. It is difficult to know how someone will make their travel decisions in the future if there are changes in where they live, where they work, fuel prices, traffic congestion, the quality of public transport service, improvements to cycling and walking facilities, their own ability to drive a car, etc.

In the face of so much uncertainty, we rely on simpler measures that focus on the near-term consequences of a change and that require fewer guesses about the future. One such measure is "access," also sometimes called "accessibility." Access measures the usefulness of a public transport network for any person who has a limited amount of time to spend traveling.



Public transport is useful to the extent that it allows people to go where they want in a reasonable amount of time. **The more destinations you can reach in a reasonable amount of time, the greater your access to opportunity.**

When we measure access, as illustrated at left, we use arithmetic to sum travel times among all residents, jobs and schools. Faster journeys mean that people can access more within a limited amount of travel time.

Designing cities and their public transport networks so that more people have access to more opportunities, within a reasonable journey time, is a reliable way to increase patronage.

The New Network Plan will improve access throughout the week:

- **People will be able to reach 69% more jobs within 30 minutes**, all day on weekdays.
- **Youths will be within a 30-minute bus journey of 83% more school places**, on weekdays at rush-hours.
- **On Sundays, residents will have access to 82% more jobs within 30 minutes**, plus the shops and services those jobs represent.

How to Learn About the New Network Plan

In this Report

This Report is one source of information about the New Network Plan. Within this Report you will find:

- The principles used in bus network design, starting on page 18.
- A description of the New Network Plan, starting on page 26.
- A summary of public feedback, and how it informed the final New Network Plan, starting on page 38.
- Analysis of how residents' access to services and to destinations will change with the New Network Plan, starting on page 38.

Online Map

To explore what the New Network Plan will mean for your area and for your journeys, you can refer to the online webmap available at the BusConnects Waterford website.

The online map allows you to:

- Zoom in and see detailed routing.
- Look at areas that are difficult to show on these small pages.
- See how average access to jobs or residents will change from your area.
- Create your own access map comparing how far you could travel using the Existing or New Network.

2 Route & Network Design Principles

What Makes a Useful Network?

Access to opportunity, described starting on page 16, is the way that public transport network design can affect the **usefulness** of services, and thereby affect **patronage**.

Access describes the likelihood that any person's trip, at the time they want to travel, will be possible in a reasonable amount of time.

There are many factors that affect patronage which have nothing to do with access or bus network design, such as:

- Economic activity and overall travel demand
- Public transport fares
- Road tolls
- Fuel prices
- Car ownership rates
- Car park prices

Usefulness and patronage are also affected by factors that the NTA and its local partners **can** influence:

- **Where** routes go
- Their **frequency** and **hours of service**
- The **connections** among public transport services, and the ease of interchange
- **Land use** and **development patterns**
- **Demographics**, and where people with particular needs are located
- **Street design** and **walkability**

The first three factors on this list have to do with the design of bus routes and of the integrated public transport network. These are the factors proposed to change in the new bus network in ways that will make services more useful for more people.

The latter three factors on this list - land use, demographics and street design – have a heavy influence on the cost and usefulness of public transport. They are primarily controlled by local Councils. They cannot be immediately changed through BusConnects, but they can be improved over the long-term to make public transport more useful and more efficient. Planning for better land use and street design will maximise the benefits of BusConnects.

A high-patronage network is more useful for more people. And most people are in a hurry.

Free Interchange

In support of BusConnects and this network redesign, a new fare structure will soon be introduced in Waterford which reduces barriers and penalties for interchange.

Interchange between urban bus routes will be free. Simply changing from one public transport vehicle to another will not come with an extra charge, because fares will be based on distance travelled rather than the number of vehicles used.

Reliability is an important consideration in planning for interchange. People must have confidence that when they get off one bus and wait for another, the wait will be reliably short.

There is some discomfort involved in interchange. But most people want to get where they are going, quickly, more than they want to avoid interchange. Free and reliable interchange allows us to design a more frequent network, providing shorter overall journey times for more people.

Frequency

One of the most powerful ways to increase access across a network is to shorten waiting times by improving frequency.

More frequent service:

- Reduces waiting time (and thus overall travel time).
- Lets you travel whenever you want.
- Improves reliability, because if you miss your bus or it breaks down, another one is coming soon.
- Makes interchange (between two frequent services) fast and reliable.

When frequency improves in places with large numbers of residents, jobs and other opportunities, that improves access for many people.

Better frequency increases the potential for high patronage, though it isn't enough by itself to cause high patronage.

How Frequent is Frequent Enough?

In small cities like Waterford, peoples' trips tend to be short. Public transport must be very frequent for short trips, since waiting time can dwarf journey time on the bus.

The shorter the trip, the less people tend to tolerate a long wait.

To think about whether any frequency is "frequent enough," imagine waiting one-half of the frequency (since on average, for most trips, you will). Ask yourself whether you could tolerate waiting that long as part of an *everyday* trip.

For many residents of the study area, the city centre and other major destinations are within a 30-minute walk or a very quick drive in a car. A bus that arrives only once every 30 minutes will therefore struggle to compete with these other options.

Frequency and Real-Time Arrival Information

One can imagine that with real-time arrival information available on smartphones, frequency doesn't matter, because nobody needs to wait for a bus anymore. If a bus only comes once an hour, that's ok, because you only go to the stop at the right time.

But despite this new technology, frequency still matters for many reasons. Most importantly, **waiting doesn't only happen at the start of a journey, it also happens at the end**. You might not spend time waiting *at the stop*, but if your bus is infrequent you often have to wait *at your destination*. For example, if you start work at 8:00 am but the bus passes your workplace at 7:35 and 8:05 am, you have a choice between being 25 minutes early or 5 minutes late.

You may be able to time your departure from home to the bus timetable, but many of life's errands end at unpredictable times – and many workers can't choose the end time for their shift. Many jobs have inflexible start and end times.

If you're making an interchange, the precise timing of that interchange also isn't up to you.

Finally, frequency improves the resilience of a journey, because if something happens to your bus, another one is coming fairly soon.

Distance, Cost and Frequency

Within a limited public transport budget, longer routes trade-off against higher frequencies. This doesn't mean that a high frequency network is all short routes. But it does mean that as a system expands to serve new areas, maintaining high frequency would require investing in more vehicles and paying more drivers.

Alternatively, lengthening routes to serve new areas can be accomplished without new funding, but by cutting frequencies or hours of service to cover the increased cost of the distance, as illustrated below.

One bus can provide 30-minute frequency over a short distance…

…but double the distance means half the frequency. Now the bus comes every 60 minutes.

As routes get longer, a public transport authority must either **cut frequencies** or **spend more** to add buses and drivers to the route.

Speed and Reliability

Slower speeds have the same effect on public transport services as do longer distances. If the same route takes twice as long to drive now as it did ten years ago, the transport provider will need twice as many buses and drivers to maintain the same frequency.

This means that, **as public transport slows down, the cost to operate it increases**. A public transport provider can either reduce frequencies or come up with additional funding – funding which could otherwise have been used to *improve* services rather than run slower services at a higher cost.

Speed and Frequency

As public transport vehicles slow down, a responsible operator must do least one of three things:

- Cut frequencies, or
- Shorten routes, or
- Find funding for more drivers and buses.

For example, the existing Routes W1 and W2 have slowed down over the past five years due to traffic congestion. As the buses have slowed, the gap between arriving buses at a stop has naturally lengthened beyond the intended frequency of 20 minutes. Fortunately, NTA has been able to increase funding, allowing Bus Éireann to add an additional driver and bus to Routes W1 and W2. In the absence of such funding, Bus Éireann would have had to simply concede a worse frequency.

In Waterford, slowing speeds and worsening reliability have consumed funding for public transport services. The percentage of Public Service Obligation investment in Waterford which goes towards slower operations and more buffer time has been increasing over the past five years.

Designing slower but more realistic timetables, adding more buffer time, and adding more vehicles to a route, all improve the reliability of the bus. However, they are short-term solutions, a necessary acceptance of the degradation of bus speeds. These actions cannot address the long-term problem.

Strategies to speed bus routes — including some of the BusConnects measures—will support services that are frequent, reliable, fast and an efficient use of public funding in the long term.

When congestion slows down public transport, it becomes more costly to operate. This consumes funding that could otherwise be spent making the service better.

Radial and Orbital Services

A public transport network should be greater than the sum of its routes. One route can take people only so many places – but if that route makes connections with many other lines, vastly more places become reachable.

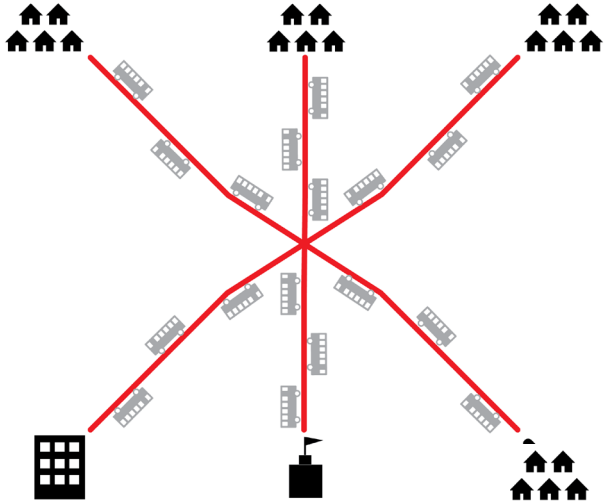
The Waterford public transport network is highly **radial**: all lines connect in the city centre. This reflects the shape of the city: most major surface roads lead to the city centre, which comprises the highest concentration of activity, and these radial roads are also very busy and lined with dense housing, shops and offices.

In a purely-radial network, every route connects with every other route at the centre; only one interchange is needed to reach every point in the system.

But as Waterford has grown, more journeys take place between outlying locations, and travelling through the centre can feel like a hassle.

Orbital routes might solve this problem, by allowing for cross-city travel without going through the centre.

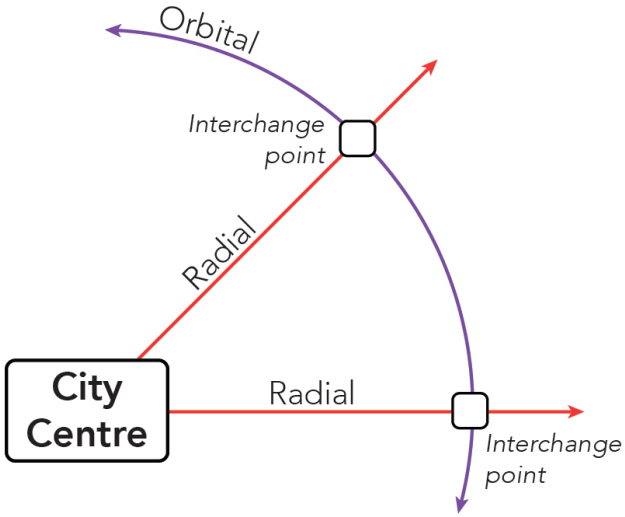
Orbital routes succeed under these conditions:



Radial bus routes travel between a City Centre and outlying areas or towns. The existing bus routes in Waterford mostly follow radial patterns, in and out of the centre of the city.

- Continuously high densities along the length of the orbital route.
- A mix of uses (housing, jobs and schools) along the length of the orbital route.
- Short and easy walks to development near orbital bus route stops.
- Easy interchange at junctions with radial routes.

In Waterford, these conditions are currently present along the Inner



Orbital bus routes travel between outlying residential and job areas, without passing through the centre. As any city grows outwards and as its radial bus network is improved, a trade-off arises between adding a new orbital route or making radial routes more frequent and useful.

Ring Road (but not along the Outer Ring Road). The Inner Ring Road has continuously dense and mixed-use development, well-connected streets that offer short walks to destinations, and easy interchange with radial routes. The New Network Plan includes Route 6 on the Inner Ring Road, an orbital service between University Hospital Waterford and SETU Cork Road.

Connections or Complexity?

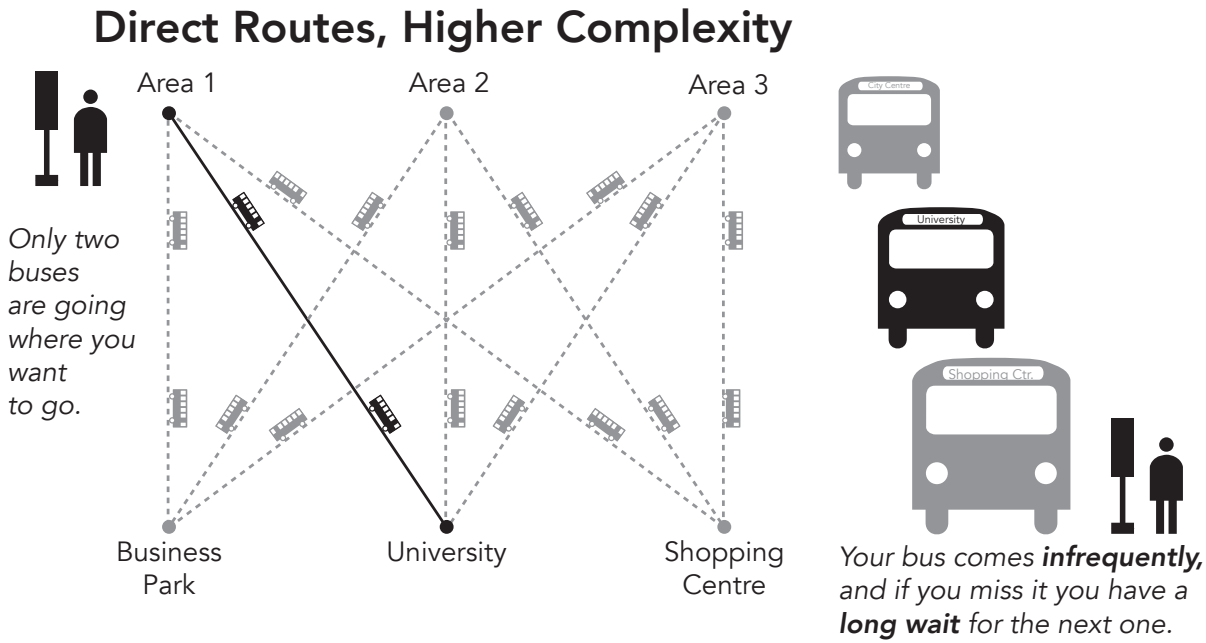
There is a trade-off between interchange and complexity that arises from the maths and geometry of transport. A public transport network designed to avoid interchange will be more complex, with poorer frequencies than are otherwise possible.

Obviously we would all prefer a one-seat-ride, rather than a second wait for a second bus. But making that wish come true for all would spread services thin, and thereby make them less useful.

The illustrations on this page and the next page show why designing a network for some interchange allows for higher frequencies, better reliability and shorter journey times overall.

The network at right is made of direct routes, one from each of three residential areas to each of three major destinations. The routes are operated by 18 buses and drivers.

There are a total of nine routes, but each is only operated by two buses, so the frequencies are poor. You always get a one-seat journey, but you can't depart when you want to. You have to time your trip to the bus schedule. If you miss your bus, it's a long wait until the next one.



A well-connected network is key to high patronage. Routes must connect with one another so that people can reach many different places across the city.

In contrast, the network on this page has just three routes, but serves the same six places and has 18 buses and drivers.

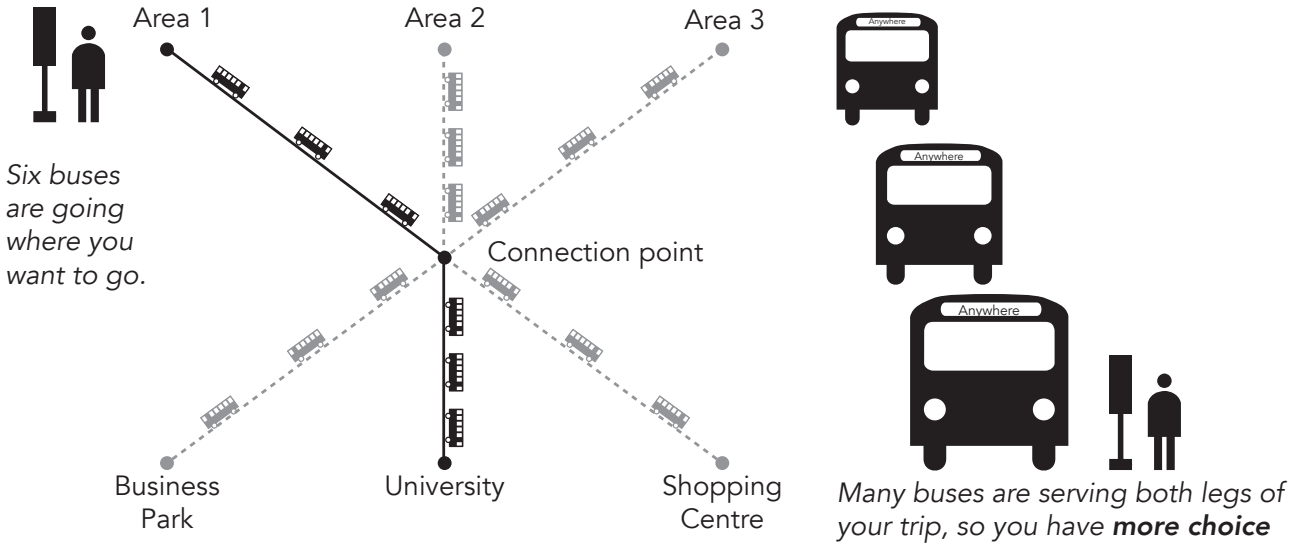
Each route offers much better frequency, because the available buses are concentrated onto fewer routes. Because there are only three routes, some journeys require interchange. The high frequencies make those interchanges fast and reliable.

In this more frequent network, you can depart at the right time for your work shift or class, because a bus is always coming soon. Your needn't arrive too early just because that's when the bus timetable dictates. You spend less time waiting for the bus and **your door-to-door travel time is shorter – despite the interchange**.

An important thing to note about these two networks is that *they cost the same to operate.*

Designing the Waterford bus network to avoid interchange would mean running a "spaghetti-pile" of routes, between every residential area and every destination. With so many unique routes, each route would have a poor frequency, since available service would be divided across all of them.

Connections, Lower Complexity



*Many buses are serving both legs of your trip, so you have **more choice** of when to travel, and **shorter waits**.*

People would save a little time by avoiding interchange, but they would lose more time every day due to the poor frequencies of the routes. Such a network would also be complex and hard for people to learn and remember, especially for people new to the city.

Whilst everyone would understandably prefer a route that goes directly from where they live to where they work; and another route that does the same to where they shop; and a third to where they socialise...satisfying those individual desires would result in an infrequent network that few people would find useful.

This is why the New Network has been designed with an acceptance that some journeys will involve interchange.

3 The New Network

How to Read the Network Maps

New Route Numbers

All of the proposed routes have been given unique numbers, without a "W" prefix, to differentiate them from existing PSO routes.

Ireland has a new national system for assigning bus route numbers, which helps online and phone-based journey planners work well for journeys among Irish cities and towns. That new system will include Waterford. The numbers for each route in this plan are therefore likely to change again, to integrate with the national system, when the network is put in place.

Line Width Shows Frequency

In the maps on the next two pages **the thickness of the lines represent the route frequency.** Thicker lines are routes coming every 15 minutes, Monday through Sunday, whilst thinner lines are routes coming every 30 minutes.

Route Branching

Some routes in the New Network will branch, shown on maps like this:

These are not interchanges. The buses on the less frequent "branches" run together to form the more frequent "trunk."

This is proposed for:

- Route 3 at Pearse Park
- Route 4 in Ferrybank and at the Outer Ring Road
- Route 5 at Ballybeg

No interchange is necessary between the two segments of the route, but the inner segment would offer shorter waits for a bus than the outer segment.

Route 6 and 6L

Like the branching routes, Route 6 is also designed with multiple segments, without a need to interchange between them:

- A high frequency will be offered on Route 6 between University Hospital Waterford and SETU Cork Road (every 15 minutes), and this segment is marked "6" on the map on the next page.
- Every second bus continues on through Skibbereen and Cleaboy, terminating at the Quays. On this segment a bus is coming every 30 minutes. It is marked "6L" (for "long") on the map.

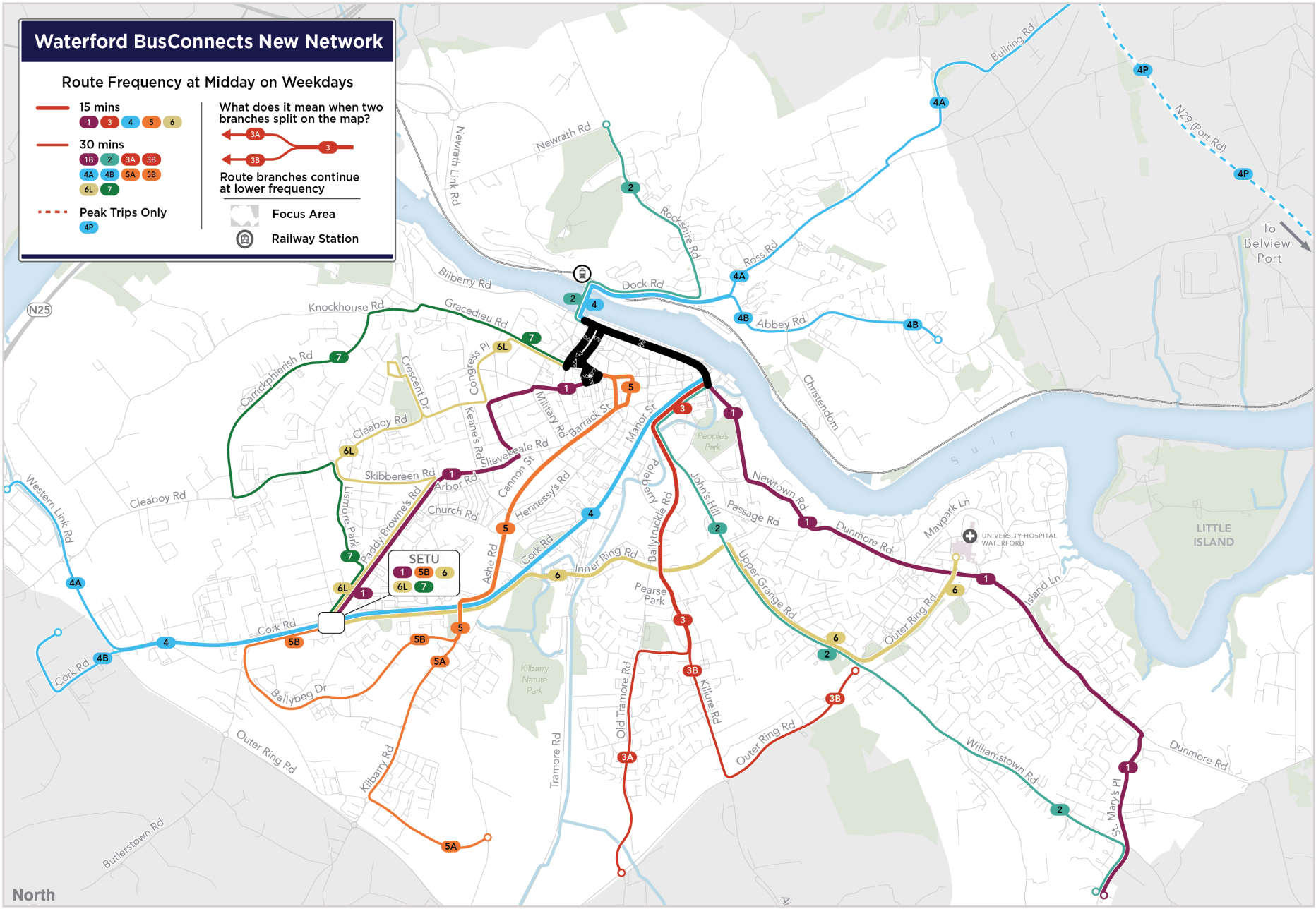
On Route 6L, a person could travel between Cleaboy Road and University Hospital Waterford, every 30 minutes, without a need to interchange.

Other Services

There are more publicly-supported bus services in the Waterford area than are shown on the maps in this report.

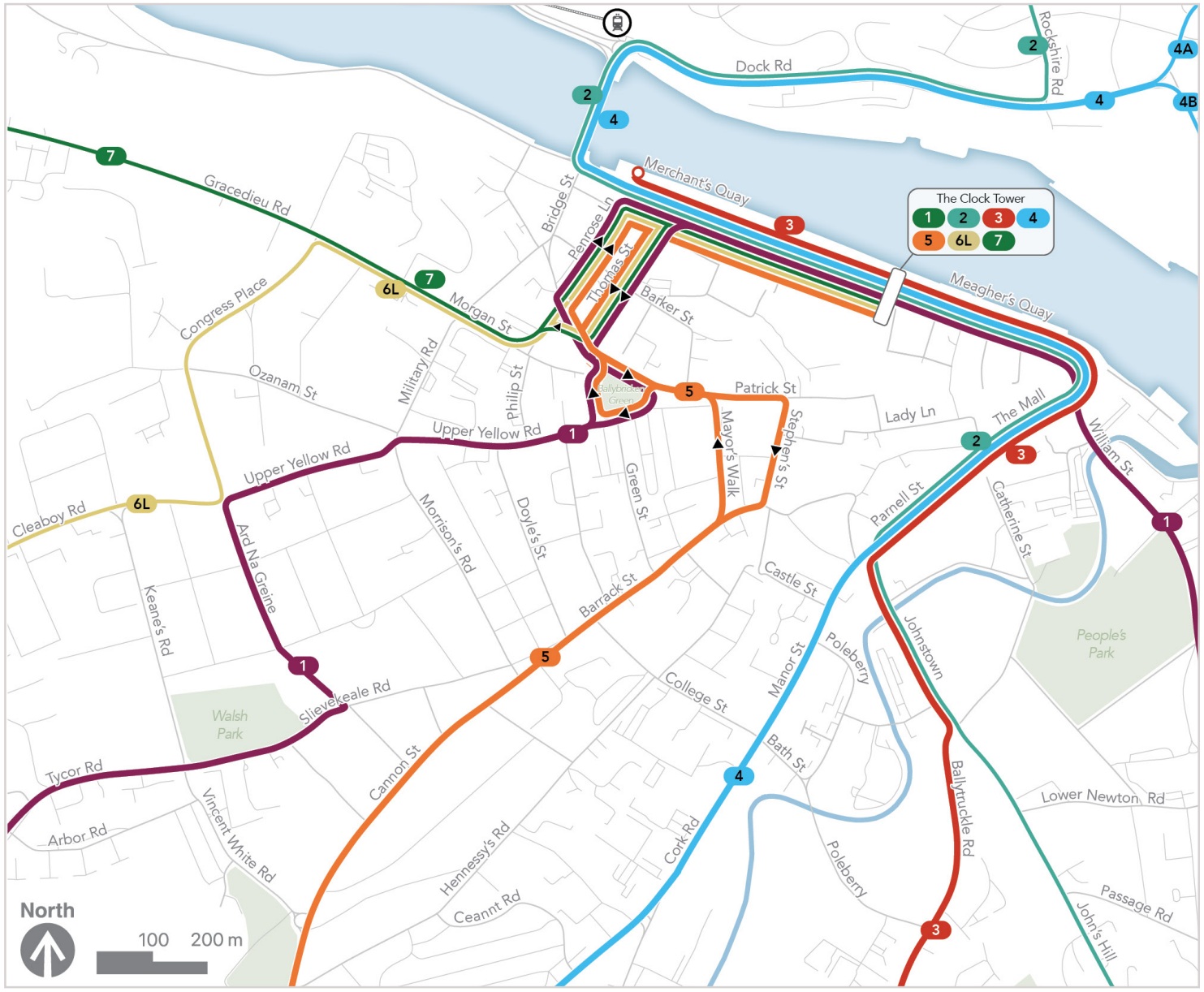
BusConnects is focused on the urban Waterford area, whilst planning for connections among cities, towns and rural areas is happening through a separate process called Connecting Ireland.

Maps of the New Network Plan



For a closer look at the New Network Plan, please visit busconnects.ie and especially the online map linked there.

City Centre



For a closer look at the city centre in the New Network Plan, please visit busconnects.ie and the online map.

Services to More Areas

The New Network Plan will provide PSO services in some areas which are not served today. They are marked in yellow on the map below, and include:

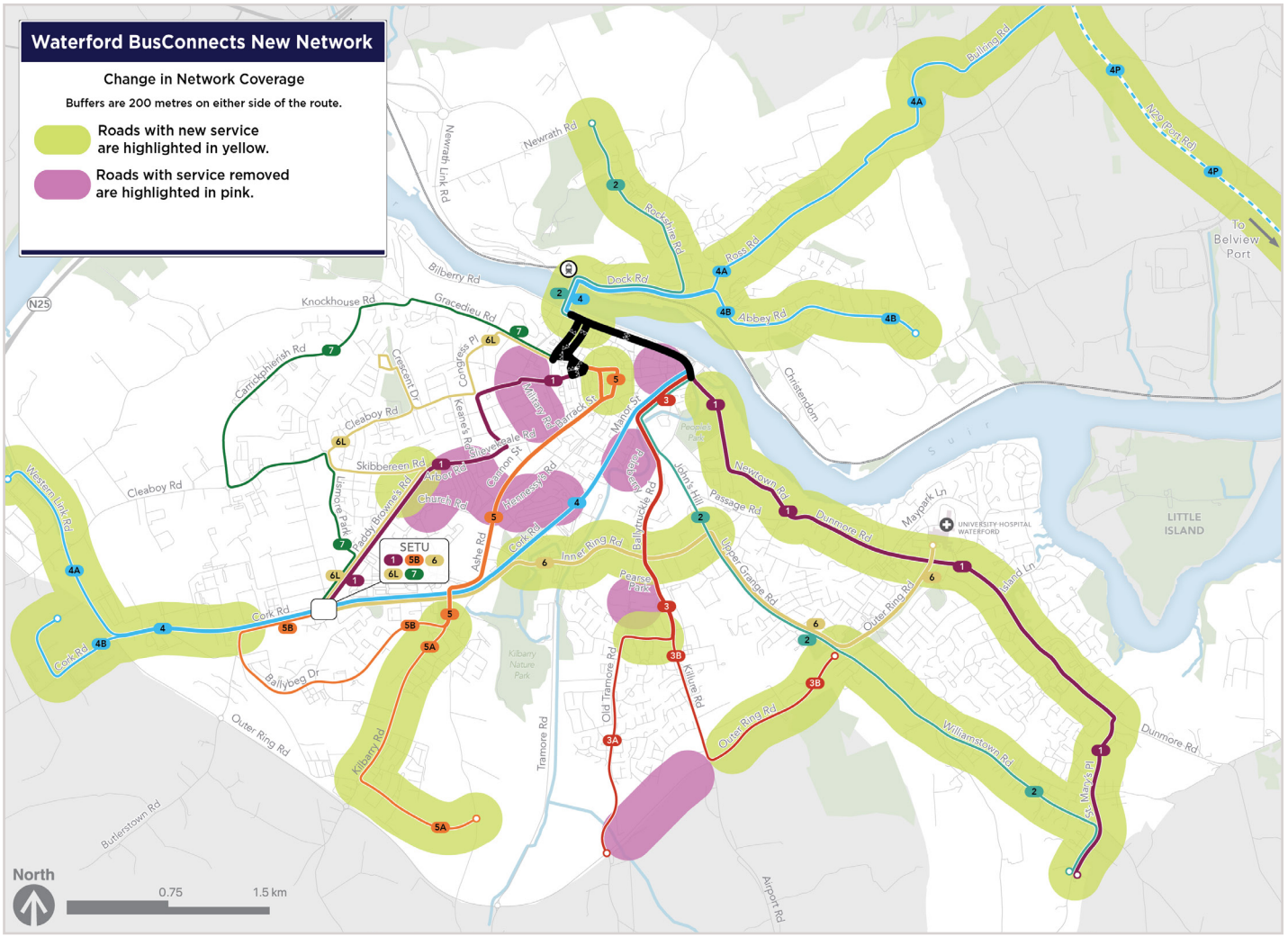
- Outer Cork Road and the Western Link Road.
- Kilbarry Road south of Cork Road.
- The Outer Ring Road between Killure Road and Williamstown.
- Abbey and Rockshire Roads in Ferrybank.

PSO services are also planned on some roads that are served by commercial routes, such as along Dunmore Road, St. Mary's Place, Williamstown Road, and Ross Road.

The New Network Plan will remove services on a few streets, which are marked in pink on the map at right. In these cases, the number of people affected will be small, and improved services will be provided within a very short walk. (Note that for the pink area along the Outer Ring Road, between Old Tramore and Killure Roads, a bus drives that way today but there are neither bus stops nor houses on that segment.)

Removing these few, small segments shown in pink it allows the network to be more frequent, more direct and simpler.

The share of residents within 400 metres of a bus stop would increase from 67% to 74% (on weekdays at midday). Across every demographic group measured, the proportion near a service will increase. The number of jobs and schools near a PSO bus service will also increase.



Higher Frequencies

The New Network Plan will improve the frequencies offered across the city as well as the hours of operation.

The graphic below uses colour to describe each route's proposed frequency by time and day. Text tables with the same information, for the Existing and New Networks, are provided in the appendix starting on page 78.

15-Minute Frequency

In the existing network, the best frequency is offered on just three routes, and it is a 20-minute frequency.

In the New Network, ***five routes*** will offer ***all-day 15-minute frequency***, and these routes cover much more of the busiest parts of the city. A sixth route will offer 15-minute frequency during weekday peaks.

Every-day Frequency

In the existing network, frequency is worse on Sundays than on other days of the week. In the New Network, the all-day frequencies on weekdays will be provided on Saturdays and Sundays as well – which means five routes will offer buses every 15 minutes all weekend.

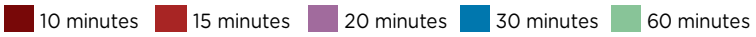
Earlier Morning Services

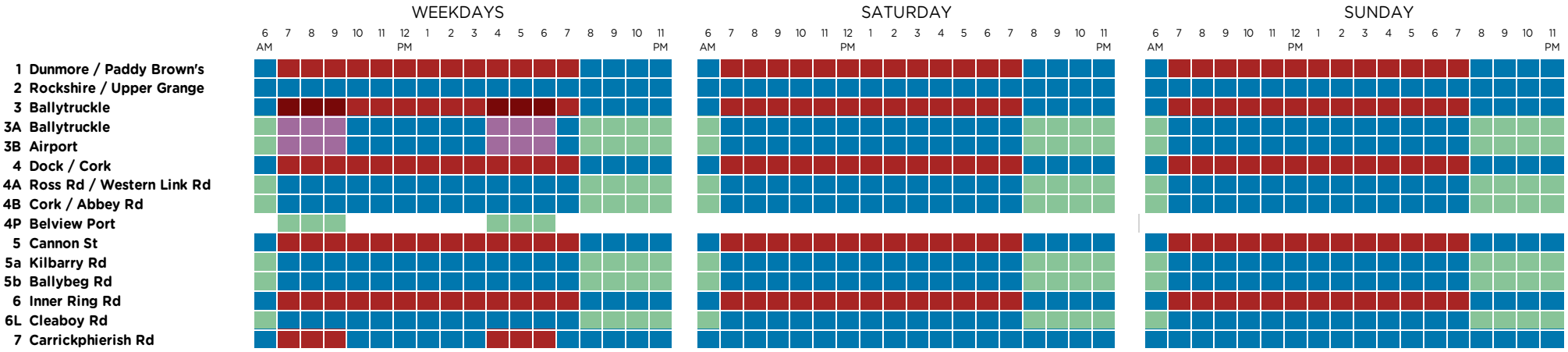
In addition to frequency improvements, some routes will offer a longer span of daily operation by starting earlier in the morning.

On weekdays, some routes will offer one hour of earlier morning service; on Saturdays, two hours; and on Sundays some areas will have service three hours earlier than in the existing network.

Waterford BusConnects Network: Frequencies and Spans of Service

The bus comes about every:





Implementing WMATS

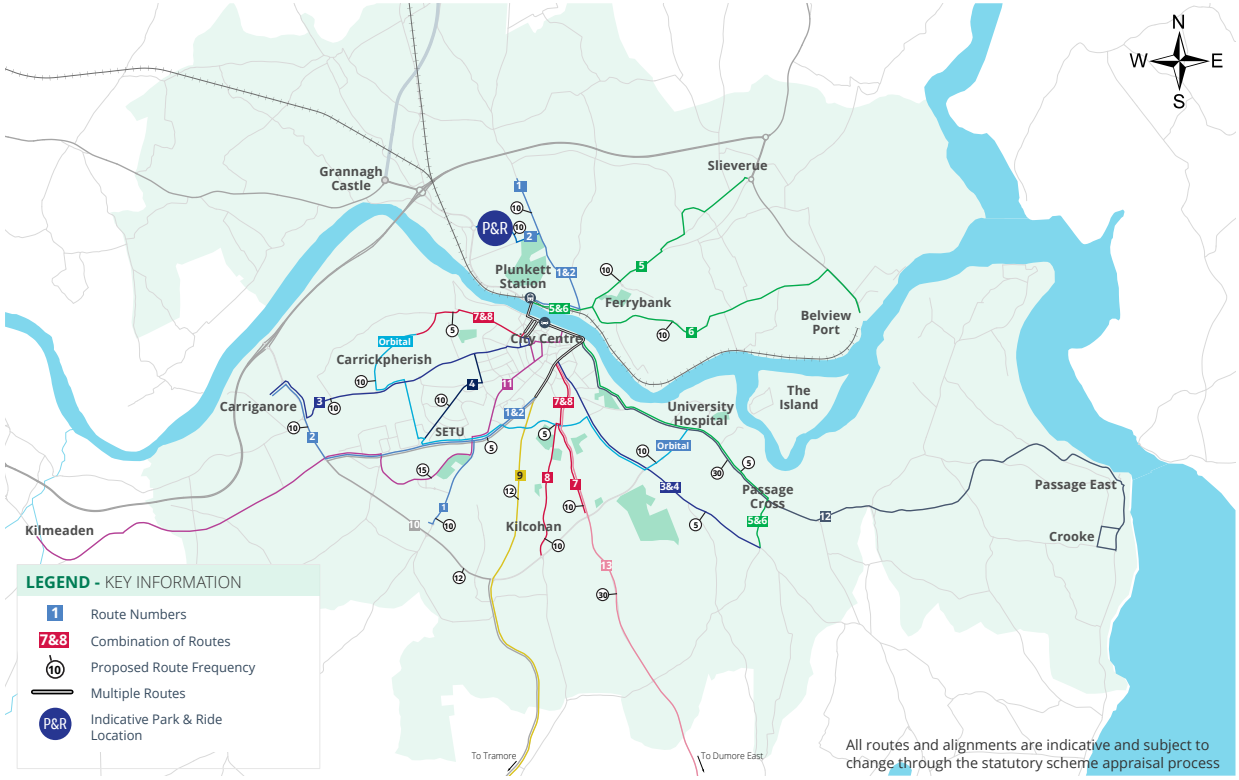
This New Network Plan is a step towards the bus network conceived in the Waterford Metropolitan Area Transport Strategy (WMATS). The map to the right was developed as part of WMATS and shows indicative routes for the year 2040. WMATS anticipated the detailed service planning that is now happening through BusConnects.

All of the routes proposed for 2040 in WMATS were two-way routes, rather than the one-way loops common in the existing network. In keeping with this, most of the service in the New Network is two-way.

The general patterns of WMATS-conceived routes are also echoed in the New Network Plan, with high frequencies on trunks that divide into lower-frequency branches to cover lower-density areas. Routes in both networks are quite linear, with minimal deviations from a direct and radial path into and out of the centre.

The New Network Plan will be a major step towards implementing WMATS 2040, while also responding to the imminent needs and opportunities in Waterford.

Proposed 2040 Bus Network



Route Descriptions

The table on this page provides a detailed text description of every proposed route and branch in the New Network Plan.

For routes 3, 4 and 5 the branches (called "A" or "B") are described including the trunk, because they would offer continuous service along the trunk and the branch without an interchange.

Route 6 would have a short section which is more frequent (every 15 minutes). Route 6 would have a long section called "6L" which would offer continuous service onto and off of the more frequent short section, every 30 minutes.

The colours in the first column match the colours for each route on the map.

Route	From	Via	To	How Often
1	SETU Cork Road	Paddy Brown's Rd – Tycor Rd – Slievekeale Rd – Ard Na Greine – Upper Yellow Rd – Lower Yellow Rd – Ballybricken Green – Thomas St (Outbound) – Penrose Lane (Inbound) – The Quays – The Clock Tower – The Mall – William St – Newtown Rd – Dunmore Rd – St. Mary's Place	Ballygunner	15 mins
2	Ballygunner	Outer Ring Road - Upper Grange Road - John's Hill - John Street - Parnell Street - The Mall - Meagher's Quay - Rice Bridge - Dock Road	Rockshire Road	30 mins
3	The Quays	The Mall - Parnell Street - John Street - Ballytruckle Green	Pearse Park	15 mins all day 10 mins peaks
3 A	The Quays	The Mall - Parnell Street - John Street - Ballytruckle Road -Ballytruckle Green – Inner Ring Road - Pearse Park	Old Tramore Road	30 mins all day 20 mins peaks
3 B	The Quays	The Mall - Parnell Street - John Street - Ballytruckle Road - Ballytruckle Green – St. John's Park – Killure Road	Outer Ring Road	
4	Outer Ring Road	Cork Road - Manor Street - Parnell Street - The Mall - The Quays - Edmund Rice Bridge - Dock Road - Fountain Street	Ferrybank	15 mins
4 A	SETU West	Western Link Road - Outer Ring Road - Cork Road - Cork Road - Manor Street - Parnell Street - The Mall - The Quays - Rice Bridge - Dock Road - Fountain Street - Ross Road - Bullring	Slieverue	30 mins
4 B	Whitfield Hospital	Cork Road - Manor Street - Parnell Street - The Mall - The Quays - Edmund Rice Bridge - Dock Road - Abbey Road	Abbey Park	
4 Peak	The Quays	Rice Bridge - Dock Road - Fountain Street - Ross Road - Bullring – N29	Belview Port	Three trips per peak
5	The Quays	Thomas Street (Outbound) - Penrose Lane (Inbound) - The Glen - Ballybricken - Stephen's Street (Outbound) - Mayor's Walk (Inbound) - Barrack Street - Cannon Street - Ashe Road - Cork Road	Ballybeg Drive	15 mins
5 A	The Quays	Thomas Street (Outbound) - Penrose Lane (Inbound) - The Glen - Ballybricken - Stephen's Street (Outbound) - Mayor's Walk (Inbound) - Barrack Street - Cannon Street - Ashe Road - Cork Road - Ballybeg Drive - Kilbarry Road	Lacken	30 mins
5 B	The Quays	Thomas Street (Outbound) - Penrose Lane (Inbound) - The Glen - Ballybricken - Stephen's Street (Outbound) - Mayor's Walk (Inbound) - Barrack Street - Cannon Street - Ashe Road - Cork Road - Ballybeg Drive - Cork Road	SETU Cork Road	
6	SETU Cork Road	Cork Rd – Inner Ring Road – The Folly – Upper Grange Rd – Outer Ring Road	University Hospital	15 mins
6 L	The Quays	Thomas Street (Outbound) - Penrose Lane (Inbound) - The Glen - Morgan Street - Gracedieu Road - Dominick Place - Congress Place - Upper Yellow Road - Cleaboy Road - Crescent Drive - Oakwood - Cleaboy Road - Skibbereen Road - Paddy Brown's Road – SETU Cork Road Campus – Cork Rd – Inner Ring Road – The Folly – Upper Grange Rd – Outer Ring Road	University Hospital	30 mins
7	The Quays	Thomas Street (Outbound) - Penrose Lane (Inbound) - The Glen - Morgan Street - Gracedieu Road - Knockhouse Road - Carrickphierish Road - Old Kilmeaden Road - Industrial Estate - Paddy Brown's Road	SETU Cork Road	30 mins all day 15 mins peaks

New and Improved Hubs

Interchange between routes would be possible wherever two routes cross (and especially easy where two routes with 15-minute frequency cross). However interchange would be especially popular and important at two new hubs: one on the Quays, near the Clock Tower; and the other near the SETU Cork Road campus.

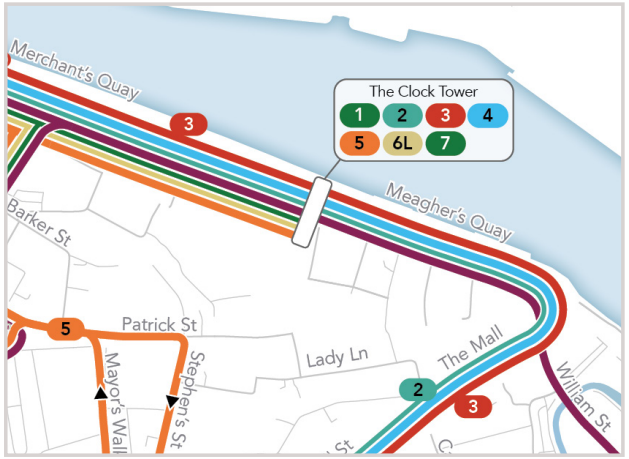
The change at the Quays is a change in degree, as it is already a major hub for the existing network. Because this network represents an increase in total service, the number of buses passing along the Quays would increase. Numerous people would also make interchanges between routes from different sides of the city, and the best place for most of those interchanges would be along the Quays. Improved infrastructure would be needed both to improve comfort for waiting passengers and to accommodate a few more buses at halts. In addition, some routes would end at the Quays, thus space would need to be provided for buses to be parked between trips on the route and whilst the driver takes a break.

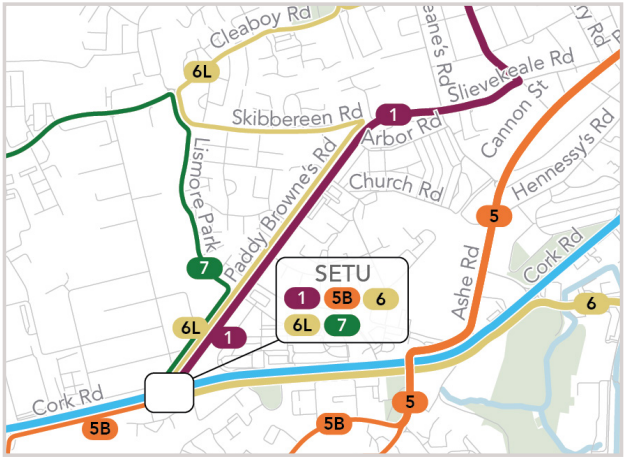
The change at SETU Cork Road is not simply an increase in service but the introduction of an entirely new hub to support a new network structure. Offering good interchange on the south side of the city will help people reach some destinations quicker, by relieving them of the need to travel all the way to the north through the centre.

SETU's Cork Road campus is a major destination, but it also sits at the crossroads between many other destinations, making it a natural place where people will want to interchange between bus routes.

Proposed Routes 1, 4, 5B, 6 and 7 would all pass through the junction of Cork Road and Paddy Brown's Road. The ideal location for an off-street hub would be in the southwest corner of the SETU Cork Road campus. The hub would provide end-of-line space and facilities for the four terminating routes, a good environment for people interchanging between them, and easy access to the university and other nearby destinations.

Route 4, which would not terminate at this location, could remain on Cork Road rather than deviating into and out of this new hub. It would offer a direct and fast service to the west, whilst also offering an easy interchange with routes at the hub, as long as comfortable crossings of Cork Road and direct footpaths into the hub and the campus are provided.





Route 1

Route 1 will travel on streets that are today served by Routes W2, W5 and commercial J.J. Kavanagh & Sons Routes 607, 617 and 627.

It will connect SETU Cork Road, Summerland Square, Ballybricken, the Quays, Newtown Road, University Hospital Waterford, Dunmore Road and St. Mary's Place.

Route 1 will be a very simple route, offering a two-way service every 15 minutes along its entire length, seven days a week.

On its western side, in the Lismore Park area, existing services are one-way loops. This makes them complex to use, and whilst they work fine for journeys to the centre, they don't easily allow people to make short journeys among adjacent neighbourhoods. Route 1 will offer a frequent two-way service to replace these one-way services. Bus stops will be added to the opposite sides of streets so that people can use the bus in both directions.

Route 2

Route 2 will operate every 30 minutes between Rockshire Road in County Kilkenny, the Quays, John's Hill and Williamstown Road.

It will include bus stops on Dock Road, near the new railway station in Ferrybank. It will also pass near De La Salle College and St. Otteran's.

Route 3 (Including 3A and 3B)

Route 3 will offer a service every 15 minutes between the Quays, Ballytruckle Road and Pearse Park. At peaks, the frequency will be increased to every 10 minutes.

Route 3 buses will continue on south of Pearse Park, with alternating buses going down Old Tramore Road (3A) or Killure Road (3B). Route 3B buses will continue on the Outer Ring Road to turn around at the junction with Williamstown Road. During peaks, each of these branches will offer 20 minute frequency, and the rest of the weekday (and all weekend) each branch will offer 30 minute frequency.

Route 3 will pass close to St. Angela's Ursuline Secondary School and St. Otteran's.

Route 4

(Including 4A, 4B and 4 Peak)

Route 4 will be a cross-city route connecting the south and north sides of the river.

The core trunk segment of Route 4 will offer two-way 15-minute frequency all day and all week. This core segment will go between the junction of the Cork & Outer Ring Roads in the south and Ferrybank in the north.

At the southwest end of the route, alternating buses will turn different directions, to offer a service every 30 minutes to two different places:

- Half of buses will serve the UPMC Whitfield Hospital (the 4B branch).
- The other half of buses will go to the SETU West Campus (the 4A branch).

Either of the termini of these branches could serve as Park & Ride locations in the future.

North of the river, alternating buses will turn different directions in Ferrybank, serving each branch every 30 minutes:

- Half of buses would serve Abbey Road (the 4B branch).
- The other half of buses would serve Slieverue (the 4A branch).

Reaching Belview Port with bus service is challenging because the most direct road (Abbey Road) is inoperable by buses whilst the road that is operable by buses (the N29) has no provision for bus stops, pedestrian crossings or footpaths. The N29 also has very little development nearby from which Port workers could walk to bus stops on the road.

Future works should improve the possibility of offering a regular public transport service to the port. Until then, an hourly connection during weekday peaks can be made, which is marked as the Route 4P on the map. This connection could be provided as a separate shuttle or as an extension of the northern 4A branch through Slieverue.

Route 5 (Including 5A and 5B)

Route 5 will offer a two-way service, every 15 minutes, all week, between the Quays, Ballybricken, Cannon Street, Ashe Road, and Ballybeg.

These areas are currently served by the one-way Routes W1 and W2. In some places, the W1 and W2 combine to offer a two-way service, but in other places people are within walking distance from a service in one direction, but not in the other. In general, the current arrangement of one-way loops made by the W1, W2, W4 and W5 is complex.

The planned Routes 1, 4, 5 and 6 will offer two-way services close to all existing bus passengers. The result will be a simpler network that is easier for Waterford residents to learn and remember.

At Ballybeg, alternating buses will turn different directions, offering a frequency of every 30 minutes on each branch:

- Half of buses will proceed along Ballybeg Drive and then come back around via Cork Road to end at the new hub (the 5B branch).
- The other half of buses will proceed south on Kilbarry Road (the 5A branch).

Unlike in the existing network, Ballybeg residents will have a two-way service connecting them to SETU Cork Road in one direction or the city centre in the other direction.

Route 6 (including 6L)

Route 6 will have a long version (the 6L) and a short version (the 6).

On the long Route 6L, trips will be provided every 30 minutes, every day, between the Quays, Upper Yellow Road, Crescent Drive, Cleaboy Road, Lismore Park, SETU Cork Road, the Inner Ring Road, Upper Grange Road and University Hospital Waterford (UHW).

The service will operate two-way (unlike the existing W5 which serves the western neighbourhoods). This will allow people to travel among places on Route 6L without an interchange or a long journey via the centre, which is not possible on the existing W5.

On the short version of Route 6, the buses coming from the long Route 6L in the west will be supplemented by additional buses only between SETU Cork Road campus, the Inner Ring Road, Upper Grange Road and UHW. On this short segment of Route 6, there will be buses in both directions every 15 minutes.

People will be able to travel between

places on the Route 6L and places on the Route 6, without an interchange, every 30 minutes.

Every second Route 6 bus coming from the east, when it reaches SETU Cork Road, will continue onwards to Paddy Brown's Road, whilst every second bus will turn around at SETU Cork Road before returning to the east.

Connections with other bus routes, including the frequent Routes 1 and 4, will be available at the new hub on Cork Road as well as at the Quays.

Route 7

Route 7 will connect the Quays, Gracedieu Road, Carrickphierish Road, Lismore Park and SETU Cork Road.

The frequency of Route 7 will be every 30 minutes, on weekdays and weekends alike. During weekday peaks, Route 7 will offer 15-minute frequency.

Route 7 will replace the existing Route W4, with two changes:

- The higher (15-minute) frequency during rush hours.
- A two-way service on Gracedieu Road without the one-way loop in the existing W4.

The one-way loop in the existing W4 is made because inbound buses go to the centre via Congress Place, Lower Yellow Road and Military Road, while outbound buses do not serve that loop. People currently using the W4 along that loop will be able to use proposed Routes 1 or 6 instead, and will have services nearby for *both* directions of their journey (rather than only one direction, as is currently provided for). For the other passengers of the W4 coming from all other areas, the route will be more direct and faster into the centre due to the removal of the loop.

The IDA Business Park will be close to Route 7 at the northern and southern entrances of the park. If a privately-owned pedestrian path to Lismore Park is reopened, additional workers inside the IDA Business Park will gain a shorter walk to Route 7.

Some residents near the Crescent would be walking distance to Route 7 (and its 15-minute frequency during rush hours) on Carrickphierish Road. However, until pedestrian connections are provided between the Crescent and Carrickphierish Road, those residents will not be able to walk to Route 7.

4 Summary of Public Feedback

Overview of the Consultation

Public consultation is an essential step in development of the BusConnects network plan. The planning process was devised to provide abundant high-quality information to the public, to maximise the number of people consulted and to gather actionable feedback that results in improvements to the network.

The Draft New Network was published in July 2024 and non-statutory public consultation was carried out between 8th July 2024 and 16th August 2024. Nearly 300 responses to this consultation were received.

Based on that feedback, the NTA, its consultants and the Waterford City & County Council discussed changes to the network. The changes made are summarised in this chapter.

This chapter focuses on comments from the public regarding the design of services in the Draft Network Plan: where routes go, frequencies, interchanges, days and hours of service. Whilst most of the comments received focused on those matters of service design, there were also comments about other public transport matters such as ticketing, pedestrian access or bus stop infrastructure. Public input on those important but ancillary issues has been reviewed and will inform the delivery of other elements of BusConnects Waterford.

Feedback Channels

Feedback was collected from the public at in-person consultation events, via an online feedback form, at an online webinar, and from email and letter submissions.

The NTA promoted the consultation and notified the public through:

- Information available on the BusConnects Waterford website, including the Draft New Bus Network Report, in English, Irish, and 'easy to read' versions.
- An Interactive Online Map to help people understand the proposed services and routes.
- Booklets delivered to every postal address in the Waterford area.
- A Public Information Campaign across local TV, radio and print media; and on social media.
- Signs and posters placed in Waterford and on-board buses.

Members of the public were encouraged to submit feedback through these channels:

- An Online Feedback Form on the website. This web survey form contained some structured questions, as well as free text boxes for written commentary and a provision for attaching files and documents.
- Email or post.
- Phone line made available for queries throughout the consultation period.
- An online webinar with questions and comments from the public.
- In-person consultation events at which people could speak directly with the BusConnects planning team.

The dates and times of the events were:

- Thursday, 18 July, 12:00-7:00 pm, at The Tower Hotel
- Friday, 19 July, 12:00-2:00 pm, at The Tower Hotel
- Monday, 22 July, 1:30-3:00 pm, online on Zoom.

All of the submissions received from

these various sources were read by the planning team, summarised quantitatively when possible and summarised qualitatively when the feedback given was free-form or written.

In autumn 2024, the written feedback described above, and additional guidance from the WCCC, were used by the NTA planning team to revise the Draft proposals into the final New Network Plan.

Analysis of Feedback

Across all feedback platforms the team received just under 300 submissions.

260 submissions were made through the online feedback form, comprising 237 submissions from individuals and 23 from organisations. In addition, 14 email submissions were received from individuals and 4 from organisations. Finally, 19 written submissions were made at the in-person public consultation events.

Through all of these sources, 297 total submissions were received, although there was a small amount of duplication between online and email submissions.

The consultant team of JWA and SYSTRA was engaged by the NTA to review and summarise the consultation submissions. All feedback was considered, categorised and used as an input in the preparation of the BusConnects Waterford Final New Network.

Profile of Respondents

The online feedback form asked some general questions about themselves respondents.

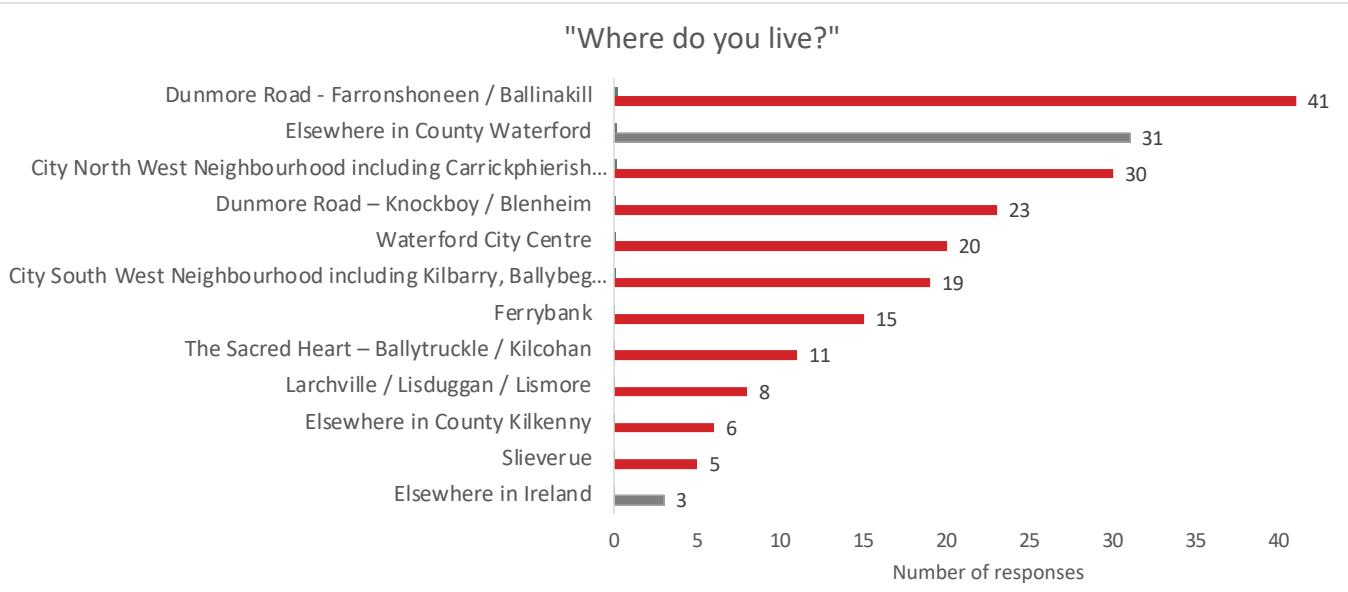
Where do you live?

The most commonly stated areas were "Dunmore Road – Farronshoneen / Ballinakill" (41), the "City North West Neighbourhood including Carrickphierish and Gracedieu" (30) and "Elsewhere in County Waterford" (31).

212 people answered this question.

Do you use the bus to travel within the Waterford area?

234 respondents answered this question with the majority, with 74% (174), stating that they were bus users.

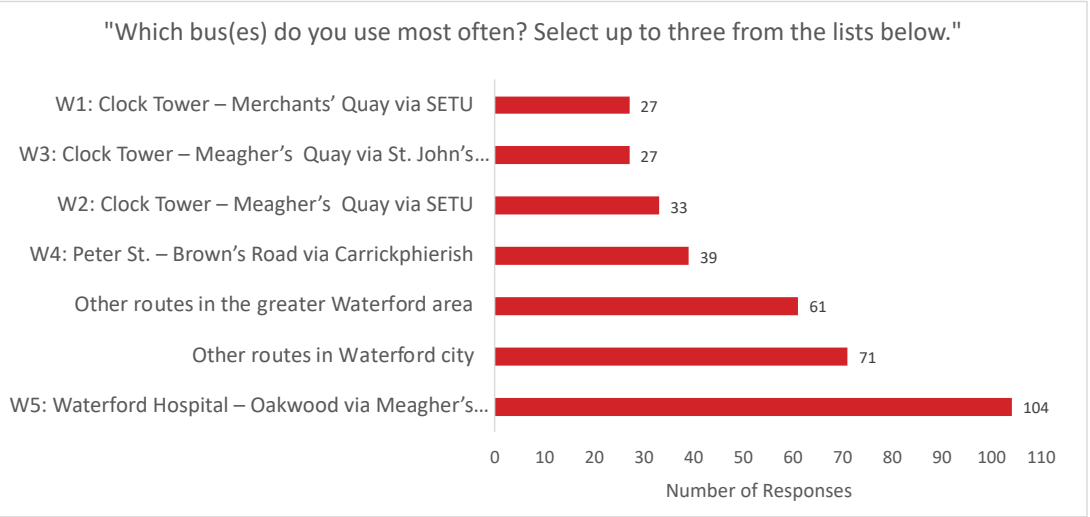


Which bus(es) do you use most often?

Respondents could select up to three from a list of existing services to reflect the bus routes they use most often. Among respondents, there was representation of all existing PSO routes, as shown at top right.

The route most commonly used among respondents was the "W5: Waterford Hospital – Oakwood". The next most used routes were "other routes in Waterford City", which would likely include Routes 607 and 617 that are not part of the existing PSO City Network.

There were 362 responses to this question, with up to three responses allowed per person.

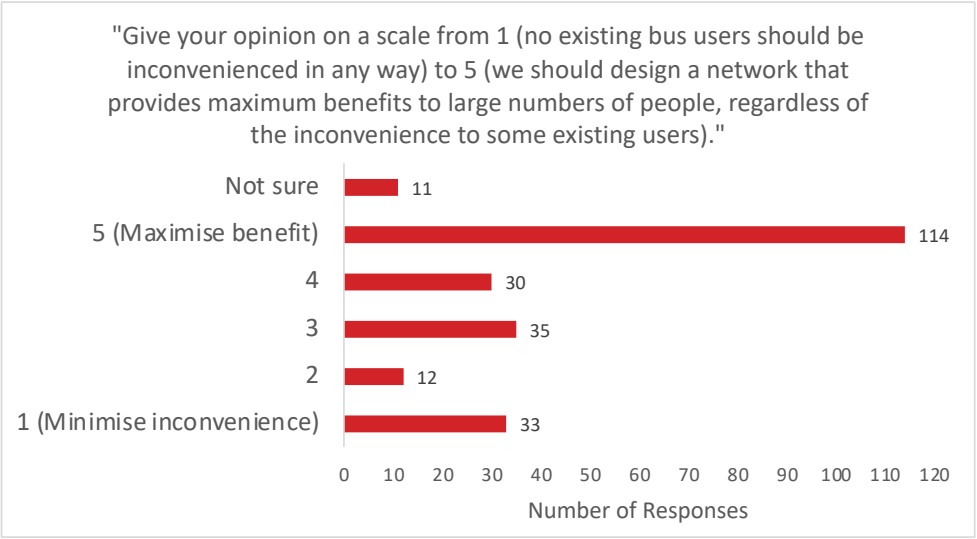


How should inconvenience to existing users be balanced against maximising benefits?

People were asked how the New Network Plan should balance the goals of avoiding inconvenience or disruption to existing bus users on the one hand, and transforming the network to maximise benefits for large numbers of people on the other hand.

On a scale from 1 (minimise inconvenience) or 5 (maximise benefit), 49% of respondents chose "5", and 62% chose "5" or "4". 19% of respondents chose "1" or "2".

235 people responded to this question, as shown below.



How would the Draft New Network compare to the existing Waterford network?

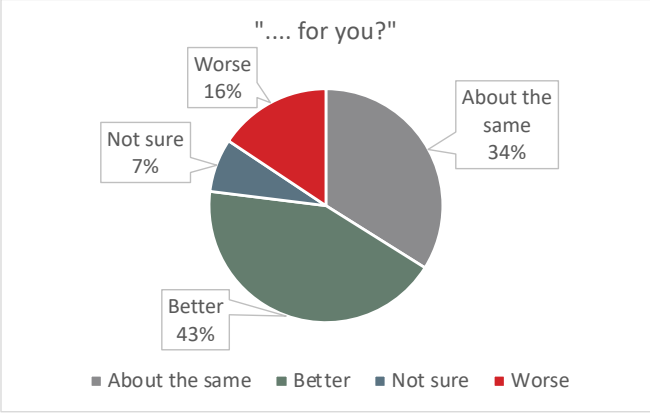
Respondents were asked to give a general indication as to whether the Draft New Network was better, worse or about the same as the existing network from different perspectives.

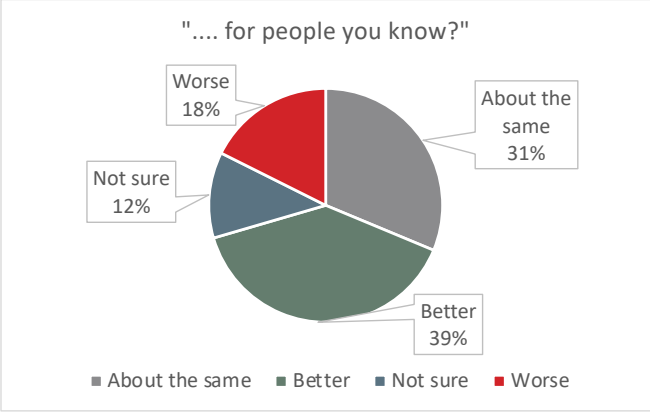
From their individual perspective ("... for you?"), a high percentage (43%) considered the Draft New Network better than the existing network. Approximately one third (34%) considered it about the same, and slightly fewer considered it worse than the existing network.

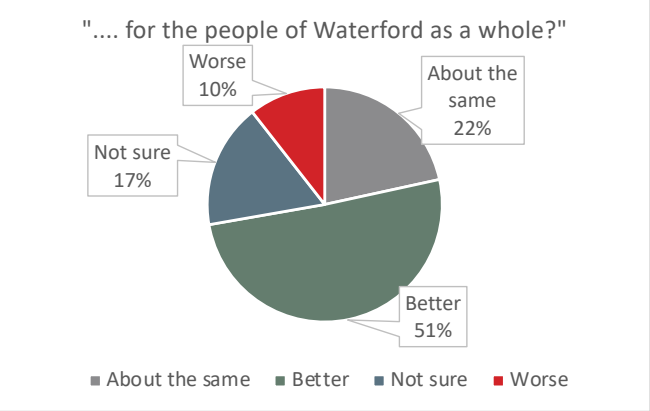
A similar response was received when respondents were asked to view the network from the perspective of people they know.

When asked to consider the network for the people of Waterford as a whole, a greater number, 51%, thought that the Draft New Network was better compared to the existing.

This indicated that the network is viewed more positively when the needs of the entire city are taken into account, but that individuals had some specific concerns or complaints relating to their own needs or the needs of people they know.



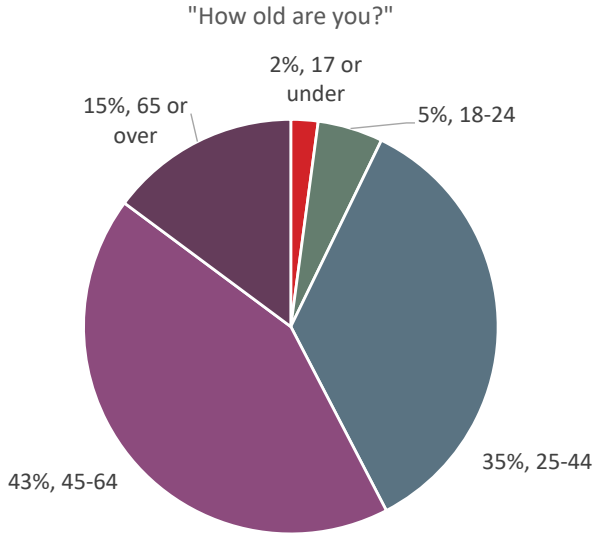




For each of the charts at left, the questions were answered by 230, 227 and 227 people, respectively.

How old are you?

Most respondents were aged between 25-44 or 45-64 (35% and 43% respectively). There was representation from over-65's (15%) and a smaller level of response from people under 24 (7%). 236 respondents answered this question.

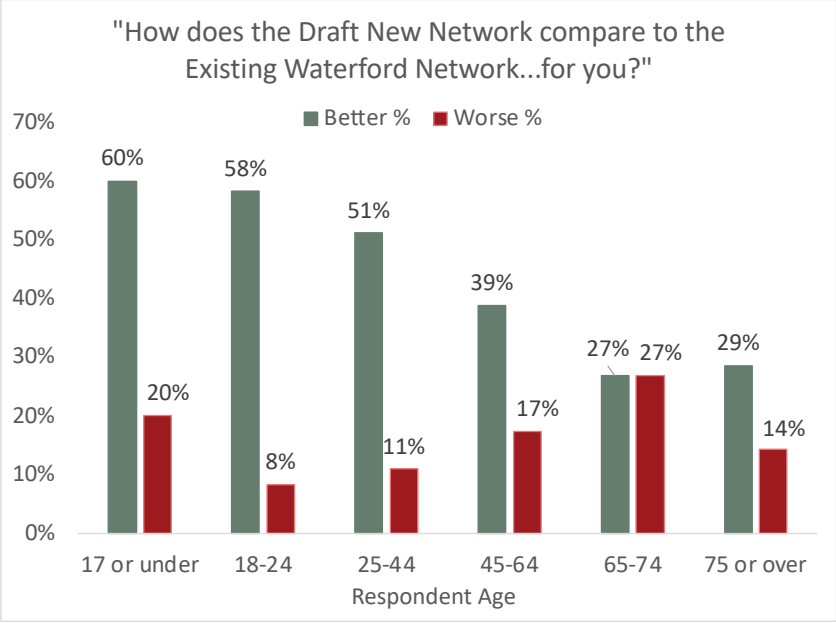


Note that some older people made submissions via email or at the in-person events. Feedback taken through those venues did not include age information.

Feelings about the Draft New Network by Age

There was some variation across the age groups in whether the Draft New Network was viewed as better or worse compared to the existing network, for the respondent individually ("...for you?"). Across most age groups, the proposed network was viewed as being better, particularly by younger people.

In the 65 to 74 age group an equal number of respondents viewed the network as being better or worse. Within that age group, among the half of respondents who said the new network would be worse, more than half of them also said they live in the City North West Neighbourhood including Carrickphierish and Gracedieu. Among the residents of this neighbourhood who provided feedback, many of them raised concerns about two specific issues: ease of access to University Hospital Waterford and a bus stop on Lismore Park/Tir Connell Ave. Changes have been made in the final New Network Plan that address those concerns.



General Themes from Feedback

While the content of individual and organisation submissions varied across Waterford, several general themes frequently emerged:

- Longer hours of operation
- Rail station
- Orbital routes
- Access to University Hospital Waterford
- Congestion / Unreliability
- Bus services outside the study area

Orbital Routes

Many submissions (59) requested the introduction of a route that would aid each commenter with a particular orbital journey and relieve them of having to travel into and out of the city centre. There were requests to connect many different residential areas to University Hospital Waterford (UHW), SETU Cork Road, colleges or other destinations, without the need to use radial routes into and out of the centre. There were suggestions for the utilisation of both the Inner and Outer Ring Roads.

The specific requests included:

- A one-seat-journey between UPMC Whitfield Hospital and UHW.
- A one-seat-journey among UPMC Whitfield Hospital, SETU Cork Road Campus and UHW for students on placement.
- An orbital route facilitating interchanging with bus routes from Tramore to give access to UHW without needing to travel into the city centre.

NTA Response

Waterford City centre is not located centrally within the geographic area of the City, with more development to the south of the historic centre as compared to the north. This creates a demand for orbital movements in the south, with people travelling east west without passing through the city centre.

However, in consultation the public suggested or requested a wide variety of paths and endpoints for an orbital service. This illustrated the challenge in designing an efficient network: many people like the idea of “an orbital route”, but the orbital route that works for one person is likely not the orbital route that works for another person. There are few potential orbital routes that would serve sufficiently large numbers of people to be viable, because people’s origins and destinations are so diverse and dispersed.

The Outer Ring Road was raised as a suggestion in many cases, as it is the obvious fast and reliable orbital route for trips made in cars. But there are long stretches with little or no development near the road. These empty segments make a public transport service less efficient because the number of potential passengers per km driven is low. There are also few destinations within walking distance of potential bus stops on the Outer Ring Road, due to circuitous and poorly-connected streets. The actual walk from an Outer Ring Road bus stop to a shopping centre or housing estate would be quite long and circuitous.

Because of the patchwork nature of development along the Outer Ring Road and the poor walkability of developments near it, patronage on the Outer Ring Road would be low.

The Inner Ring Road was also suggested by the public as part of an orbital bus route. The Inner Ring Road

passes through consistently dense and walkable areas with many residents, shops and schools located a short walk from bus stops.

In response to all of the feedback about orbital journeys and potential orbital routes, the NTA has revised the New Network Plan.

A frequent orbital route will operate along the Inner Ring Road, as an extension of the Route 6 that was proposed in the Draft New Network. The high frequency of this new orbital route will make allow for easy interchange with intersecting routes, including the bus from Tramore.

The new Route 6 will provide for some (but not all) of the orbital connections requested, among destinations such as UHW, Tramore Road and the SETU Cork Road campus.

Action: A frequent orbital route has been added to the New Network Plan through the extension of Route 6 along the Inner Ring Road.

Easy Access to University Hospital Waterford

There were 75 submissions requesting a one-seat-journey route from various residential areas to University Hospital Waterford (UHW). Of those submissions, 30 were specific requests to for such a route from the Cleaboy / Skibbereen area to replicate what exists today on Route W5.

Some of these requests included suggestions of an orbital route linking to UHW without going through the centre.

At the same time, there were comments in support of the routes proposed, that would offer cross-city connections between the SETU Cork Road campus and UHW on the proposed Route 1; and between Ferrybank and UHW on the proposed Route 2.

NTA Response

The feedback reflects workers' daily demand for travel to UHW, and many other people's need for access to UHW at least for occasional appointments.

It is not possible to offer one-seat-journeys to UHW from everywhere in the city (nor to SETU, nor to any other destination). However, the better frequency of bus services in the New Network will improve interchange opportunities.

Whilst not all parts of Waterford City can be practically linked to UWH by a single route, the areas served by buses without direct links will be able to access UHW by way of an interchange between two routes. The result will be shorter travel times to UHW for nearly all residents.

The introduction of a frequent orbital route, as an extension to Route 6, was described on previous pages. This orbital route will terminate at UHW. But introducing this orbital route necessitated redesigning other routes near UHW to avoid wasteful duplication and inefficient operation. Thus in the New Network Plan, Route 2 will terminate in Ballygunner instead of UHW as was proposed in the Draft Network. Unfortunately this severs the one-seat-journey from Ferrybank to UHW, which some commenters appreciated. Passengers coming from Ferrybank to UHW will have two options available to them: either interchange on the Quays to Route 1

or interchange on Upper Grange Road to Route 6. In either case, they will be interchanging to a frequent route and so the wait will be relatively short.

The addition of the orbital segment of Route 6 will also maintain the existing one-seat-journey between the Cleaboy Road area and UHW, which was raised as an issue by numerous users of the existing W5.

Action: The total frequency of buses to UHW has been increased from what was proposed in the Draft New Network. A new orbital bus route serving UHW has been introduced, with a frequency of every 15 minutes between SETU Cork Road and UHW. With these changes, the New Network Plan will increase by 89% (9,800 residents) the number of people who can reach UHW by bus in 30 minutes or less.

Congestion & Unreliability

Issues of traffic congestion were raised in 53 submissions, with 36 submissions highlighting bus unreliability and an interest in bus priority measures to help improve this. These submissions mentioned specific areas, especially: such as:

- Rice Bridge
- The Quays
- Parnell Street / The Mall
- Dunmore Road

NTA Response

As part of the BusConnects Programme the NTA, Waterford City & County Council and Kilkenny County Council will make plans to invest in bus priority measures across key corridors. These measures will help buses to run faster and more reliably.

The design of BusConnects priority measures is the next step in the process, following this finalisation of routes. Planning the routes to meet people's travel demands, and then planning the infrastructure, ensures that infrastructure is provided in the places where it will have the greatest positive impact on people's journeys. The BusConnects road priority schemes will be the subject of public consultation where required.

Action: No changes.

Longer Hours of Operation

A total of 12 submissions mentioned a need for longer hours of operations, particularly in the early morning and late evening. Business groups supported this, suggesting that late-night and early-morning buses could boost the night-time economy by facilitating easier travel for both customers and staff. Some key issues raised included:

- Shift workers who work early mornings, late evenings and nights
- Night-time outings
- High cost of taxis for those who need to travel outside of bus operating times

NTA Response

The enthusiasm for extended hours of operation is welcomed. The New Network Plan will increase bus services in Waterford. Whilst routes are not currently planned to run any later (past midnight) than in the existing network, many routes are planned to start one hour earlier on weekdays and 1, 2 or 3 hours earlier on Saturdays and Sundays.

Action: No changes.

Rail Station

Some people asked for clarity on the integration of the new Plunkett Train Station into the BusConnects New Network Plan. Queries were raised on the potential utilisation of the new bridge within the bus network to bypass the congested Rice Bridge.

NTA Response

The bridge that will connect the quays to the relocated rail station cannot support the operation of public bus services because it does not include street connections for motorised vehicles (to say nothing of large buses) at its ends.

The new bridge will allow passengers the choice of walking or rolling across the river to access all bus and rail services.

Buses on Routes 2 and 4 will stop in Ferrybank, with stops for Route 4 directly in front of the relocated railway station. The precise location of bus stops will be identified during the implementation plan with the desire for connectivity between bus and rail services noted for the implementation team's consideration.

Action: No changes.

Future Developments

A number of people asked about providing bus services in areas of future development. The areas mentioned included Kilbarry, Ballygunner and St. Otterans.

NTA Response

The provision of bus services with good frequencies and long hours of operation every day of the week will support the sustainable development of Waterford City, including in the specific development areas mentioned. In the case of developments that are already underway, the planning team reviewed the timeline, scale, density and walkability of the developments and considered adjustments to the network. Some adjustments are described by area, on later pages.

Future enhancements to the network can be made in line with the longer term growth of Waterford City.

Action: No changes.

Bus Services Outside the Urban Area

BusConnects is an urban public transport planning programme. For Waterford, BusConnects is focused on the urban portions of the Waterford Metropolitan Area, and on redesign of the existing PSO services. The focus area does not include villages that are separated from the urban area by rural lands, nor housing or businesses at rural densities.

The Connecting Ireland programme, which is being implemented by the NTA on an ongoing basis, is improving bus service provision outside the cities, in rural areas and among villages. Queries about services to villages or rural areas received during BusConnects Waterford were redirected to the Connecting Ireland programme.

Action: No changes.

Other Bus Transport Issues

Many people commented on wider bus transport issues that are not directly related to the network redesign. These

most commonly included comments on cashless payments, bus priority, real-time arrival information, bus stop locations and bus stop infrastructure such as shelters.

NTA Response

The first step in the BusConnects programme is the redesign of the bus network. Now that the pattern of services is finalised, work can commence on the other elements of the programme. For example, precise bus stop locations will be identified as part of the later implementation phase.

All responses have been reviewed and comments relating to wider BusConnects issues are summarised and provided to the BusConnects implementation team.

Action: No changes.

Feedback by Area

This section summarises issues by area. It draws on written comments submitted in the online feedback form, letters and emails sent by individuals or organisations, and comments made to project staff at in-person events. The reporting of the feedback and any related changes is grouped by geographical areas:

- North: all areas north of the river
- Southeast: areas east of John's River / Tramore Road
- Southwest: areas west of John's River / Tramore Road

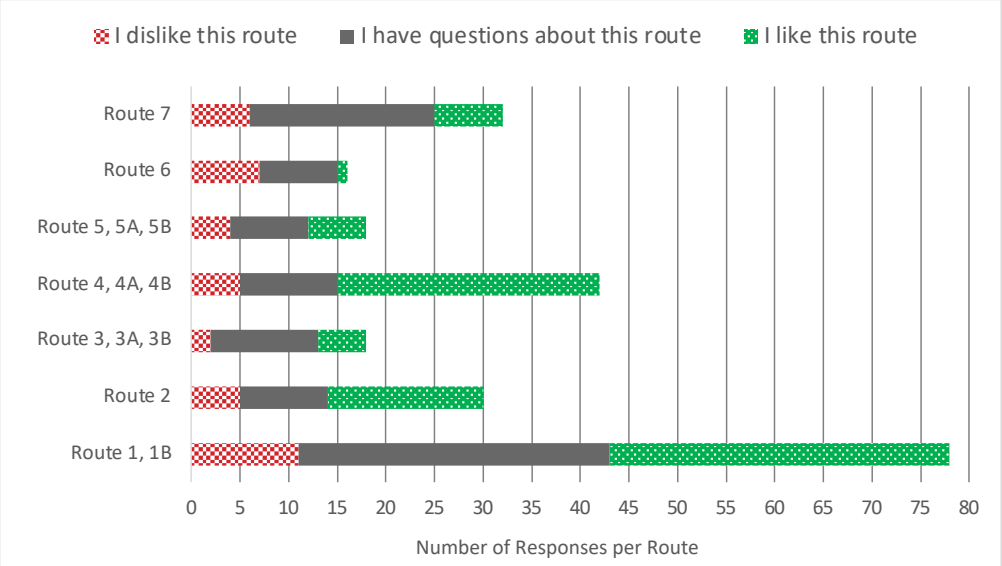
Respondents were invited to provide feedback on each route in the Draft New Network. Some respondents provided feedback on multiple routes. Respondents were asked if they liked or disliked the route or whether they had questions on the routes proposed.

Using the online form, 176 people opted to comment on one or more proposed new routes, providing 234 written impressions of the new routes. (Many respondents, 51, opted not to comment on specific new routes.) The substance of these written comments informed our summary of issues by geographic area.

The table at right shows the ratio of "like" responses to "dislike" responses for each route.

The bar chart at right, bottom, shows the ratio of "like" to "dislike" responses to the number of people who reported having questions about each route. In addition to those three choices, people were invited to write a comment about the route, though not all respondents did so.

Route Number in the Draft Network	Description	Like %	Dislike %
Route 1, 1B	SETU Cork Road – UHW / Ardkeen via Tycor Road, The Quays, Dunmore Road	45%	14%
Route 2	UHW – Rockshire Road via John's Hill, The Mall, Dock Road	53%	17%
Route 3, 3A, 3B	The Quays – Ballytruckle via Lower Grange Road	28%	11%
Route 4, 4A, 4B	Ferrybank – SETU West / Whitfield Hospital via The Mall	64%	12%
Route 5, 5A, 5B	The Quays – Lacken / SETU via Cork Road	33%	22%
Route 6	The Quays – SETU Cork Road via Cleaboy Road	6%	44%
Route 7	The Quays – SETU via Carrickphierish Road	22%	19%



Some of the points raised in the route-by-route comments include:

- Route 4 was liked by many people with 63% saying they liked the route. Reasons given included its potential to connect with important locations such as the UHW and the IDA Business & Technology Park in Butlerstown.
- Nearly half of respondents disliked Route 6. This seemed to relate to the need to interchange to go to UHW or the Tower Hotel, compared to what the existing bus route W5 currently provides.
- Route 2 was well liked with around three times as many respondents liking as disliking the proposed route. Reasons for this include improved frequency, services to schools and services to UHW. However, note that Route 2 has been changed, in the final New Network Plan, to accommodate an orbital route and to maintain existing one-seat-journeys to UHW.

The next sections address written comments submitted during the public consultation. Not all participants chose to make written comments. People who were unhappy with the proposed network were more likely to submit a comment than others.

North

Rockshire Road

Some people in this area requested that Route 2 be extended northwards on Rockshire Road, to serve the homes at Mullinabro and at Cloone Road.

This request was reviewed and assessed against existing proposals, costs and operation implications of extending Route 2, and whether it would improve the overall BusConnects Network at a reasonable cost per potential passenger.

NTA Response

Whilst there are some houses in the area, this is an area of very low density and is not contiguous with dense urban areas. It would be costly to extend city bus services to this area, with a small number of people benefiting.

In addition, the road infrastructure is challenging for city bus operation leading to particular difficulties locating a suitable terminus location and turning for buses.

Queries about services in such low-density non-urban areas were redirected to the Connecting Ireland programme, which is focused on bringing lower-frequency services to such areas outside of cities.

Action: No change.

Ferrybank

Many supportive comments were made, with general appreciation that services in Ferrybank were being integrated with other city services. The extension of coverage was noted and welcomed. However, the consultation feedback in this area did also refer to some issues:

- Requests to increase frequency on Route 2 and 4B to accommodate the number of people living in Ferrybank and working on the Dunmore Road, as well as children traveling to schools in the Ferrybank area, including Abbey Road.
- Requests for a one-seat-journey from Ferrybank to UHW.

NTA Response

The team reviewed the frequencies planned for Routes 2 and 4 north of the river.

The planned frequencies for Routes 2 and 4 in Ferrybank are comparable to or higher than the planned frequencies elsewhere in the city with similar levels of density. Density is the main indicator of potential patronage and usefulness for a bus service, and an important justification for an investment in higher frequency. If Ferrybank develops to a higher density, or patronage on bus services results in crowding, frequency of service on Route 2 should be revisited.

Regarding one-seat-journeys to UHW, the team evaluated options for connecting Ferrybank and UHW more directly, as well as for addressing the unrelated concerns raised by other people about the southeast area.

There were many requests for direct bus services to UHW from every residential area across the city. It is not possible to connect all areas to any one destination in a cost efficient way.

Two high frequency routes in the final New Network will serve UHW. These routes will provide access to UHW through interchange with all other routes in the network, including Routes 2, 4A and 4B from Ferrybank.

Action: No change.

Belview Port

The feedback in this area relates to the following issues and suggestions:

- Concern over the hours of operation for the peak hour Route 4P.
- Recognition of the benefit of providing a bus service for younger staff in the area who are more likely to depend on public transport.

NTA Response

The recognition of the potential for the new bus service to provide for the areas transport needs is welcomed. Adding more hours of operation to the planned Route 4P would increase the cost of the network to a greater extent than already planned.

The exact timing of the first trip of the morning (or last trip of the evening) on Route 4P will be set at a later date, during implementation. At that time, additional information will be requested from major employers, regarding their then-current shift start and end times.

Southeast

Knightswood and Deerpark Estates

Some responses sought the provision of a bus route on the Outer Ring Road between Williamstown Road and Killure Road to stop near the access road into the new developments of Knightswood and Deerpark.

NTA Response

Whilst the Draft New Network proposed frequent services within 400 m of the east and west edges of these developments, a lack of street or footpath connections to any road save the Outer Ring Road has isolated the developments from nearby bus service.

Development along the Outer Ring Road is in general sparse, but the Knightswood and Deerpark estates will be sizeable and contiguous with other urban development.

During the design of the final New Network Plan, revisions were made

to Routes 3A and 3B to improve their legibility. This change afforded the opportunity to extend Route 3B along the Outer Ring Road towards Williamstown Road.

Knightswood and Deerpark will both have poor street and path connectivity, limiting residents' access to bus service to only service provided to the south (rather than to the east or west). Walking distances to bus stops to the south will be long due to the circuitous and disconnected street network inside the estates. If additional pedestrian connections are added to the east and west, additional bus services are available to these two developments on Killure Road and Upper Grange Road.

Action: Route 3B is extended and can make a stop on the Outer Ring Road near Williamstown Road, within walking distance of the entrance to the Knightswood Estate.

Dunmore and Williamstown Roads

There were a number of comments about the proposed Route 1B, especially relating to these requests and concerns:

- Increase the frequency of the bus service on Williamstown from 30 minutes to 15 minutes.
- Increase the frequency of bus service on Dunmore Road to 15 minutes all day.
- The inclusion of a route on Williamstown Road was welcomed.
- The route of the Route 1B on Williamstown Road was thought to be unnecessarily long (as it was proposed to reach Williamstown Road via Dunmore Road and St. Mary's Place).
- Add bus services to serve new housing in Gorse Hill and Ballygunner.

NTA Response

After public consultation, the planning team observed that the proposed network structure in this area was confusing (as evidenced by misunderstandings among commenters).

In consideration of the feedback from the public and this concern about legibility, the design of the network in this area has been greatly changed from what was shown in the Draft New Network.

An orbital Route 6 has been added to the plan, which will offer frequent service along the portion of the Outer Ring Road that was proposed to be served by Route 1B in the Draft New Network. This new orbital route will end at UHW.

To make the routes on Williamstown and Dunmore Roads simpler, and eliminate the out-of-direction travel from Williamstown Road on the proposed Route 1B, each road has been given a single radial route from the city centre. Route 2 serves John's Hill, Upper Grange Road and Williamstown Road. Route 1 serves Newtown and Dunmore Roads. The two routes will terminate in Ballygunner.

With this simpler structure, Route 1 will be shorter. It is therefore possible to offer a 15 minute frequency on Route 1 along Dunmore Road and St. Mary's Place.

Route 2 will operate every 30 minutes, a frequency planned for other areas of comparable population density inside the city. At its northern end Route 2 will cross the river and serve Rockshire Road.

Whilst there were some requests for

better frequency on Williamstown Road, a 30 minute frequency is what is planned in other neighbourhoods of comparable density elsewhere in the city. Also, residents of Williamstown Road who are near the junctions of the Outer Ring Road or St. Mary's Place will have a short walk to other frequent services.

Action: Restructure the network in this area, resulting in improved frequency along Dunmore Road; more direct journeys for those on Williamstown Road; an orbital route connecting to points west; and more service to Ballygunner.

Maypark Lane and King's Channel Estate

Feedback was received requesting an hourly bus service on Maypark Lane and to the King's Channel estate.

NTA Response

The planning team carefully examined the road network in the Maypark Lane / King's Channel area.

The entrance gate to the King's Channel estate is about 800 m walk from the nearest bus stop on Dunmore Road, or 900 m walk from the bus stop on the UHW campus. Maypark Lane residences are slightly closer to bus stops.

Whilst BusConnects aims to increase the proportion of residents within 400 m walk of a bus stop, it is impossible to do so for all residents. Residences that are located on cul-de-sacs, in estates with poor street connections to neighbouring estates, and far from main roads are particularly difficult to reach with public transport.

In the case of King's Channel/ Maypark, sending a bus to the front gate of King's Channel would require circuitous driving on a one-way road system. As a deviation on a route going elsewhere, it would add considerable journey time for all through-passengers and considerable operating cost. In addition, no suitable turning place for buses was identified in this area.

Action: No changes.

Blenheim Estate

Requests were received for a bus service to Blenheim Estate, every 30 minutes.

NTA Response

The provision of bus services with good frequencies and long hours and days of service will be key in keeping Waterford moving as the city grows. It's essential however that the network is operated efficiently, so that the expenditure results in high levels of use by large numbers of people. In order to do so, the network must concentrate most of the service in places where large numbers of people can be reached efficiently.

Blenheim is a low density estate located at a far remove from the contiguous urban area and at a far remove from the main road. It does not offer potential for high patronage at an efficient operating cost, nor does it present severe social needs for service.

Just as described for King's Channel Estate, if Blenheim Estate were added to a longer route to Passage East, the resulting deviation would add journey time for all passengers journeying through, as well as adding operating cost.

If Blenheim Estate were served with a dedicated route ending there, this would be useful for residents of

Blenheim, but they are few in number. The cost per household served would be far out of proportion to the costs incurred to serve all other residential areas in the city.

It is possible that, if Waterford's urban development continues to expand outward, additional urban bus services will be justifiable through Passage Cross. However, a dedicated route up the road to Blenheim Estate is unlikely; a bus stop near the junction with the main road, 550 m away, would be more likely at that time.

Action: No changes.

Southwest

Congress Place / Dominick's Place

The feedback in this area related to concerns about service on Congress Place and Dominick's Place, where the current W4 provides a one-way service westbound.

Some commenters mentioned children using this to go to schools on Carrickphierish Road. How the children make the return journey in the afternoon (when the W4 stays on Gracedieu Road into the centre) was unstated.

NTA Response

At present the W4 operates one way on Congress Place and Dominick Place (shown in the green line in the map at top, right). This means that passengers can board on these roads to travel on to Carrickphierish schools. But on the journey from school passengers have to alight on Gracedieu Road, unless they stay on the bus for its journey around the centre.

The New Network Plan includes more direct route for Gracedieu and Carrickphierish Roads: the Route 7 will serve the centre and then continue straight out Gracedieu Road, without the deviation.

This is an improvement for the many people who live, work or study on Carrickphierish Road, but for the small portion of them who live on the existing route deviation they will have a longer walk for one direction of their journey. Meanwhile, for other journeys to other places, residents of Congress Place and Dominick's Place will have easy access to Route 6L as well as to Route 1.

Action: No changes.

Water's Gate / Bilberry / Quarry Hill

In the public feedback there were requests for service to Bilberry, both for the residents there and for access to the Waterford Greenway nearby.

Bilberry is about 500 m from service on Gracedieu Road, service which is proposed to increase over what is offered today. However the walk involves a steep hill.

NTA Response

The Bilberry area has few residents and jobs compared to the areas served by bus routes in the New Network Plan. Because it is not on the way to any other neighbourhood or public transport destination, serving Bilberry would require a unique route whose entire cost would need to be justified by the small number of jobs and residents located there.

If in the future Bilberry and Quarry Road grow more dense, then a new bus service that reaches them either via Grattan Quay or Gracedieu Road. Until then, the bus services available up the hill are what can be offered at a

reasonable expense.

Action: No changes.

UPMC Whitfield Hospital

Feedback on the proposed Route 4B included requestions for service early enough to accommodate work shifts beginning at 7:00 am, late enough for work shifts ending at midnight, seven days a week.

NTA Response

The enthusiasm for extended hours of operation is welcomed. The New Network Plan includes earlier-morning starts to service by one, two or three hours depending on the route and the day of the week. However, even earlier or later trips are not currently achievable within the foreseen budget for service. Start and end times of service can be re-evaluated in future years as new funding comes available and the city continues to grow.

Action: No changes.

Butlerstown GAA Club

Butlerstown GAA Club, located on Holycross Road, requested service to the front of the Club to allow members to reach it by bus.

NTA Response

In the New Network Plan, Route 4B will reach UPMC Whitfield Hospital. The GAA club is located beyond the hospital, without enough neighbouring activities, destinations or residents to support a public bus service.

In addition, there are practical requirements for the end of a bus route , especially a turning loop, roundabout or car park in which the bus can be turned around, and a toilet/ rest facility for the bus driver. Those can be provided for at or near UPMC Whitfield Hospital, but not near the Butlerstown GAA Club.

Action: No changes

Lismore Park / Tir Connell Ave.

Feedback on the proposed Routes 1, 6 and 6 in the Lismore Park area included requests for a stop on Lismore Park. Whilst Route W4 travels that road today, it does not make any stops.

In the Draft New Network, Route 7 was proposed to travel via the IDA Business Park, assuming that the pedestrian entrance on Lismore Park would be opened, allowing residents to walk a short distance to a bus stop in the park (or a slightly longer distance to service on Skibbereen or Paddy Brown's Roads).

NTA Response

In conversations with the IDA, the Waterford City & County Council learned that it would not be possible to restore a pedestrian connection between the business park and Lismore Park. Lacking that connection to neighbours, it would not be appropriate to provide a public service through the private business park.

As a result, the design of Route 7 has been changed. In the New Network Plan, Route 7 will operate via Lismore Park/Tir Connell Avenue, and a stop will be added on that street. (As a consequence of this change, any employees at IDA workplaces who wish to reach a service will need to walk north or south to exit the private business park.)

Action: Route 7 is altered to serve Lismore Park and Tir Connell Avenue with exact bus stop locations chosen during the implementation stage.

Cleaboy Road / Skibbereen Road / Route W5

Many residents living along the route of the existing W5 bus expressed a dislike that in the new network the Route 6 bus would no longer take them directly to the Mall, UHW, nor other destinations in between.

NTA Response

There were requests for direct bus services to UHW from across the city. It would not be efficient to operate routes from every neighbourhood directly to UHW.

Reinstating the W5 exactly as it exists today would maintain all of the connections that existing passengers value in the existing W5, but it would eliminate features of the New Network Plan that generated many positive comments.

As an alternative to the existing W5, a route between the Cleaboy Road Area and UHW can be provided by way of an orbital extension of Route 6. The extended Route 6 will also provide one-seat-journeys from Cleaboy to destinations on the Upper Grange Road.

Connections from the Cleaboy area to the Mall may not be provided for with a single route. The terminus of Route 6/6L at the Quays will be determined during implementation. The Clock Tower may be the route's last stop, though it is also possible that the route will terminate and turn around closer to the Mall.

People who use the existing Route W5 to reach the Mall, who live near Slievekeale or Tycor Roads, will be near the planned Route 1. They will have a frequent and direct connection to the Mall. Those who do not live near the planned Route 1, in particular those on Cleaboy Road, will need to use Routes 6L or 7. They may need to make an interchange to another route or walk 500 m to reach their destination on the Mall.

Action: A revised Route 6 and 6L will connect University Hospital Waterford, SETU Cork Road, Cleaboy Road, and the City Centre, without an interchange.

Arbor Road

Arbor Road is currently served by the W2. There were concerns expressed by elderly residents of this area that a bus would no longer stop on Arbor Road.

NTA Response

To make the improvements to the bus network and provide more services across Waterford as a whole, some routes have had to be changed, and this includes routing buses away from Arbor Road.

The residents of Arbor Road will have many services nearby, on Routes 1, 5 and 6. At present the W2 operates as a one-way service on Arbor Road. The New Network will provide residents with two-way service very nearby on Tycor Road and Skibbereen Road, and as a result there will be at least one bus stop very close to residents of Arbor Road, for travel in either direction. Service will also be available down the hill on Cannon Street.

Exact bus stop locations on each of these three routes will be set during the implementation stage, with the aim of offering the largest number of residents in this area a short walk to

the bus, whilst also maintaining good operating speed and reliability for those on-board the bus.

Action: No changes.

Morrisson's Road

Morrisson's Road is currently served by Route W2, in one direction only. In the New Network service will be shifted to other nearby streets. Residents in the area expressed concern that they would be losing access to nearby service.

NTA Response

To make the improvements to the bus network and provide more services across Waterford as a whole, some routes have had to be changed, and this includes routing buses close to but not on Morrisson's Road.

At present the W2 operates as a one-way service on Morrisson's Road running every 20 minutes. The New Network will provide residents with two-way services on nearby routes:

- At Summerland Square (the junction of Upper and Lower Yellow Roads) the Route 1 will offer buses every 15 minutes in both directions.
- On Árd na Greine the Route 1 will also serve stops in both directions, every 15 minutes.
- On Barrack Street and Slievekeale Road, the Route 5 will offer buses every 15 minutes in both directions.

Together, these routes will provide a more frequent service for residents in this area and are within a short walk of Morrisson's Road. Many residents of the area will find that they live closer to a bus stop on the New Network than on the old.

During implementation of the New Network Plan exact locations for bus stops will be chosen, with the aim of keeping walking distances short for the greatest number of residents in this area, whilst maintaining good operating speeds for those on-board the buses.

Action: No changes.

Hennessy's Road / Ceannt Road

Hennessy's Road and Ceannt Road are currently served in one direction by the W2 bus. There were concerns among elderly residents that in the New Network buses would no longer stop on these roads and that nearby service might not be available.

NTA Response

To make the improvements to the bus network and provide more services across Waterford as a whole, some routes have had to be changed, and this includes routing buses away from Ceannt Road and Hennessy's Road.

At present the W2 operates as a one-way service on these roads running every 20 minutes. The existing stop on Ceannt Road is actually located at the junction with Cork Road. The existing stop on Hennessy's Road is located about 150 m from Ashe Road.

The New Network will provide residents with two-way services on Cork Road and Ashe Road, very close to the two existing stops. On Cork Road the Route 4 will have buses every 15 minutes, in both directions, very close to the existing Route W2 stop. On Ashe Road the Route 5 will have buses every 15 minutes, in both directions, about 150 m from the existing Route W2 stop.

Nearly all existing W2 passengers in this area will find that they are just as close to a bus stop, if not closer, with

the New Network. They will also enjoy shorter waits to use the service, and two-way rather than one-way service.

During the implementation of the New Network Plan, exact locations for bus stops will be chosen, with the aim of minimising walking distances for the greatest number of residents in this area, whilst maintaining good operating speeds for those on-board the buses.

Action: No changes.

5 Comparing the Existing and New Networks

Public Transport and Access to Opportunity

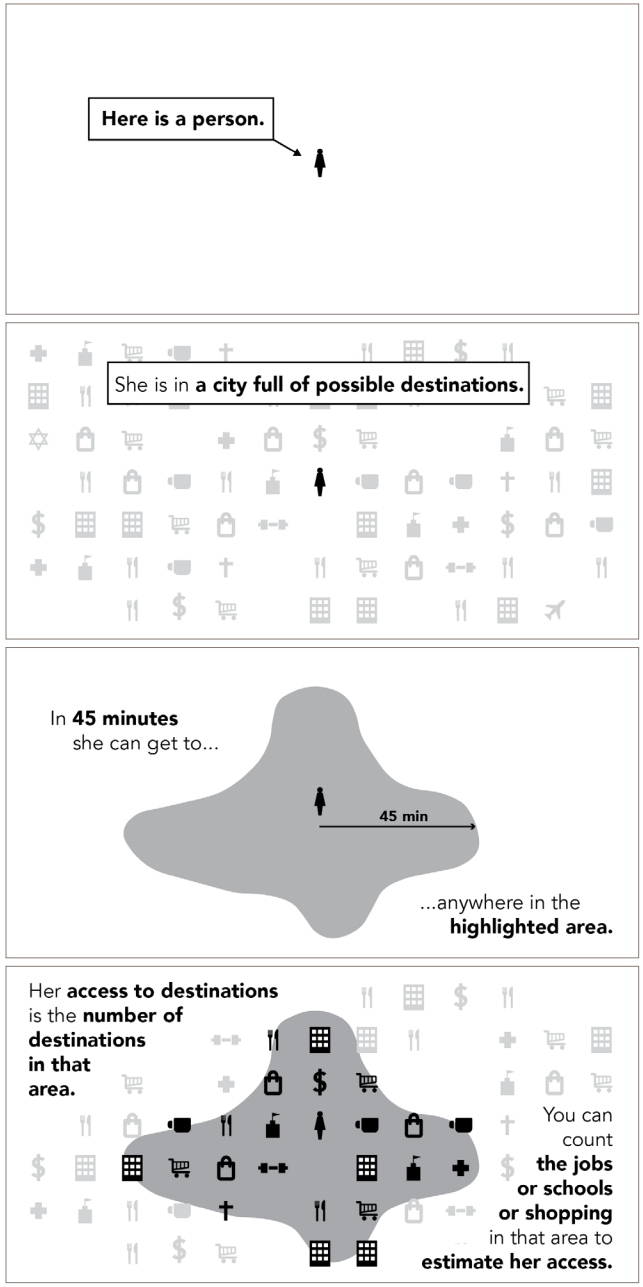
As described in the Summary chapter of this report, it's impossible to predict exactly how many people might use an improved bus network. The future is inherently unpredictable.

In the face of uncertainty, we can rely on simpler measures that focus on the near-term consequences of a change, and that require fewer assumptions about the future.

An important measure used in public transport planning is "access," also sometimes called "accessibility." Access measures the usefulness of a public transport network for any person who has a limited amount of time to spend traveling.

Public transport is useful to the extent that it allows people to go where they want in a reasonable amount of time. **The more destinations you can reach in a reasonable amount of time, the greater your access to opportunity.**

Designing cities and their public transport networks so that more people have access to more opportunities, within a reasonable journey time, is a reliable way to increase patronage.



What affects public transport access?

Access to opportunity via public transport is affected by:

- **How many destinations are near public transport**
- **How long a person has to walk** to and from a service
- **How long they have to wait** for a bus
- **How far they have to travel** in the public transport vehicle
- The **speed** of the vehicle
- **How long they have to wait to interchange** between services

All of these sources of travel time and access to destination were taken into account for the analysis of the New Network Plan, as reported on the following pages.

Estimating Journey Times

Often when people describe public transport journey time they focus on the time spent on the bus. Public transport journeys also include time spent walking and waiting, which can exceed the time spent on the vehicle itself.

Walking to and from the stop

Most public transport journeys begin and end with a walk.

Waiting for the next bus

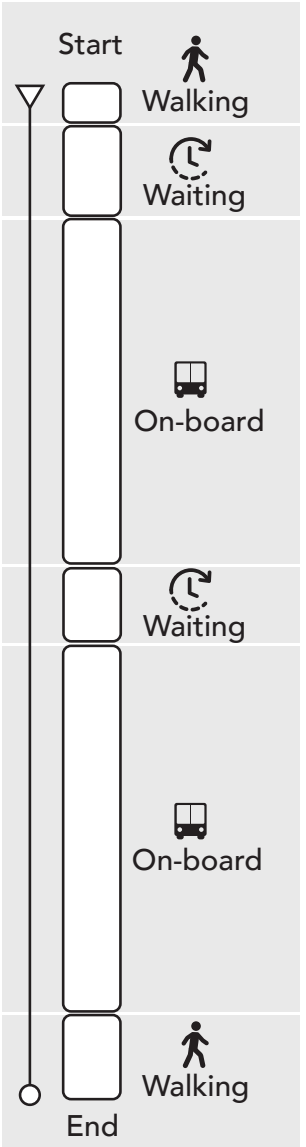
Waiting doesn't only happen at the start of your journey, it can also happen at the end. You may leave home shortly before your bus departs, but if your bus comes infrequently you often have to arrive at your destination early to avoid being late.

If you're interchanging, you'll have to wait a second time.

On average, across all passengers, the minutes spent waiting will sum to approximately one-half of the frequencies of the routes in question.

On-board the vehicle

Time spent on-board is affected by distance and speed. In summing travel times on the New Network, we used conservative (slow) assumptions, and did not take into account the faster speeds that may result from BusConnects projects. Improvements in speeds will result in greater job access for more people.



Access Gains Citywide

Access improvements resulting from the New Network Plan have been analysed for:

- Door-to-door journeys of 30- or 45-minutes or less.
- Rush hours and midday.
- Weekdays, Saturdays and Sundays.
- To jobs and to education (primary, secondary, and third-level).
- For all residents, and for residents of areas of social deprivation; unemployed residents, young and senior[1] residents.

The tables at on the following page report the median[2] increase in access that would be provided, for all residents and by demographic group, within 30- and 45-minutes of travel, and to either jobs or education.

The New Network Plan will increase residents' access to jobs by +69% on weekdays all day, and +79% on weekdays at rush-hours, within 30 minutes of travel. On Sundays, the increases are just as large, with +82% more jobs accessible within 30 minutes.

Access to jobs within 45 minutes of travel would also improve for all groups. Whilst 45 minutes sounds like a long commute time for a small city like Waterford, it is necessary for some cross-city journeys once one accounts for all walking and waiting time, and when one considers residents of more distant areas such as Tramore (who were included in this measure).

To measure access to education, we measured travel times from residents to primary schools, secondary schools, colleges and universities, with the number of enrolments available at each school accounted for. Access to educational enrolments would improve for all residents and specifically for youths: +83% more school enrolments would be reachable within 30 minutes during rush-hours, and +50% more school enrolments would be reachable during the rest of the weekday.

Maps showing changes in access within 30- or 45-minute journeys, for any specific location in Waterford, can be made using the interactive online map linked from busconnects.ie.

Access to more jobs can indicate access to more destinations, because many places people visit (such as shops, schools, restaurants and clinics) are also places of work.

1 Access to jobs for senior residents was measured not because seniors are likely to hold a job, but because job locations often represent areas with shops, services and social opportunities. Access for seniors would improve on all days, and especially on Sundays.

2 "Median" is similar to "average" but it represents the point in the middle of the range of all experiences, rather than being a numerical average of all experiences. *Median* is a better representation of the most common experience Waterford residents would have with the New Network than is *average*.

Changes in Access to Jobs within 30 Minutes

Waterford-area residents, by demographic	Weekday midday increase in jobs reachable within 30 minutes of travel	Weekday rush-hours increase in jobs reachable within 30 minutes of travel	Saturday increase in jobs reachable within 30 minutes of travel	Sunday increase in jobs reachable within 30 minutes of travel
All	+69%	+79%	+51%	+82%
Residents in Disadvantaged Areas	+27%	+26%	+21%	+44%
Unemployed Residents	+15%	+18%	+13%	+37%
Young Residents	+76%	+98%	+46%	+98%
Senior Residents	+53%	+62%	+43%	+64%

Changes in Access to Jobs within 45 Minutes

Waterford-area residents, by demographic	Weekday midday increase in jobs reachable within 45 minutes of travel	Weekday rush-hours increase in jobs reachable within 45 minutes of travel	Saturday increase in jobs reachable within 45 minutes of travel	Sunday increase in jobs reachable within 45 minutes of travel
All	+35%	+30%	+30%	+33%
Residents in Disadvantaged Areas	+19%	+25%	+16%	+23%
Unemployed Residents	+18%	+22%	+13%	+20%
Young Residents	+36%	+31%	+31%	+35%
Senior Residents	+28%	+27%	+22%	+27%

Changes in Access to Education within 30 Minutes

Waterford-area residents, by demographic	Weekday midday increase in education reachable within 30 minutes of travel	Weekday rush-hours increase in education reachable within 30 minutes of travel
All	+52%	+64%
Young Residents	+50%	+83%

Changes in Access to Education within 45 Minutes

Waterford-area residents, by demographic	Weekday midday increase in education reachable within 45 minutes of travel	Weekday rush-hours increase in education reachable within 45 minutes of travel
All	+41%	+21%
Young Residents	+60%	+25%

Improved Access from Example Locations

Maps on the following pages show how access would change with the New Network, from six example locations, on weekdays.

What These Maps Show

These maps are meant to answer the questions:

- *How many places could I reach from each place, in a reasonable amount of time?*
- *How would this be different from where I can go today?*

The reader is encouraged to make their own map for any place the Waterford urban area using the online map linked from the project website.

Assumptions

You're walking and using any available public transport. These maps illustrate improvement in the bus network, comparing the Existing and New Networks. They are not comparing the car or bicycle to public transport.

In other networks, all public transport lines are included, not only the urban routes but also Routes 360, 360a, 40, 354, etc., and the railway. Some of the accessible places shown on the maps are therefore beyond the focus area for this study.

You walk at a moderate speed. The maps assume a walking speed of 1 metre per second, which is a bit slow for an able-bodied and unencumbered adult. This reflects things that can slow people down like street crossings.

You wouldn't walk for more than 30 minutes total, in any one-way journey. Walking trips are included, even all the way to a destination if it is faster to reach that destination by foot than by bus, and if the walk doesn't exceed 30 minutes.

Most bus stops would be located in the same places as they are now. In cases of different streets being served, we've made some assumptions about where stops would be located. Stop locations will be decided more precisely during implementation of the final network.

On average, your wait to use a bus would be half its frequency, for the reasons explained on page 62. For example, if the bus comes every 15 minutes, you'll wait 7.5 minutes on average. If it comes every 30 minutes, you'll wait 15 minutes on average. You won't necessarily spend this waiting time at the bus stop, but you will often spend it at your destination, and so we have counted it in the total time needed to use the bus.

Buses would travel at similar speeds as they do now. BusConnects will increase bus speeds, but for this analysis we have assumed 2023 bus speeds. Any improvements in speeds from BusConnects will result in greater increases in access than are shown here.

You would interchange if it made your trip quicker overall. BusConnects Waterford will include the elimination of interchange fares between buses.

If you were to interchange, you would have to wait for the second bus as well. As with the first bus, the assumed wait time would be half the frequency of the second bus route.

You're travelling on a weekday, around midday. Better access would be available at weekday rush hours. Similar access would be available on weekends because the same frequencies would be offered on each route all week long.

Clock Tower

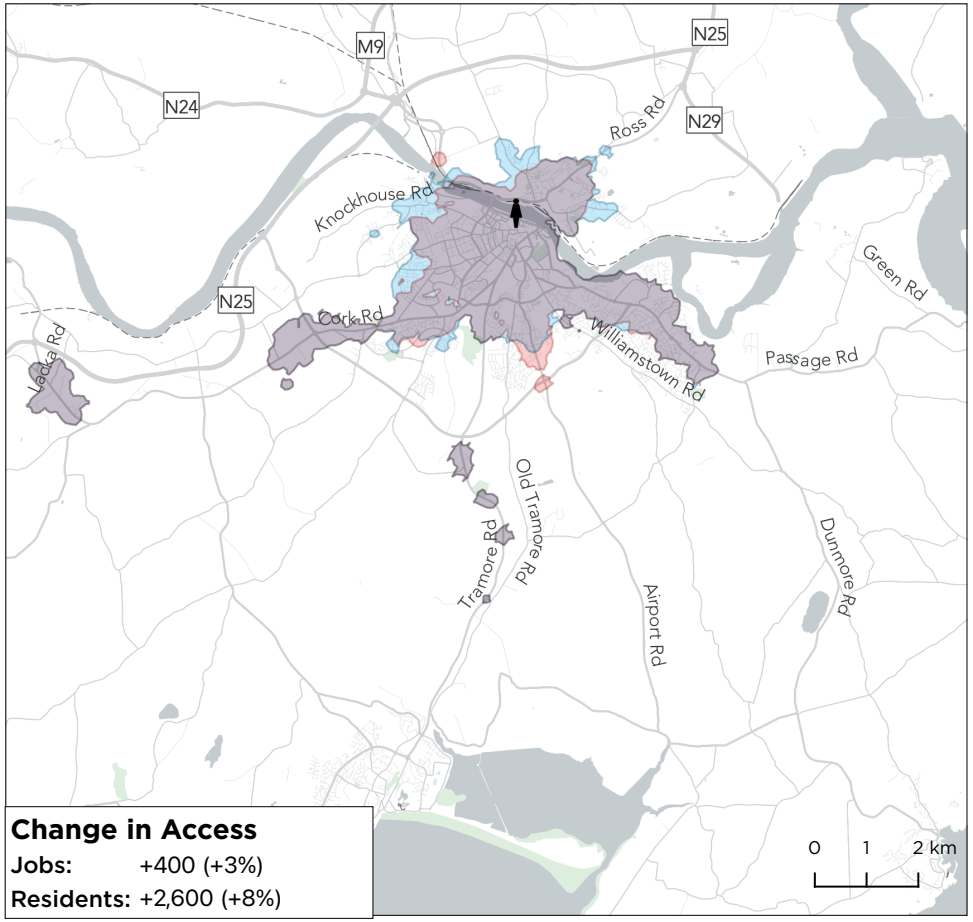
How far could I travel from

Clock Tower

in a reasonable amount of time?

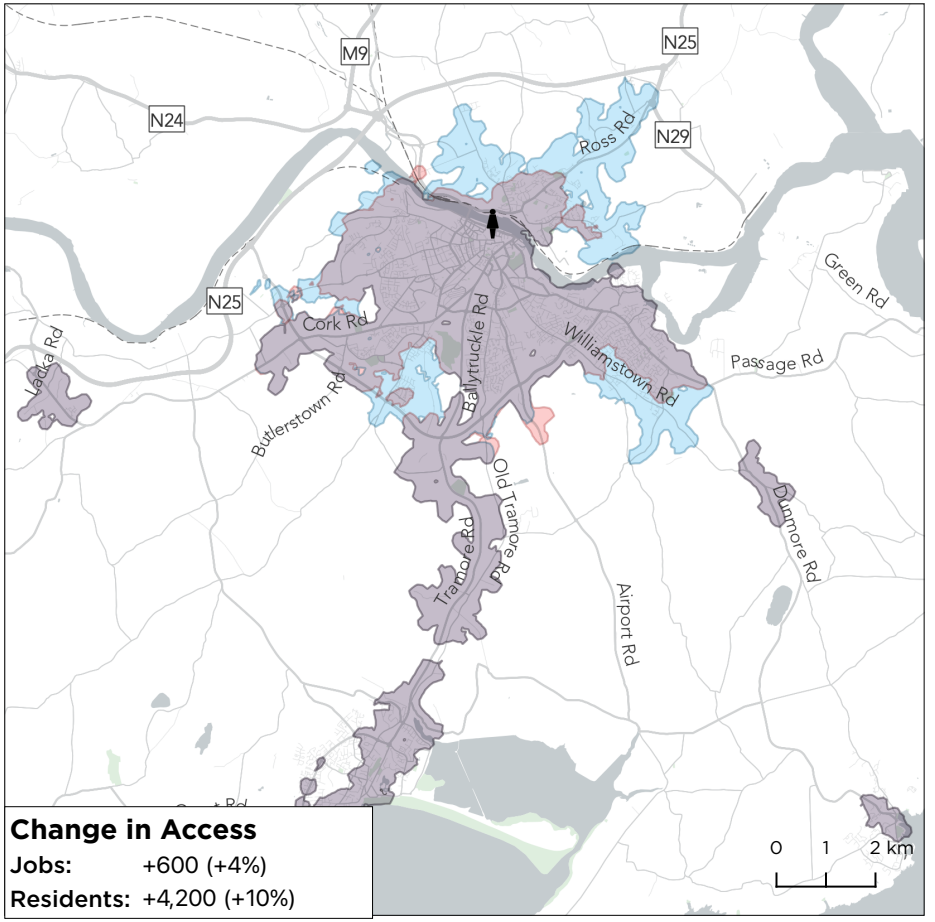
Weekdays, in the Daytime

30 minutes



Change in Access
Jobs: +400 (+3%)
Residents: +2,600 (+8%)

45 minutes



Change in Access
Jobs: +600 (+4%)
Residents: +4,200 (+10%)

Ballybricken Green

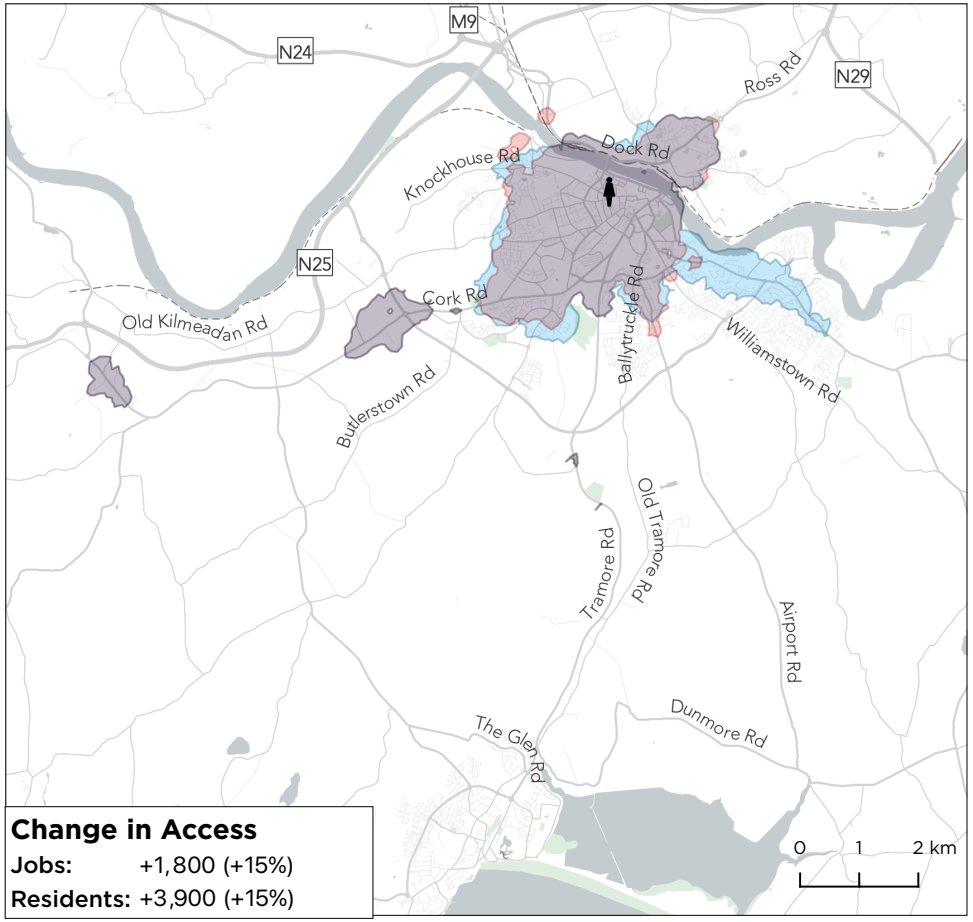
How far could I travel from

Ballybricken Green

in a reasonable amount of time?

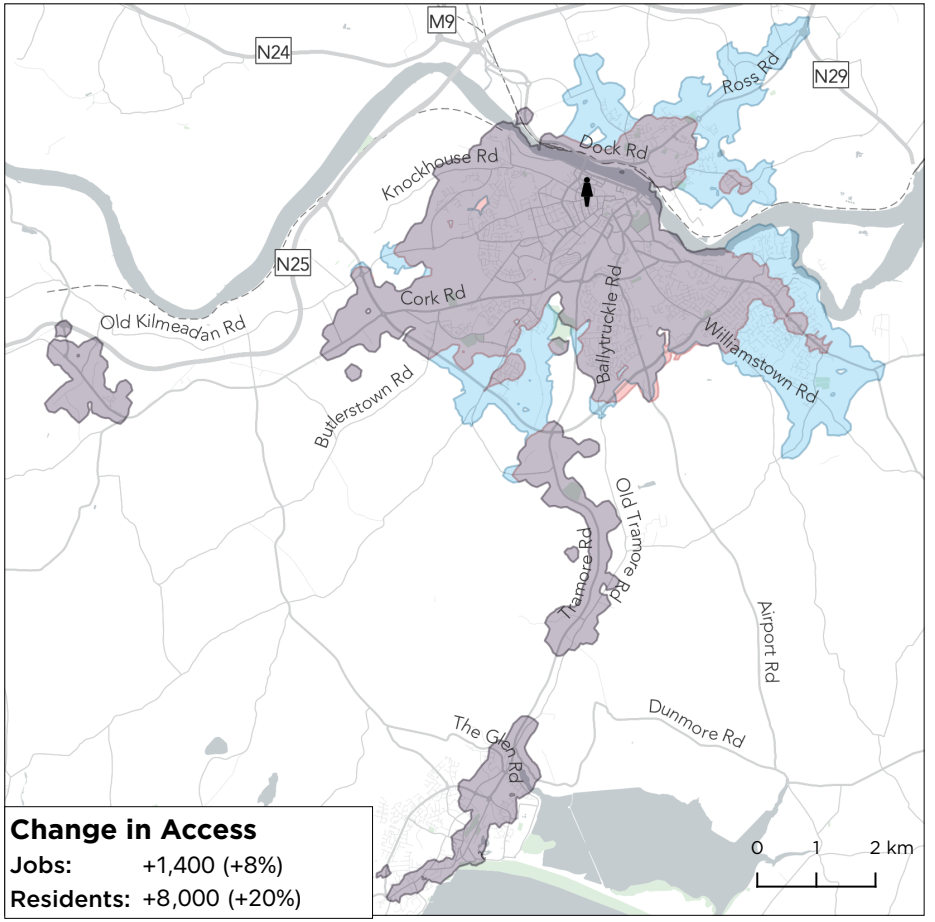
Weekdays, in the Daytime

30 minutes



Change in Access
Jobs: +1,800 (+15%)
Residents: +3,900 (+15%)

45 minutes



Change in Access
Jobs: +1,400 (+8%)
Residents: +8,000 (+20%)

SETU Cork Road Campus

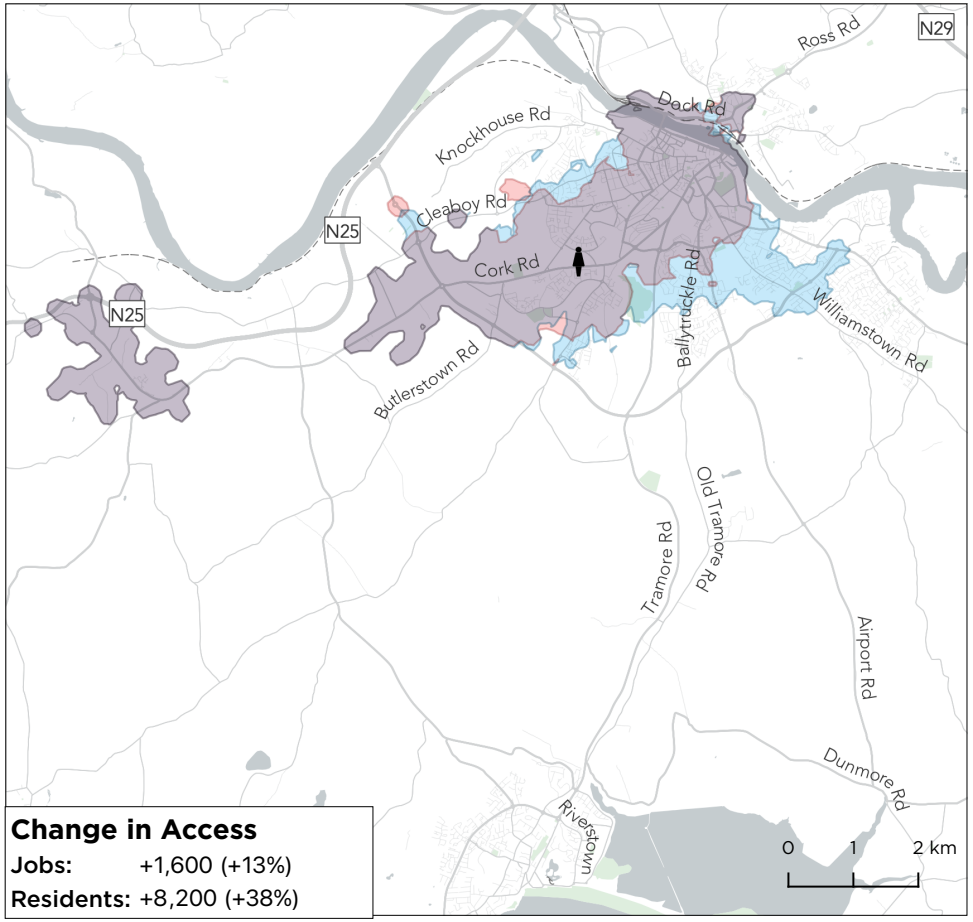
How far could I travel from

SETU Main Campus

in a reasonable amount of time?

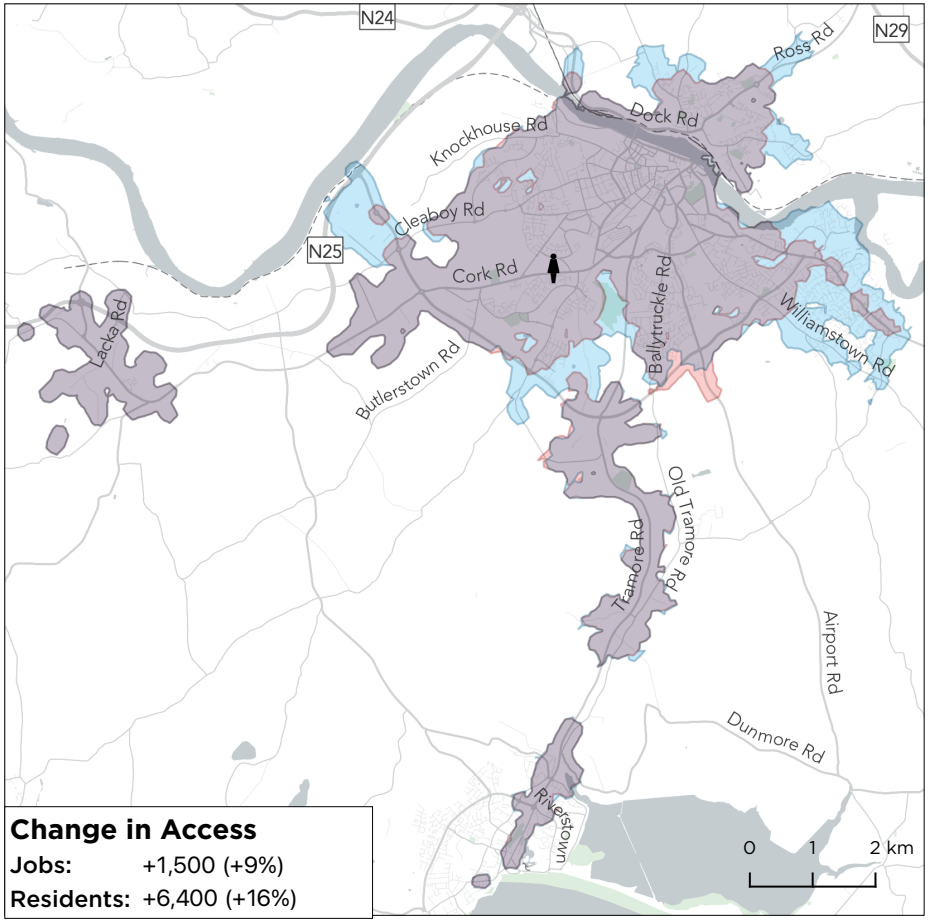
Weekdays, in the Daytime

30 minutes



Change in Access
Jobs: +1,600 (+13%)
Residents: +8,200 (+38%)

45 minutes



Change in Access
Jobs: +1,500 (+9%)
Residents: +6,400 (+16%)

University Hospital Waterford (UHW)

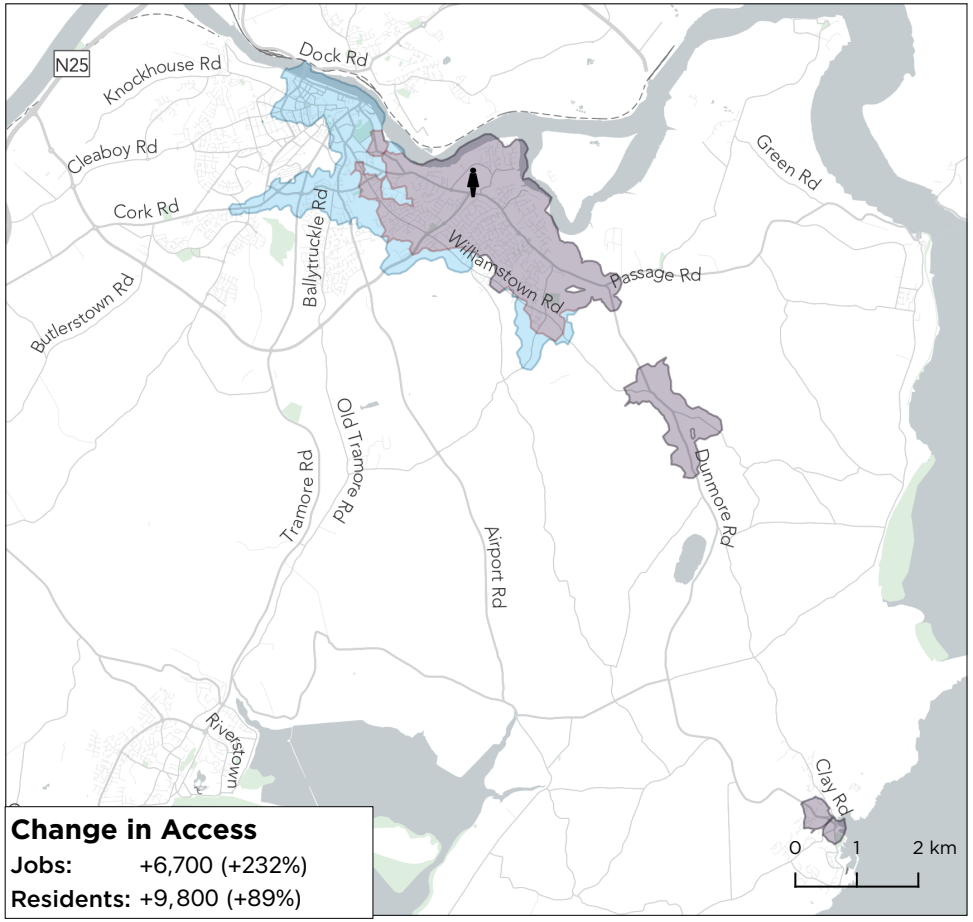
How far could I travel from

University Hospital Waterford

in a reasonable amount of time?

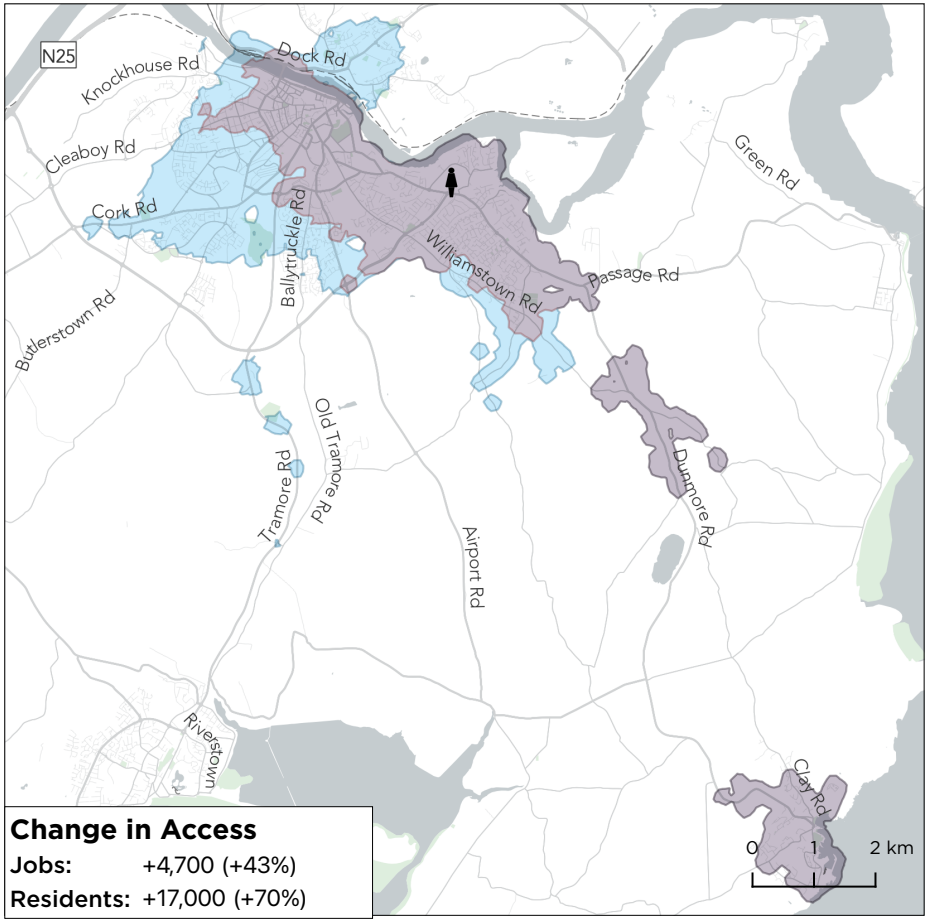
Weekdays, in the Daytime

30 minutes



Change in Access
Jobs: +6,700 (+232%)
Residents: +9,800 (+89%)

45 minutes



Change in Access
Jobs: +4,700 (+43%)
Residents: +17,000 (+70%)

De La Salle GAA Club

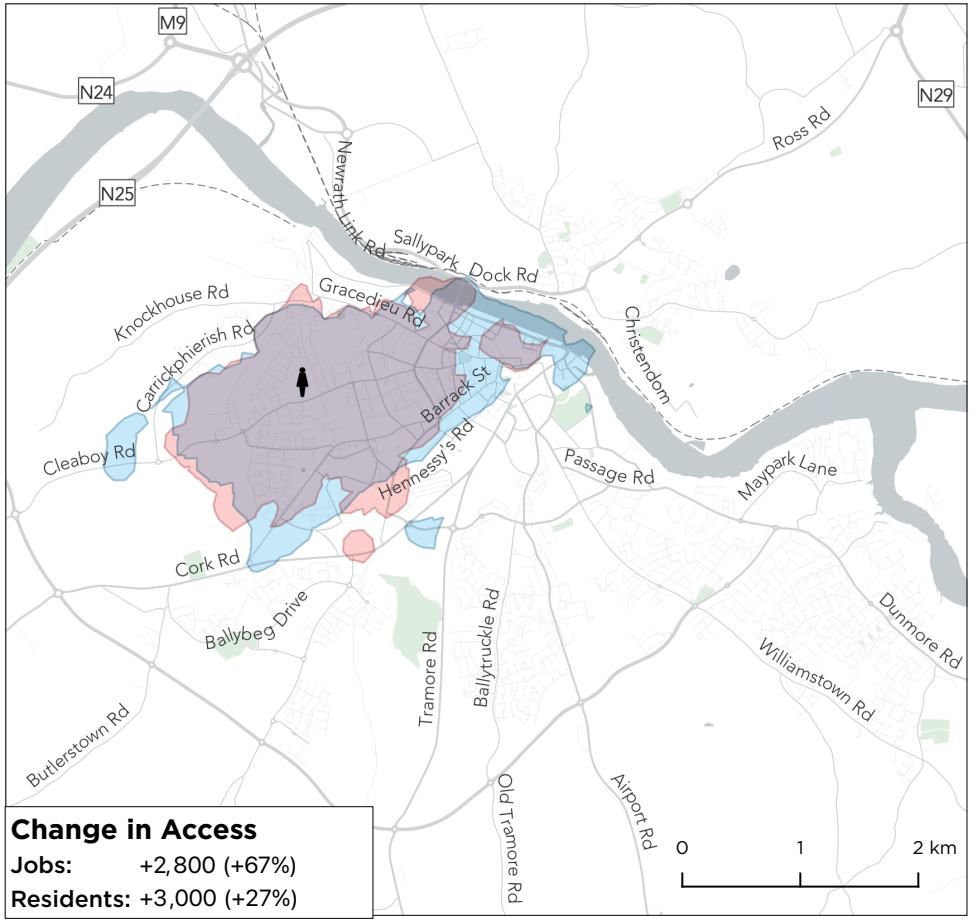
How far could I travel from

De La Salle GAA Club

in a reasonable amount of time?

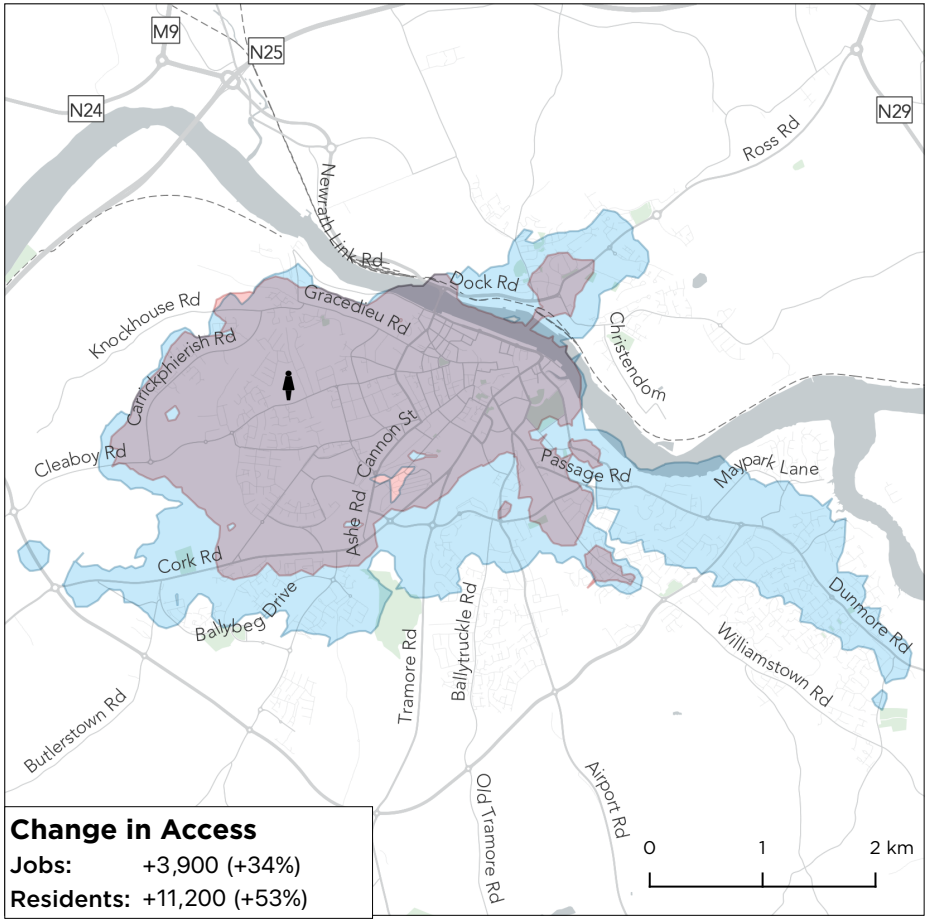
Weekdays, in the Daytime

30 minutes



Change in Access
Jobs: +2,800 (+67%)
Residents: +3,000 (+27%)

45 minutes



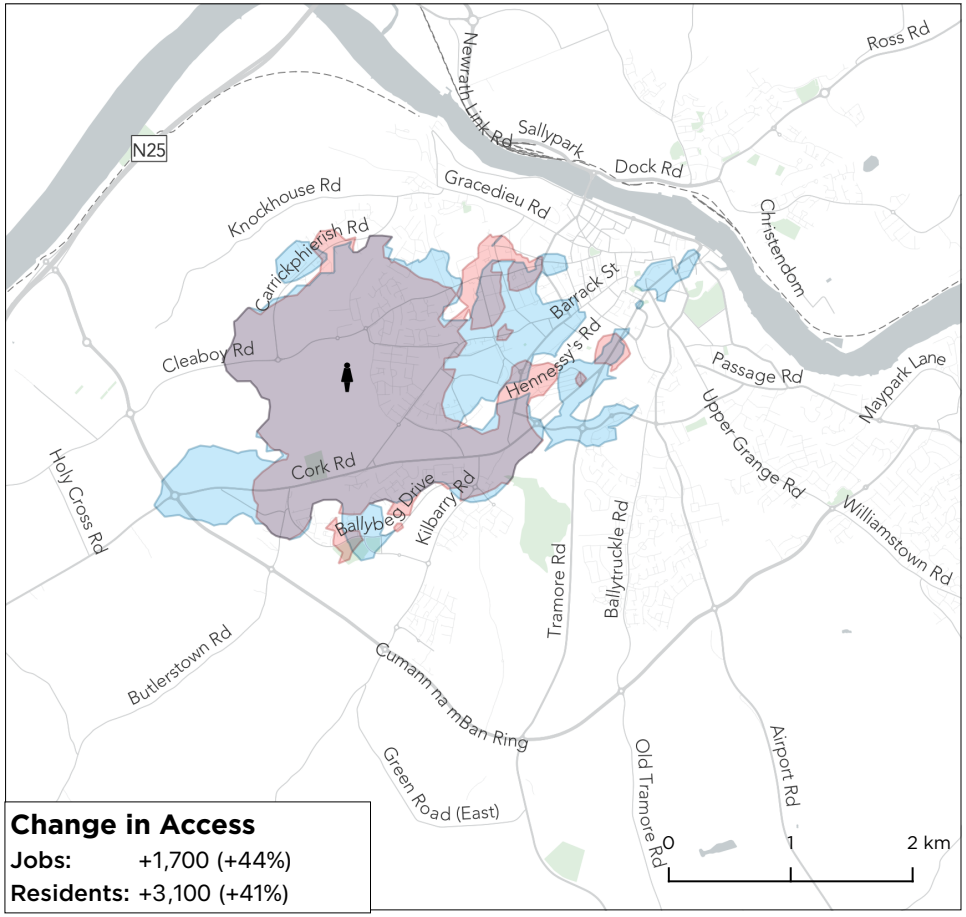
Change in Access
Jobs: +3,900 (+34%)
Residents: +11,200 (+53%)

IDA Business Park

How far could I travel from
IDA Business Park
in a reasonable amount of time?

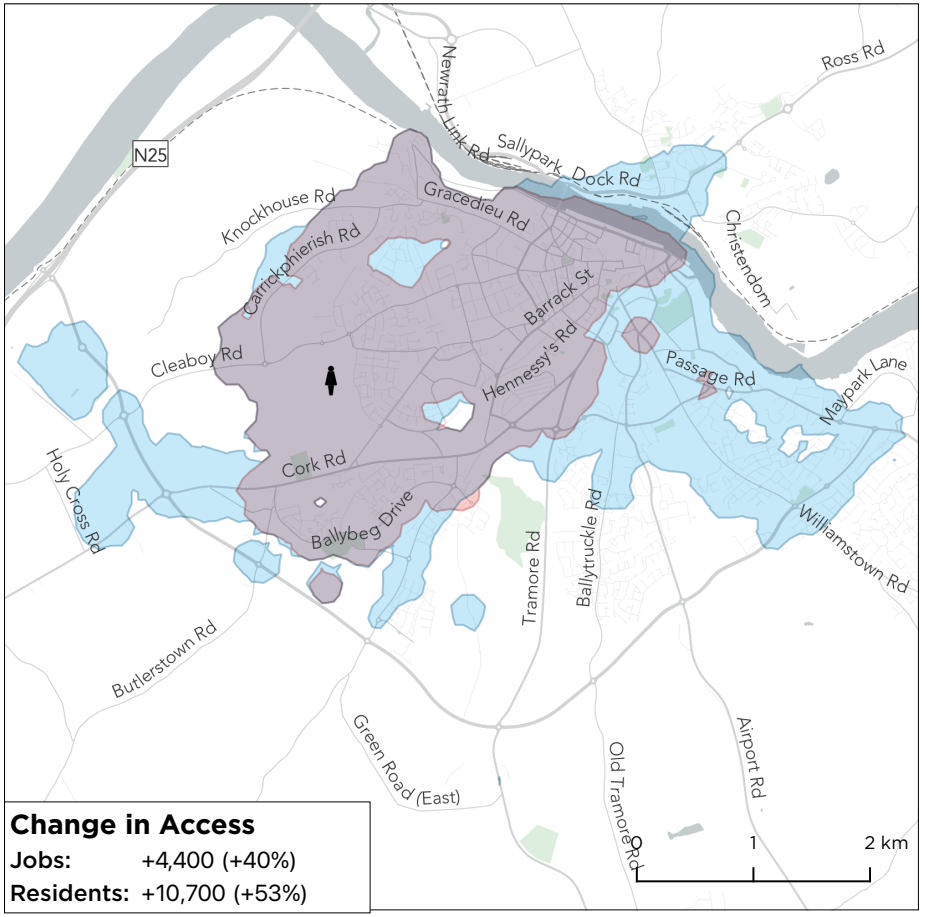
Weekdays, in the Daytime

30 minutes



Change in Access
Jobs: +1,700 (+44%)
Residents: +3,100 (+41%)

45 minutes



Change in Access
Jobs: +4,400 (+40%)
Residents: +10,700 (+53%)

Kilkenny Library, Ferrybank

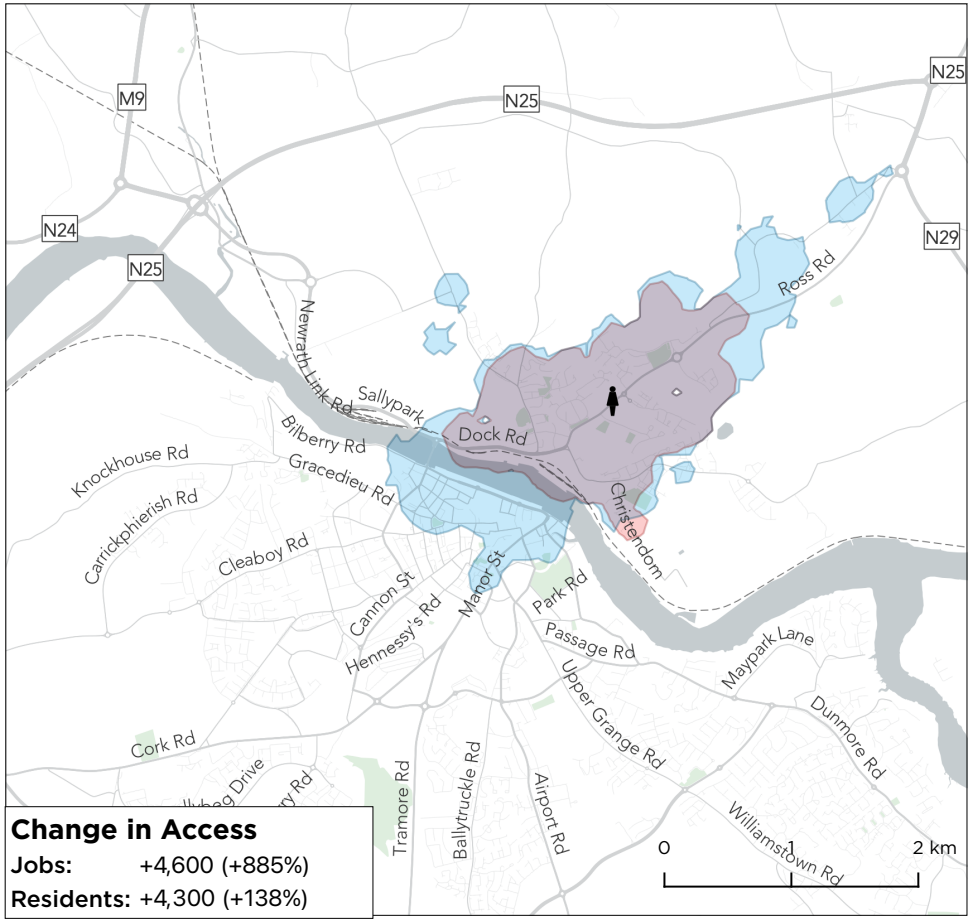
How far could I travel from

Kilkenny Library, Ferrybank

in a reasonable amount of time?

Weekdays, in the Daytime

30 minutes

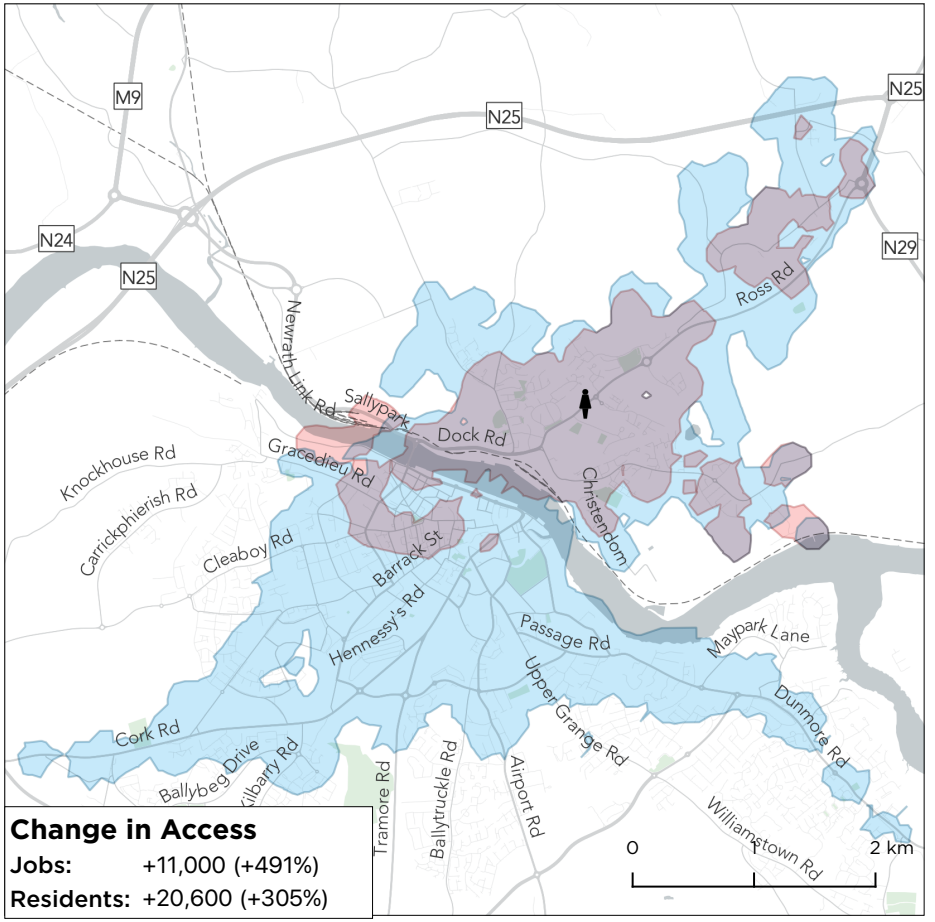


Change in Access

Jobs: +4,600 (+885%)

Residents: +4,300 (+138%)

45 minutes



Change in Access

Jobs: +11,000 (+491%)

Residents: +20,600 (+305%)

Proximity to Services of Various Frequencies

The New Network Plan will increase the number of residents, jobs and school enrolments near a bus service. Among residents of the Waterford area, 67% are today within a 400 m walk of a bus service all day on weekdays, whereas 74% will be within 400 m of the New Network. For schools and jobs, the number near bus services will increase by four and five percentage points, respectively.

On the next four pages, graphics show how people's proximity to bus services will change under the New Network Plan, at four different times of the week. This analysis has been performed for all jobs, all schools (primary through third-level) and all residents; and for residents living in areas of high deprivation, seniors and youths. It has counted all bus services in the Waterford area, both the urban PSO routes and the longer-distance and commercial services.

Walking Distance

Someone is considered "proximate" if they are within a 400 m walk of a bus stop. This walk is measured along the pedestrian network, and is therefore sensitive to barriers such as motorways, cul de sacs or walls.

Most people can walk 400 m in about 5 minutes. Some people cannot walk that distance, either all the time or in certain situations (such as when carrying packages or wrangling small children). Other people regularly walk much longer than 5 minutes and would happily walk longer to reach public transport, especially if is frequent, fast and reliable.

It is not possible to set one or even multiple walking distance limits that reflect the great diversity of walking abilities and desires among Waterford residents. For this analysis, a five-minute walk has been assumed.

Frequencies by Time of Day and Week

The numbers of residents and jobs within 400 m of a service have been measured at these times for the Existing and New Networks:

- Weekdays at midday, reflecting the services offered between the AM and PM rush hours. For many routes this is also the same frequency offered in the early morning and evening.
- Weekdays at rush hour. A few planned routes will offer better frequency at rush hours than in the rest of the weekday.
- Saturdays at midday, reflecting the frequency offered during most of the day.
- Sundays at midday, reflecting the frequency offered during most of the day.

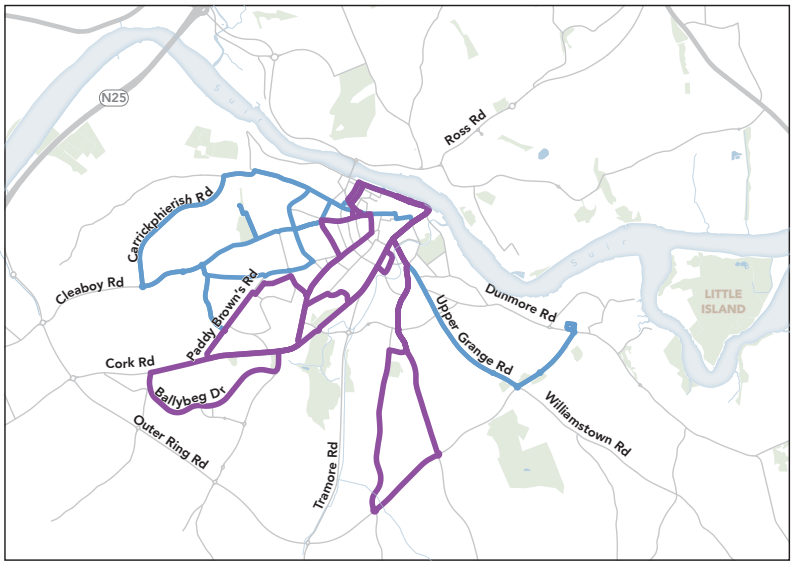
Map Colours Show Frequency

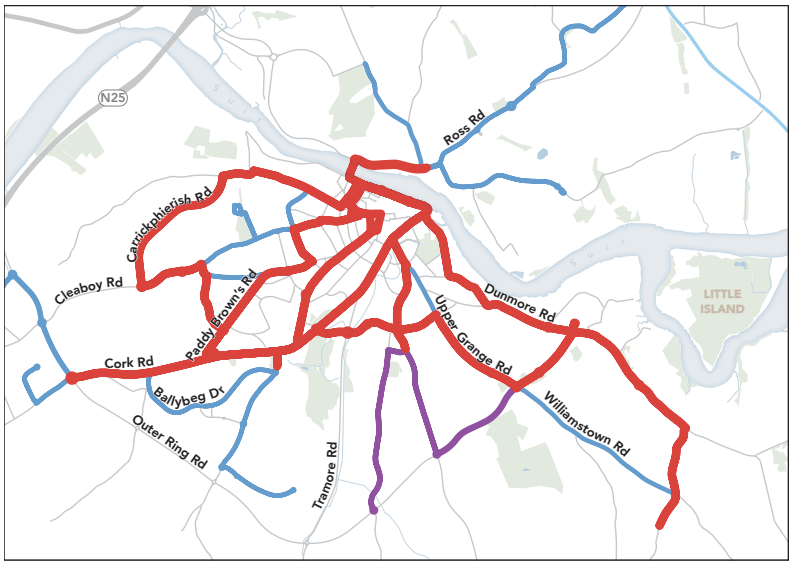
The charts on each page are accompanied by small maps. These maps use colour-coding of the Waterford urban PSO routes to give a visual impression of the frequency of the networks during each of these four days and times.

- **Red** lines indicate a frequent service, every 15 minutes or better.
- **Purple** lines indicate routes that come every 20 minutes.
- **Dark blue** lines indicate routes that come every 30 minutes.
- **Light blue** lines indicate routes that come every 60 minutes.

Weekday Rush Hours

Rush hours often correspond to peak travel, as many office workers commute to or from home. Many people also run errands on the way to or back from work or school.



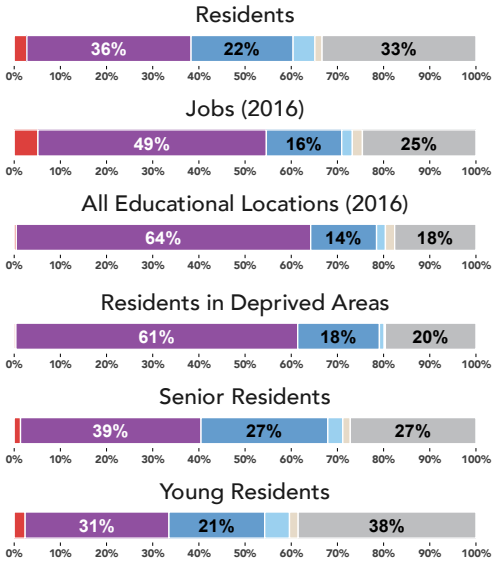


Map Legend

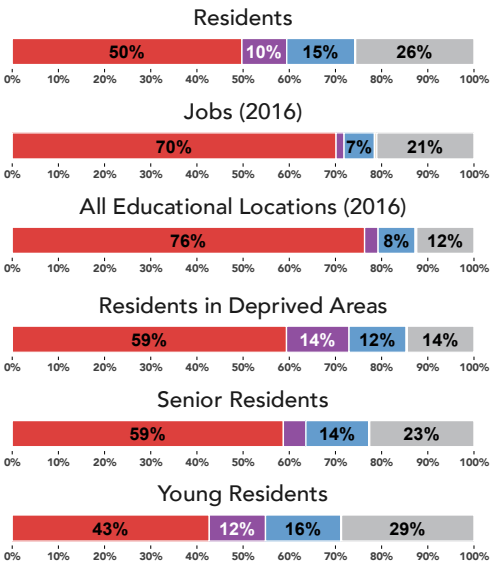
Service frequency:

- 15 minutes or better
- 20 minutes
- 30 minutes
- 60 minutes
- over 60 minutes

Weekday Rush Hours in the Existing Network

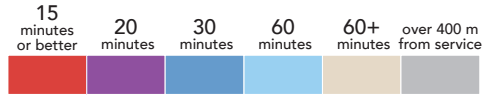


Weekday Rush Hours in the New Network



Graph Legend

Within 400 m walk of a service every:

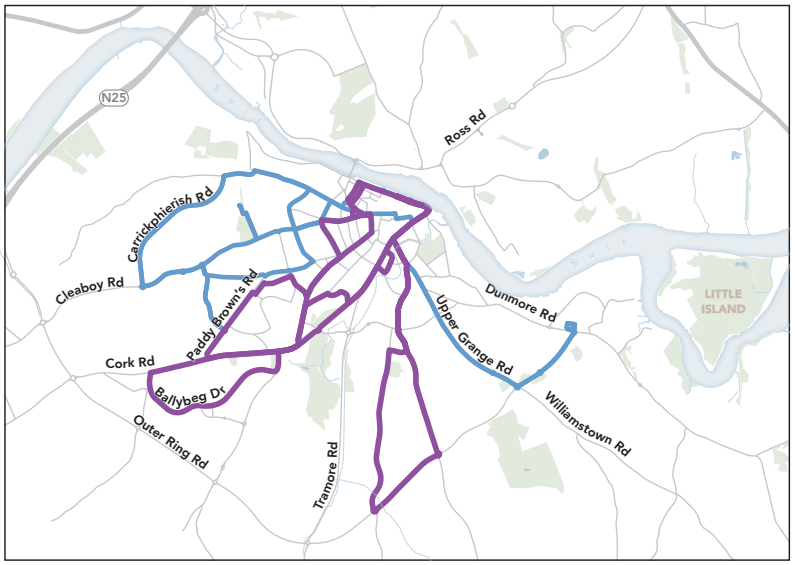


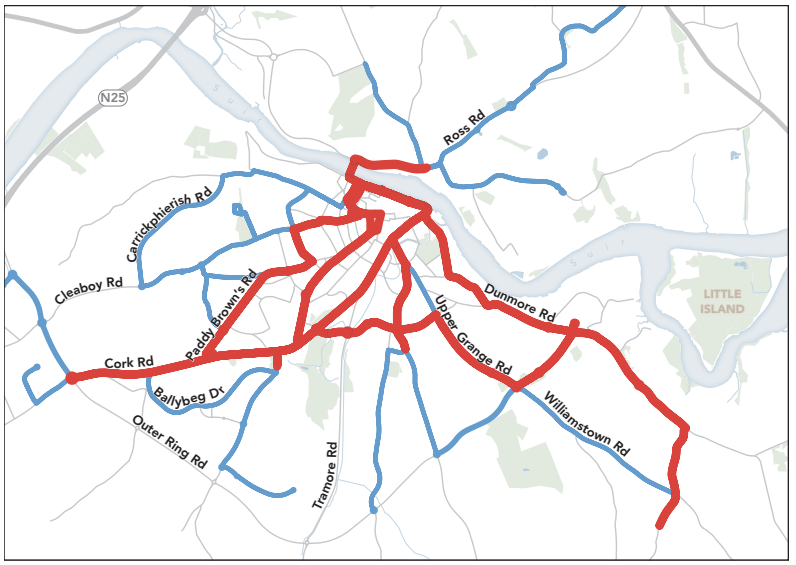
These graphs show the portion of residents, jobs and educational locations in the Waterford area that are within a 400 metre walk of public transport, and at what frequency, at this particular time of the week.

This analysis includes *all* public and commercial transport services in the Waterford area, whereas the small maps above show only the urban PSO bus routes.

Weekdays, Daytime

Many people need to travel throughout the day, as well as during rush hours, whether to come home from an early work shift, leave work or school early, go to a meeting, or run errands.



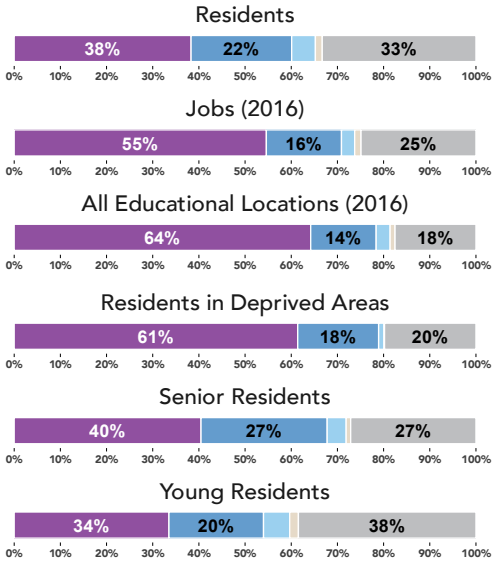


Map Legend

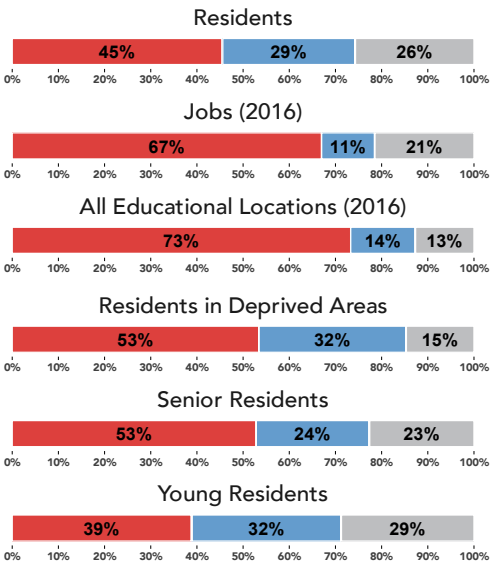
Service frequency:

- 15 minutes or better
- 20 minutes
- 30 minutes
- 60 minutes
- over 60 minutes

Weekday, Daytime in the Existing Network



Weekday, Daytime in the New Network



Graph Legend

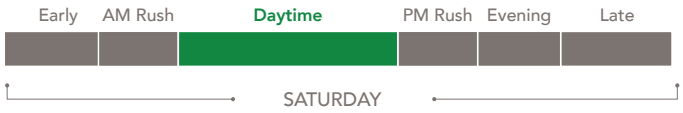
Within 400 m walk of a service every:

15 minutes or better | 20 minutes | 30 minutes | 60 minutes | 60+ minutes | over 400 m from service

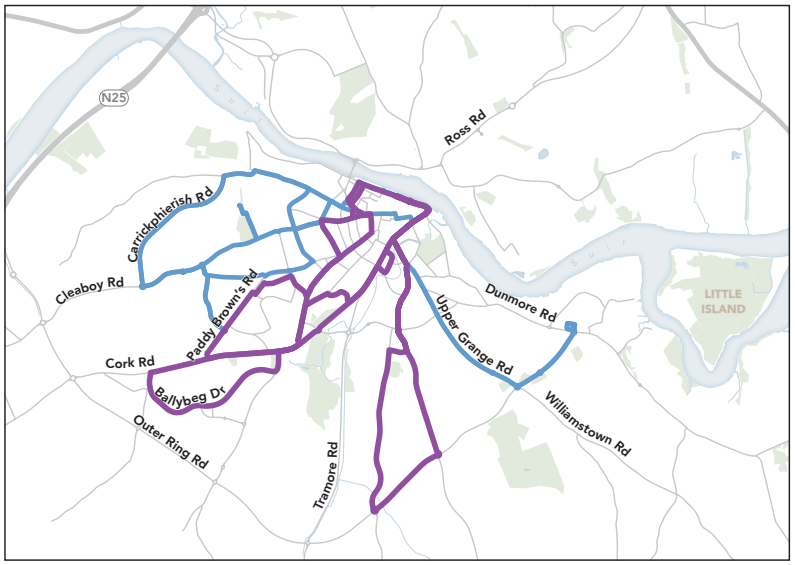
These graphs show the portion of residents, jobs and educational locations in the Waterford area that are within a 400 metre walk of public transport, and at what frequency, at this particular time of the week.

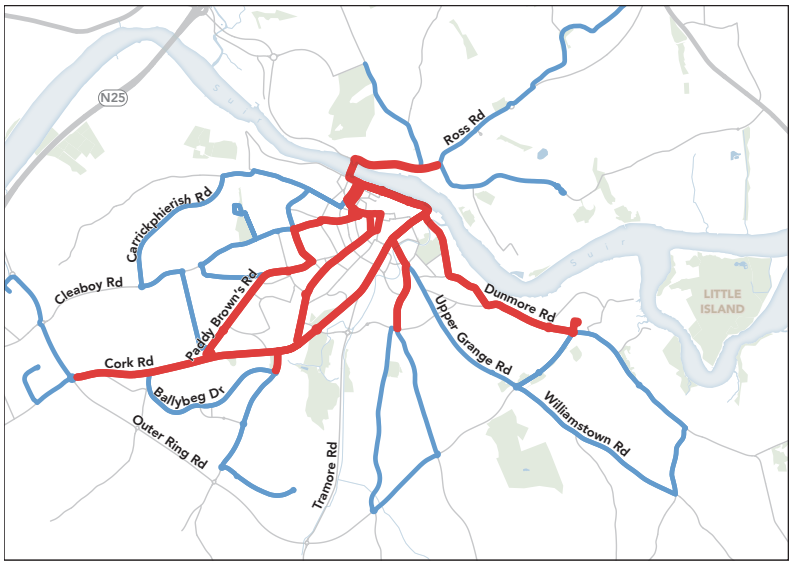
This analysis includes *all* public and commercial transport services in the Waterford area, whereas the small maps above show only the urban PSO bus routes.

Saturdays, Daytime



Weekend travel has grown over the last few decades. In addition to travel for errands and socialising, many retail, service, and hospitality workers commute on weekends.



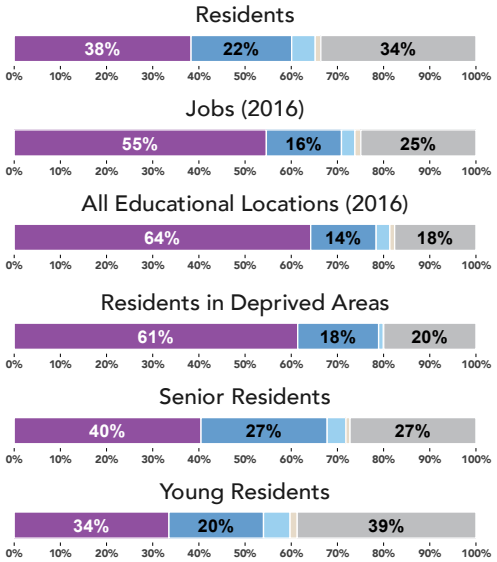


Map Legend

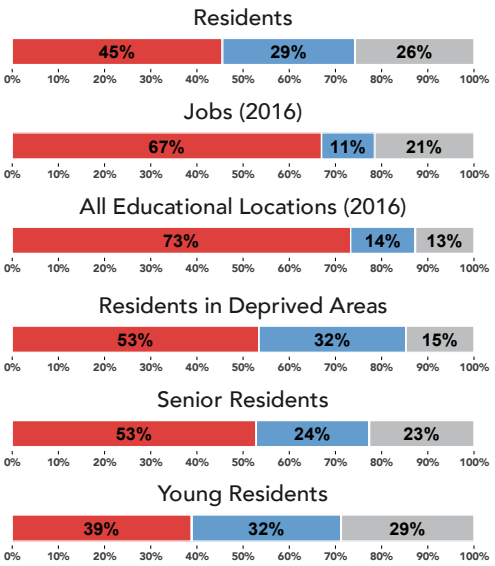
Service frequency:

- 15 minutes or better
- 20 minutes
- 30 minutes
- 60 minutes
- over 60 minutes

Weekday, Daytime in the Existing Network

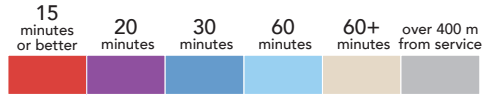


Weekday, Daytime in the New Network



Graph Legend

Within 400 m walk of a service every:

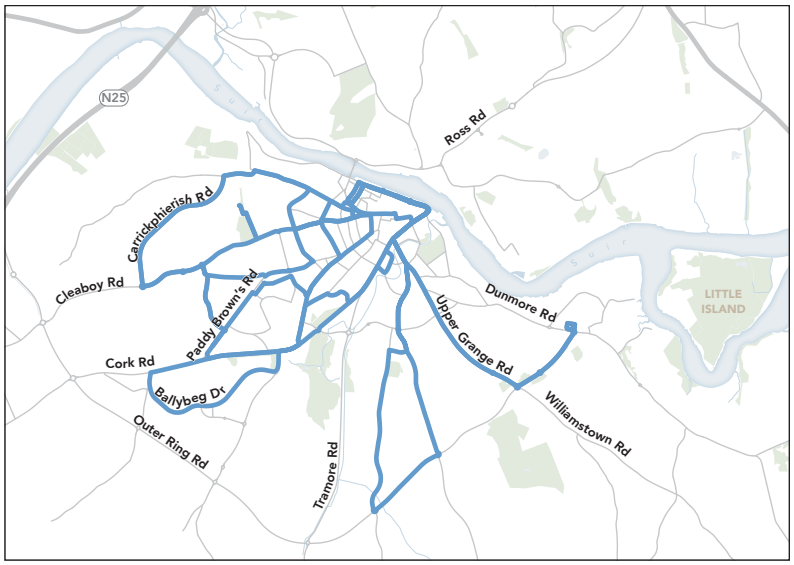


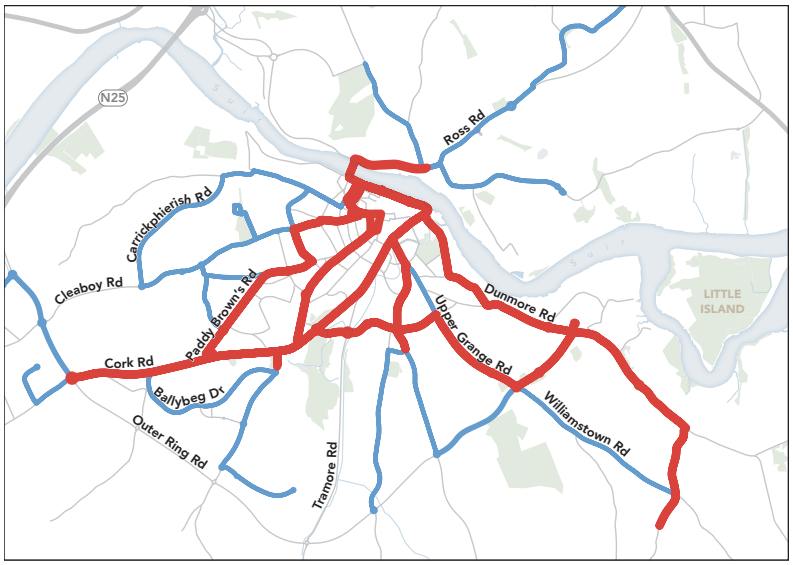
These graphs show the portion of residents, jobs and educational locations in the Waterford area that are within a 400 metre walk of public transport, and at what frequency, at this particular time of the week.

This analysis includes *all* public and commercial transport services in the Waterford area, whereas the small maps above show only the urban PSO bus routes.

Sundays, Daytime

As traditions relating to Sundays change, more people want to travel for all purposes. Industrial jobs sometimes call for weekend shifts as well.



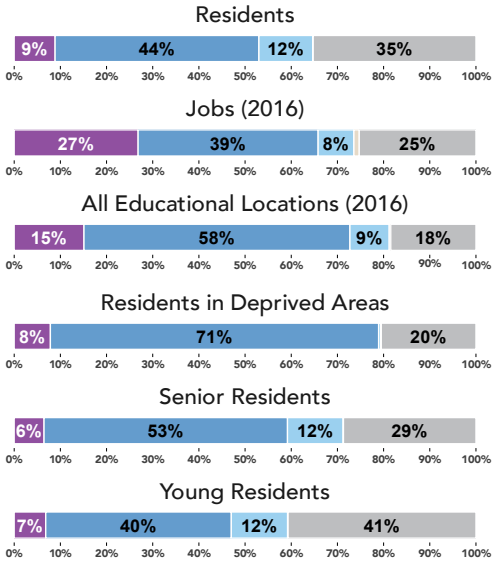


Map Legend

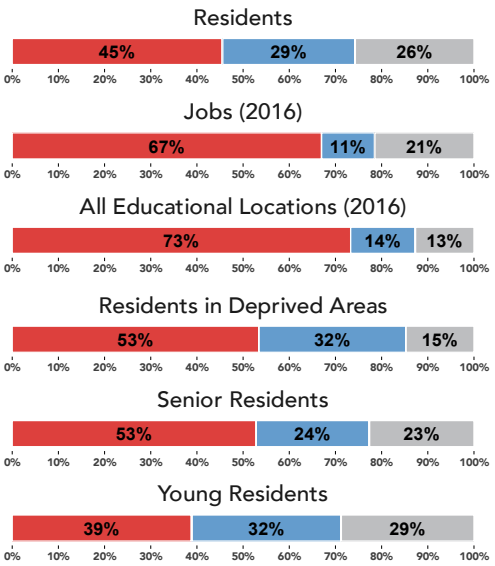
Service frequency:

- 15 minutes or better
- 20 minutes
- 30 minutes
- 60 minutes
- over 60 minutes

Weekday, Daytime in the Existing Network

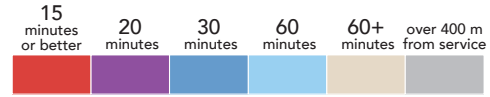


Weekday, Daytime in the New Network



Graph Legend

Within 400 m walk of a service every:



These graphs show the portion of residents, jobs and educational locations in the Waterford area that are within a 400 metre walk of public transport, and at what frequency, at this particular time of the week.

This analysis includes *all* public and commercial transport services in the Waterford area, whereas the small maps above show only the urban PSO bus routes.

Appendix A

Text-based Tables of Route Frequency by Time of Day

Existing 2023 Network Frequencies and Spans (Text)

Existing Route	Weekdays	Saturdays	Sundays	Notes
Route W1 between the Clock Tower and Ballybeg	Every 20 minutes from 6am to 7pm, then every 30 minutes from 7pm to midnight.	Every 30 minutes from 7am to 9am, then every 20 minutes from 9am to 7pm, then every 30 minutes from 7pm to midnight.	Every 30 minutes from 9am to midnight.	Entire route is a one-way loop.
Route W2 between the Clock Tower and SETU Cork Road	Every 30 minutes from 7am to 9am, then	Every 30 minutes from 7am to 9am, then every 20 minutes from 9am to 7pm, then every 30 minutes from 7pm to midnight.	Every 30 minutes from 9am to midnight.	Entire route is a one-way loop.
Route W3 between the Clock Tower and Outer Ring Road via Ballytruckle	Every 20 minutes from 6am to 6pm, then 30 minutes 6pm to midnight.	Every 30 minutes from 8am to 10am, then every 20 minutes from 10am to 7pm, then every 30 minutes from 7pm to midnight.	Every 30 minutes from 8am to midnight.	Service on Airport and Ballytruckle Roads is in one direction only.
Route W4 between the City Centre and Brown's Road via Carrickphierish	Every 30 minutes from 7am to midnight.	Every 30 minutes from 7am to midnight.	Every 30 minutes from 9am to midnight.	Outbound includes a one-way loop on Military and Congress Streets, whereas inbound the route skips those streets.
Route W5 between University Hospital and Oakwood	Every 30 minutes from 6am to midnight.	Every 30 minutes from 6am to midnight.	Every 30 minutes from 8am to midnight.	Service on Cleaboy and Skibbereen Roads is one-way only.

New Network Frequencies and Spans (Text)

Proposed Route or Branch	Weekdays	Saturdays	Sundays	Notes
Route 1 (Dunmore / Paddy Brown's Road)	Every 30 minutes from 6am to 7am, then every 15 minutes from 7am to 8pm, and 30 minutes 8pm to midnight.	Same as weekdays.	Same as weekdays.	
Route 2 (Upper Grange Road / Rockshire Road)	Every 30 minutes from 6am to midnight.	Same as weekdays.	Same as weekdays.	
Route 3 trunk (Ballytruckle Road)	Every 30 minutes from 6am to 7am, then every 10 minutes from 7am to 10am, then every 15 minutes from 10am to 4pm, then every 10 minutes from 4pm to 7pm, then every 15 minutes from 7pm to 8pm, then every 30 minutes from 8pm to midnight.	Every 30 minutes from 6am to 7am, then every 15 minutes from 7am to 8pm, and every 30 minutes from 8pm to midnight.	Same as Saturdays.	Branches 3A and 3B combine to provide the higher frequency along this trunk segment, at every 10 minutes during peaks and every 15 minutes the rest of the daytime on weekdays and weekends.
Route 3A (Old Tramore Road / Ballytruckle Road)	An early trip before 7am, then every 20 minutes from 7am to 10am, then every 30 minutes from 10am to 4pm, then every 20 minutes from 4pm to 7pm, then every 30 minutes from 7pm to 8pm, then every 60 minutes from 8pm to midnight.	Every 60 minutes from 6am to 7am, then every 30 minutes from 7am to 8pm, and every 60 minutes from 8pm to midnight.	Same as Saturdays.	Route 3A branch flows into the Route 3 trunk on Ballytruckle Road and on to the Quays.

Proposed Route or Branch	Weekdays	Saturdays	Sundays	Notes
Route 3B (Killure Road / Ballytruckle Road)	An early trip before 7 am, then every 20 minutes from 7 am to 10 am, then every 30 minutes from 10 am to 4 pm, then every 20 minutes from 4 pm to 7 pm, then every 30 minutes from 7 pm to 8 pm, then every 60 minutes from 8 pm to midnight.	Every 60 minutes from 6am to 7am, then every 30 minutes from 7am to 8pm, and every 60 minutes from 8pm to midnight.	Same as Saturdays.	Route 3B branch flows into the Route 3 trunk on Ballytruckle Road and on to the Quays.
Route 4 trunk (Cork Road / Rice Bridge / Dock Road)	Every 30 minutes from 6am to 7am, then every 15 minutes from 7am to 8pm, and every 30 minutes from 8pm to midnight.	Same as weekdays.	Same as weekdays.	Branches 4A and 4B combine to provide 15-minute frequencies along Cork Road (from the Outer Ring Road), the Quays, the Rice Bridge and Dock Road (as far as the new railway station).
Route 4A branches to SETU West Campus in the southwest and Slieverue in the north	Every 60 minutes from 6am to 7am, then every 30 minutes from 7am to 8pm, and 60 minutes from 8pm to midnight.	Same as weekdays.	Same as weekdays.	Route 4A branch flows into the Route 4 trunk on Cork Road, the Quays and Dock Road.
Route 4B branches to UPMC Hospital in the southwest and Abbey Park in the north	Every 60 minutes from 6am to 7am, then every 30 minutes from 7am to 8pm, and 60 minutes 8pm to midnight.	Same as weekdays.	Same as weekdays.	Route 4B branch flows into the Route 4 trunk on Cork Road, the Quays and Dock Road.
Route 4P to Belview Port	Every 60 minutes from approximately 7am to 10am and 3pm to 7pm.	No service on weekends.	No service on weekends.	Special service extending Route 4A from Slieverue, to be scheduled in consultation with the Port.

Proposed Route or Branch	Weekdays	Saturdays	Sundays	Notes
Route 5 trunk (Ashe Road / Cannon Street / Barrack Street)	Every 30 minutes from 6am to 7am, then every 15 minutes from 7am to 8pm, and 30 minutes from 8pm to midnight.	Same as weekdays.	Same as weekdays.	Branches 5A and 5B combine to provide 15-minute frequencies along the trunk between Cork Road and the Quays.
Route 5A branch to Summerfields via Kilbarry Road.	Every 60 minutes from 6am to 7am, then every 30 minutes from 7am to 8pm, and 60 minutes from 8pm to midnight.	Same as weekdays.	Same as weekdays.	Route 5A branch flows into the trunk on Ashe Road, Cannon Street and Barrack Street, and on into the centre.
Route 5B branch to SETU Cork Road Campus via Ballybeg Road.	Every 60 minutes from 6am to 7am, then every 30 minutes from 7am to 8pm, and every 60 minutes from 8pm to midnight.	Same as weekdays.	Same as weekdays.	Route 5B branch flows into the trunk on Ashe Road, Cannon Street and Barrack Street, and on into the centre.
Route 6L (Congress Place / Cleaboy / Paddy Brown's Road / Cork Road / Inner Ring Road / Upper Grange Road / UHW)	One early trip before 7am, then every 30 minutes from 7am to 8pm, and every 60 minutes from 8pm to midnight.	One early trip before 7am, then every 30 minutes from 7am to 8pm, and every 60 minutes from 8pm to midnight.	One early trip before 7am, then every 30 minutes from 7am to 8pm, and every 60 minutes from 8pm to midnight.	All Route 6L buses will also follow the path shown on the map for Route 6.
Route 6 (Cork Road / Inner Ring Road / Upper Grange Road / UHW)	Every 30 minutes from 6am to 7am, then every 15 minutes from 7amm to 8pm, and every 30 minutes from 8pm to midnight.	Same as weekdays.	Same as weekdays.	Every second Route 6 bus will continue onto the path shown on the map for Route 6L, whilst the remainder will turn around at the SETU Cork Road campus.

Proposed Route or Branch	Weekdays	Saturdays	Sundays	Notes
Route 7 (Gracedieu Road / Carrickphierish Road / Tir Connell Drive)	Every 30 minutes from 6am to 7am, then every 15 minutes from 7am to 10am, every 30 minutes from 10am to 4pm, every 15 minutes from 4pm to 7pm, and every 30 minutes from 7pm to midnight.	Every 30 minutes from 6am to midnight.	Same as Saturdays.	