Cork Bus Network Redesign
Volume II:
Draft New Network

NOVEMBER 2021

BUS
CONNECTS
CORK

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

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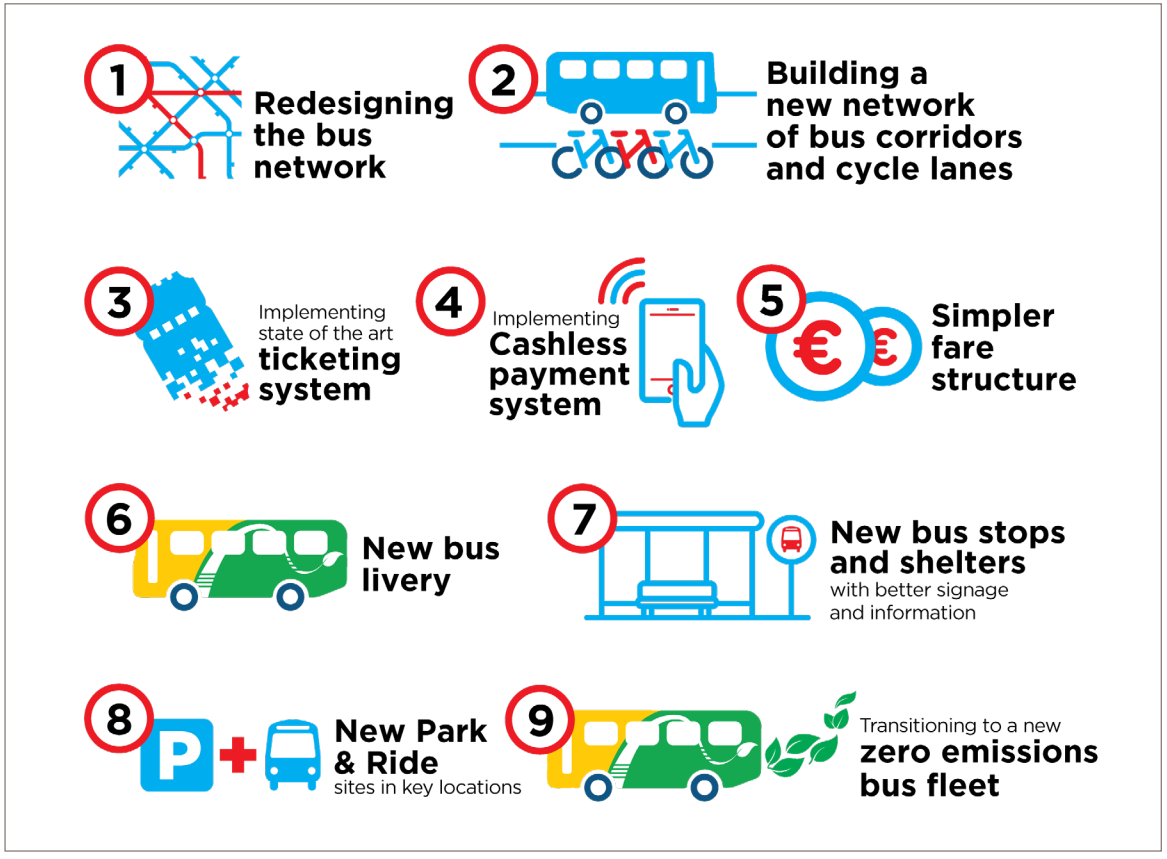
1 Introduction and Summary

BusConnects Cork Network Redesign

BusConnects is the NTA's programme of bus service improvement in Irish metropolitan areas. It is funded by Project Ireland 2040. It includes nine measures which will transform Cork's bus system, illustrated below.

The review and redesign of the bus network is a key component of the overall BusConnects Cork programme. The scope of the network redesign includes:

- Public Service Obligation (PSO) routes. Each year NTA makes funding available to public transport operators for socially necessary public transport services. In Cork, Bus Éireann provide these PSO services, under contract to the NTA.
- The Cork Metropolitan Area (CMA), of which a simple map is shown in the next page. A handful of PSO routes extend beyond the CMA, but the focus of this redesign is on routes and areas within the CMA.



Jarrett Walker + Associates (JWA), specialist public transport network designers, and SYSTRA, Ltd., transport planners, are currently supporting the NTA in reviewing and revising the bus network.

A new Cork bus network will be implemented starting in 2023 and 2024.

Volume I: Choices Report provides background on the design of bus networks in general and on the existing Cork PSO network. It is found on the project website.

Early Public Input

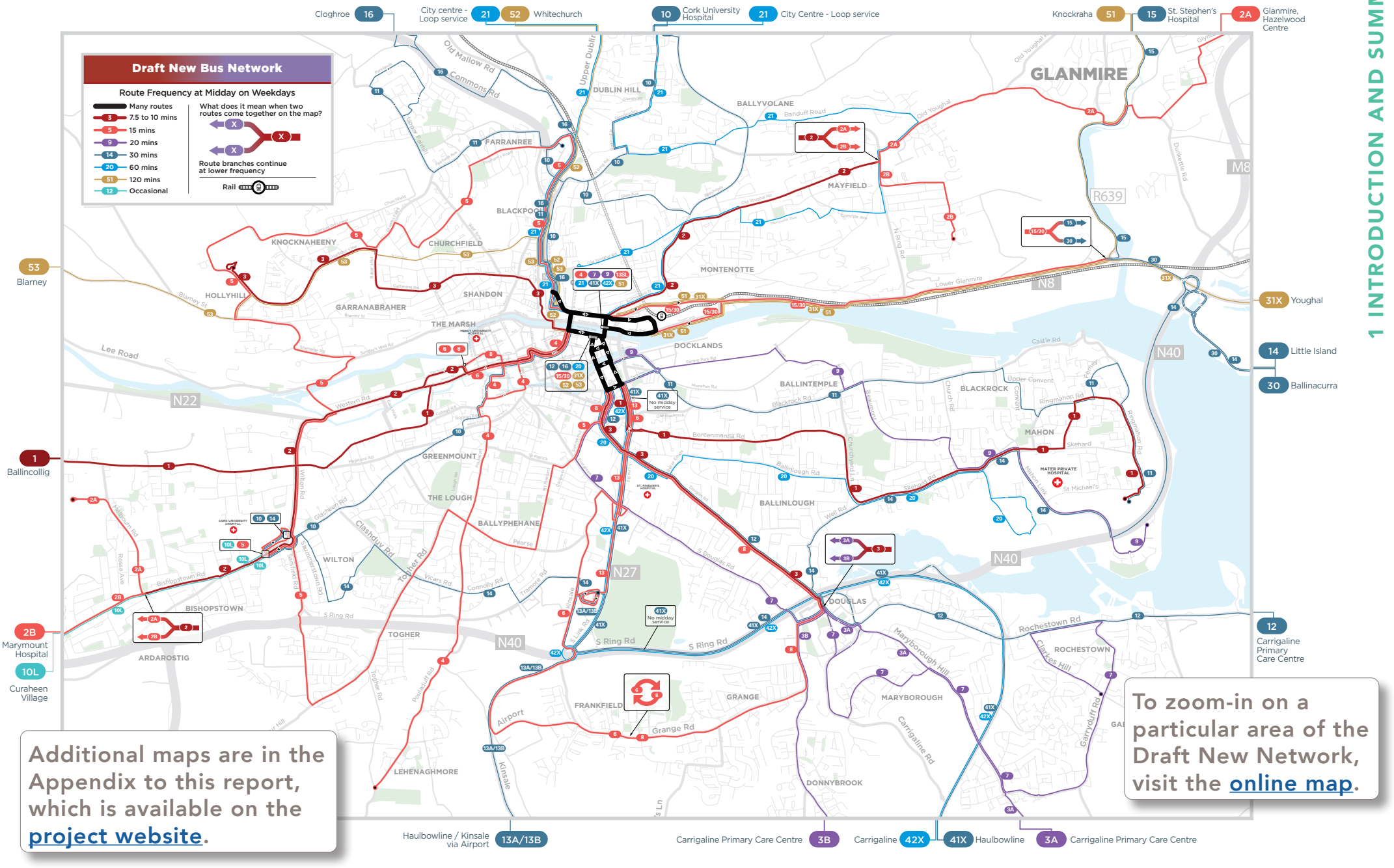
In July 2021 the NTA held an initial public consultation to give the people of Cork an early opportunity to shape the new bus network. There were 1120 responses to a survey, and additional engagements via email and on the project website.

Public input from that first phase informed the design of the Draft New Bus Network. NTA and their consulting experts drafted this network in collaboration with Bus Éireann, Cork City Council and Cork County Council.

Phase One public input is summarised starting on page 24.

Map of the Cork Metropolitan Area (CMA)

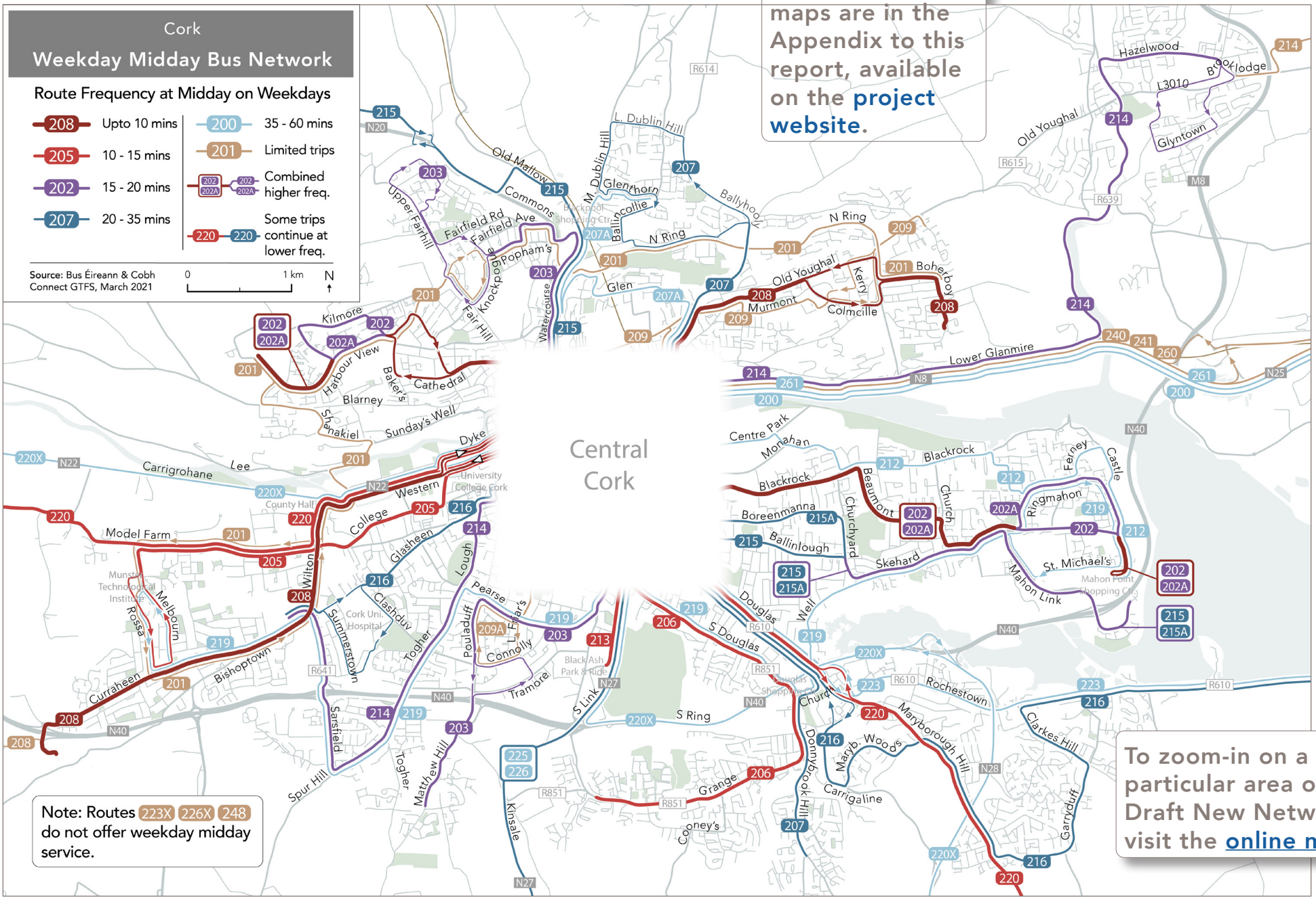
Map of the Draft New Network



Additional maps are in the Appendix to this report, which is available on the project website.

To zoom-in on a particular area of the Draft New Network, visit the online map.

Map of the Existing Network



What Would Change with the Draft New Network?

The Draft New Network is a complete redesign of the Cork bus network. Every route is proposed to change.

Greater Access to Employment Areas

Changes to routes, interchange locations and frequencies would bring some major employment areas within reasonable commute journeys of more residents. The average resident could reach 17% more jobs within an hour's commute (including all waiting time), and 11% within a half-hour's commute.

Some of the largest employment areas that would gain access to more workers are Little Island, Holly Hill, Mahon Point, the airport, Blackpool and Cork City Centre.

Increased Access to Schools

By improving frequencies and making routes more direct, the Draft New Network would shorten journeys to school for many students.

The number of education places the average young resident could reach within an hour's journey (including all waiting time) would increase by 10%, and the number reachable within half an hour's journey would increase by 21%.

Frequent Service Near More People and Jobs

The Draft New Network would provide high-frequency service in the places where the most people live and work. As a result, more residents, students and workers would find themselves near buses coming every 15 minutes or better.

Frequent service reduces waiting time and makes public transport faster relative to car travel. When frequent service is provided to large numbers of people efficiently, high patronage tends to result.

At most times of the day and week, the Draft New Network would get frequent service within 400 m walk of more residents. For example:

- Residents near frequent service would grow by 34%.
- For households without cars, those near frequent service would grow by 40%.
- Unemployed residents near frequent service would grow by 56%.

Charts showing the percent of residents and jobs near service of various frequencies start on page 38.

New Coverage in the City and County

Little Island, Cobh, Carrigaline, Ringaskiddy, Glanmire, Ballincollig and Blarney are among the areas with new routes serving new streets and developments.

The Draft New Network proposes to expand public transport coverage of the developed parts of the Cork Metropolitan Area (CMA). In some cases this new coverage is unlikely to attract high patronage because of the low-densities or car-oriented design of the newly-covered areas, but it provides inclusion for the people living there. Including all developed areas of the CMA, regardless of patronage, was given second-highest priority by survey respondents in the Phase One consultation.

The proposed increases in coverage would increase the number of residents and jobs in the CMA that are within 400 m walk of public transport, as shown in the graphs on page 16.

A Luas-Ready Network

The Draft New Network includes a revision to the pattern of cross-town through-routing for the most frequent routes. This change is necessary to prepare for Luas.

In the existing network, a route from the west (Ballincollig) is through-routed to the south (Carrigaline); whilst a route from the north (Holly Hill) is through-routed to the east (Mahon Point).

In contrast, the future Luas line will connect west (Ballincollig) and east (Mahon Point).

It is necessary to build patronage and development now, using frequent bus service, before the Luas is built. This means providing frequent east-west bus service around which people can build their lives, employers can build their business and developers can build housing.

In order to prepare for Luas, the Draft New Network changes the through-route arrangements. It links Ballincollig and Mahon Point with an east-west route, whilst linking Holly Hill and Carrigaline with a north-south route.

This would have the effect of lengthening some journeys that are made on the existing through-routes. However, by increasing frequencies the negative impacts on those journeys can be kept modest. It would also have the effect of shortening journeys that people are currently making between east and west, or between north and south.

Easier Interchange

The Draft New Network would make interchange between many pairs of routes easier, in one of two ways:

- More routes would offer high frequency all week long, so interchange between them would require a reliably short wait.
- Some routes would be scheduled to "pulse" together, with coordinated arrivals and departures. This is particularly important for the infrequent routes serving small towns and rural parts of the County.

Both of these improvements to interchange depend on improvements to reliability, speed and technology. Some of those improvements are within the control of NTA, whilst others require actions by Cork City and County Councils.

Making interchange easier for passengers in certain busy places – such as Cork City Centre, Carrigaline town centre, Blackpool, CUH and Douglas – will require more space for bus stops as well as bus-only lanes and other priority measures.

The Draft New Network is being proposed using existing road operations, but NTA will continue to work with the City and County Councils on optimisation of streets to support the new network.

What Wouldn't Change?

Some features of the existing network would be maintained:

- **No one who is close to bus service today would lose all access to service.** Every home, workplace or school that is covered by some type bus service today would continue to be covered, though the frequency of service or the pattern followed by the route may be changed.
- **Overnight service would continue between Carrigaline and Ballincollig**, from midnight to 5:00 am.
- **Frequent service between Carrigaline and Cork City Centre would continue.** Service between Carrigaline and Cork City Centre would become ***more frequent*** - with departures every 10 minutes, Monday-Saturday, and every 15 minutes on Sunday.[1]

1 Frequency would increase on other routes as well, but the high frequency between Carrigaline and Cork City Centre is less obvious on maps because the proposed new route would use alternating paths.

Assumptions

The Draft New Network was designed with some assumptions about other changes that will come as part of the BusConnects Cork programme:

- A simpler fare structure, and no additional cost to interchange.
- Faster and more reliable bus service.
- New two-door buses, phased-in over the next decade.
- Real-time arrival information.
- Improved waiting areas and signage.

These changes affect the design of the network. They make it possible to plan for a Cork bus network that is more frequent, allows passengers to reach more destinations quickly through interchange, and offers more reliable journey times.

Bus Speeds

In our analysis of how the Draft New Network would affect residents' access to jobs and school, we have used bus speeds from September 2021. These speeds are slower than what can be expected once priority measures are in place to speed up bus service.

The access results reported on page 15 and shown on maps on later pages are therefore likely an underestimate. Additional gains should be expected in proportion to the improvement in bus speeds, which will be arrived at through collaboration between NTA, Cork City Council and Cork County Council.

Improving speeds would also allow for some additional improvements in frequency because faster bus routes cost less to operate.

Waiting Time

Throughout this report, whenever we refer to a public transport journey time, it includes the average amount of time passengers spend waiting at every stage of their journey.

Waiting doesn't just happen at the start of one's journey, it also happens at the end, especially on infrequent routes. For example, if you must arrive at work by 8:00 am, but your once-hourly bus passes by your work at 8:12 am, you are forced to arrive at 7:12 am – 48 minutes too early.

People who are able to decide their own work or school hours can schedule around

Estimating Journey Times

Often when people describe public transport journey time they focus on the time spent on the bus or train. 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 walking.

Waiting for the next bus or train

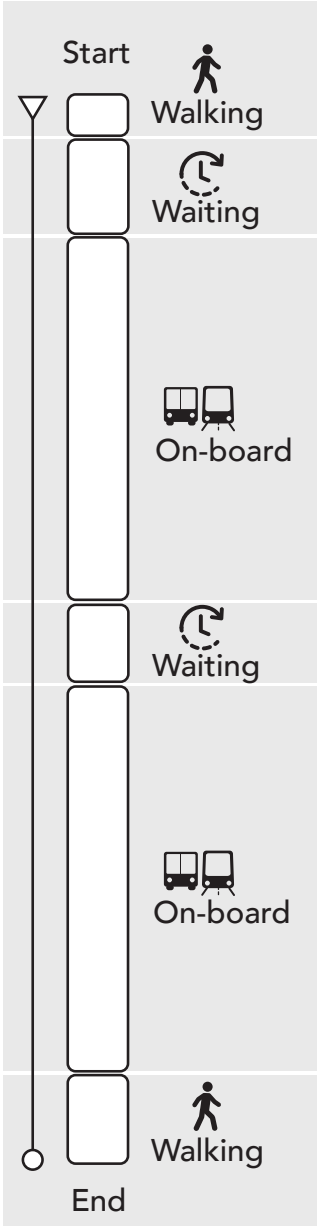
Waiting doesn't always happen at the start of your journey, it can also happen at the end. You may leave home only a short time before your bus departs, but if your bus comes infrequently you often have to choose between arriving at your destination very early or too late.

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

On average, across all passengers, both of these forms of waiting will require about one-half the frequency of the routes in question.

On-board the vehicle

Time spent on the vehicle is affected by the distance you are traveling and the speed of the vehicle. Our analysis of the Draft New Network used conservative (slow) speed assumptions. Improvements in speeds will result in greater job and school access for more people.



an infrequent bus schedule, but many people do not have that privilege. A trip to a doctor's appointment, a film or another scheduled event can similarly require an early arrival that feels like a waste of time.

The extra time that a route's passengers spend waiting will be, on average, one-half of the frequency of the route. When we talk about a 30- or 60-minute public transport journey, we are including an average wait of one-half of the frequency of each route used.

Including this average wait time can make the journeys described in this report sound quite long, compared to how bus passengers would describe them. Yet it is essential to account honestly for this waiting time. One of the ways public transport can fail to compete with cars is by forcing people to start their journey earlier than they want to and to therefore waste time at their destination.

The diagram on the left explains how average journey times were estimated for the Draft New Network.

Measuring the Draft New Network

This report contains three measures of the potential performance of the Draft New Network. These three measures speak to the network's delivery on two main goals:

- Competing with car travel for more peoples' journeys, in order to reduce vehicle use and carbon emissions. These goals were given the highest priority (out of five) by participants in the Phase One survey.
- Including all developed parts of the CMA, regardless of the potential for patronage or the level of need in those areas. This goal of geographic inclusion was given second-highest priority by participants in the Phase One survey.

The three measures are:

1. **Access**: The number of jobs or schools that the average resident could reach within a 30- or 60-minute public transport journey.
    - Access speaks to the possibility of high patronage, effective competition with cars and reduced emissions.
2. **Proximity to Frequent Service:** The percentage of residents and jobs within 400 m of buses or trains coming every 15 minutes or better.
    - Like Access, Proximity to Frequent Service speaks to the possibility of high patronage, effective competition with cars and reduced emissions.
3. **Proximity to Any Service:** The percentage of residents and jobs within 400 m of public transport offering any frequency.
    - Proximity to Any Service speaks to the coverage of more areas and people by public transport service.

Some of the additional service in the Draft New Network has been added in ways that increase access, get frequent service close to more people, and in other manners make Cork public transport more competitive with cars.

Some of the additional service has been used to provide at least minimal service close to more areas and people, but it does not add much access. For example, buses serving lower-density or more dispersed areas have to travel longer distances to pass a significant number of jobs, so they does not add much to the number of jobs the average resident can reach in a 30- or 60-minute commute. But they do serve the goal of geographic inclusion.

Change in Access to Work and School

The table on the right summarises the way access to jobs and schools would change with the Draft New Network.

The number of jobs and education places most people could reach within a reasonable commute time would increase, especially within a short commute of 30 minutes or less (including all waiting time).

Young and unemployed residents would gain the most access to jobs and schools within a 30-minute journey.

A few notes about this table:

- This summary is for weekdays at midday. Though service is slightly better during peaks, the frequencies at midday are typical of what is offered all day, Monday-through-Saturday, on nearly every route, in both the existing and the Draft New Networks. The midday condition therefore represents the network that is offered most of the time.
- "Education places" refers to the number of available enrollments at all schools, from primary through university.
- Retired residents may have little need for access to jobs for the purpose of working, but jobs are a geographic proxy for shops, hospitals, restaurants, and other destinations that are important to retired people.
- As noted previously, the journey times referenced here include all average waiting time.

Change in Access, on Weekdays at Midday

	Change in Jobs Reachable...		Change in Education places Reachable...	
	Within a 30-minute Journey	Within a 60-minute Journey	Within a 30-minute Journey	Within a 60-minute Journey
All residents	+ 17%	+ 11%	+ 18%	+ 8%
Unemployed residents	+ 18%	+ 10%	+ 21%	+ 7%
Young residents	+ 18%	+ 13%	+ 21%	+ 10%
Retired residents	+ 17%	+ 10%		

Peaks and Weekends

How are these numbers different for weekday peaks (7:00-9:00 am and 3:00-6:00 pm)? They are very similar, varying by one percentage point or not at all.

How are these numbers different for Saturdays and Sundays? They are also very similar, varying by two percentage points or not at all.

Change in Proximity to Public Transport

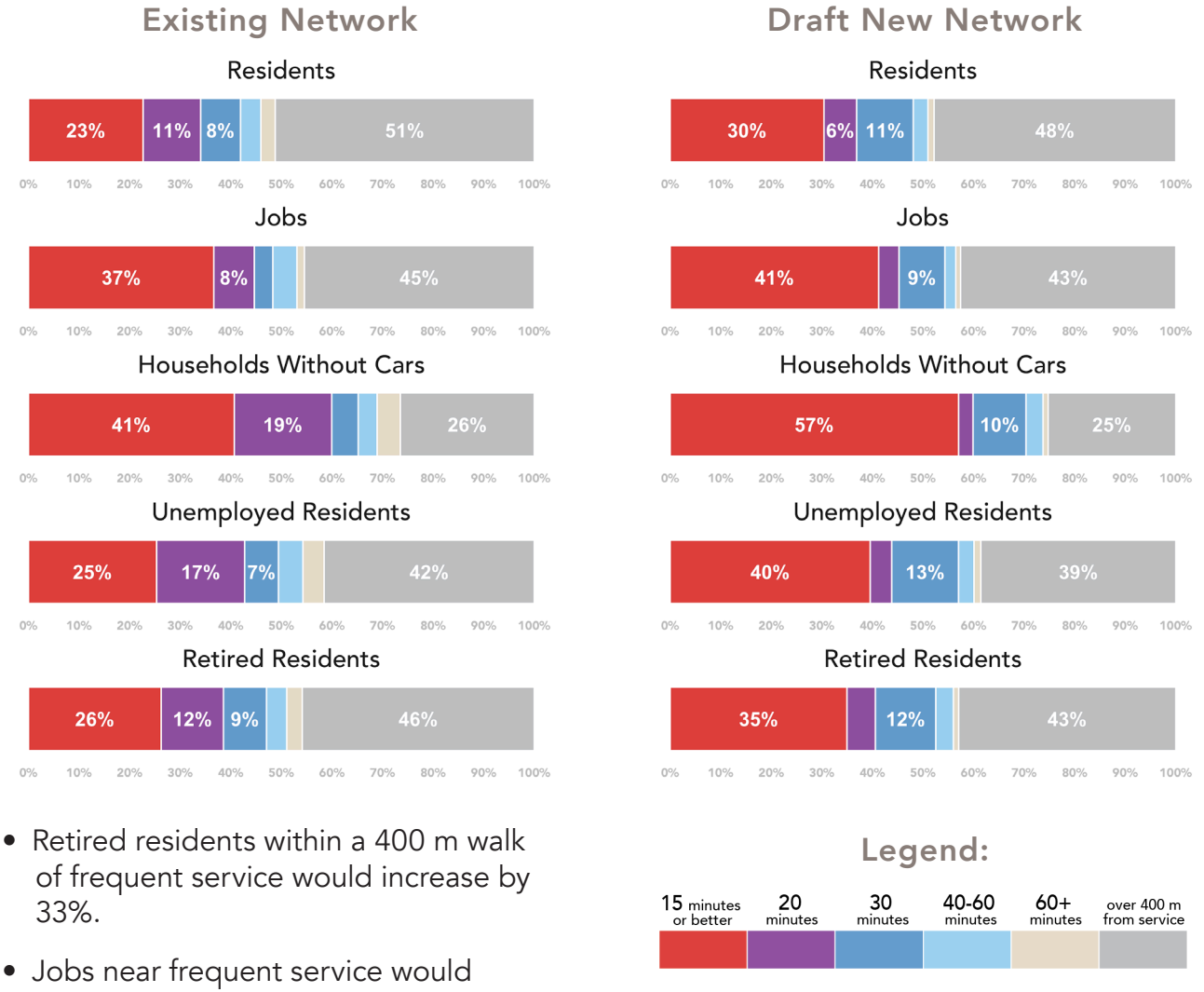
The graphs on the right show the percentage of residents and jobs in the Cork Metropolitan Area (CMA) that would be within a 400 metre walk of service of various frequencies, on weekdays at midday.

The Draft New Network would send public transport close to more residents and jobs:

- Residents near some type of service would increase by 7%.
- Retired and unemployed residents near service would increase by 7%.
- Households without cars near service would increase by 2%.
- The jobs in the CMA that are close to service would grow by 5%.

Major improvements would be made to the percentage of jobs and residents near **frequent service**:

- The number of residents near frequent service would grow by 34%.
- Households without cars near frequent service would increase by 40%.
- The number of unemployed residents near frequent service would increase by 56% over existing.



- Retired residents within a 400 m walk of frequent service would increase by 33%.
- Jobs near frequent service would increase by 13%.

Frequent service tends to attract the most patronage, even relative to its higher costs, because it is so easy for busy people to use.

Similar graphs comparing proximity to service at other times of day and week are shown starting on page 37.

Providing Geographic Coverage

The Draft New Network covers more of the developed parts of the CMA with public transport service. The map on the next page highlights those areas that would be newly-included in the Draft New Network.

The number of people within 400 m walk of bus stops in low-density areas will naturally be low. This means that more kilometres of bus routes must be provided in a low-density area, compared to a high-density area, to make service proximate to any given number people. This is one of the reasons that routes designed to promote geographic inclusion in dispersed or low-density areas can't contribute much to job access within a 60-minute commute, nor to increasing the percentage of people who are near frequent service.[1]

The new coverage services in the Draft New Network (shown on the map on the next page) add only modestly to the total number of people and jobs near service, despite adding many new kilometres to the network. This is a result of lower densities, more circuitous street networks and longer distances between developed areas.

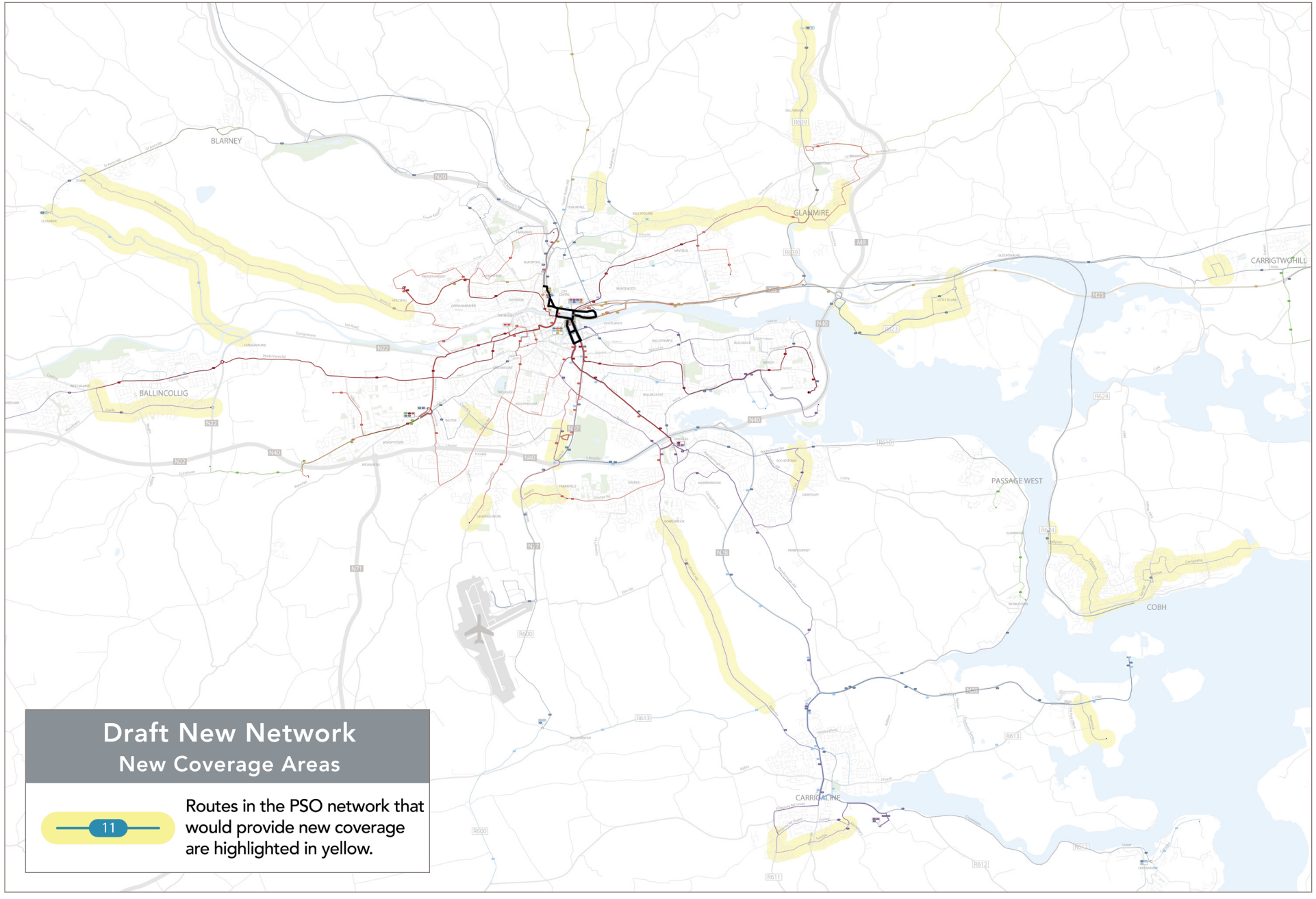
Put another way, as the network is expanded from the dense parts of the CMA to less-dense parts, getting bus routes close to each additional resident or job comes at a higher marginal cost.

The areas that are most efficient to serve, because buses can cover such short distances and be close to so many people, are already covered by the existing network. Expanding coverage to promote geographic inclusion means spending more to reach smaller numbers of people.

Based on 2016 Census data, the Draft New Network would cover an additional 10,500 residents and 3,500 jobs. However, the network was designed with an eye towards recent developments and those under construction, so the actual increase is certain to be higher.

1 For more about the way that frequency and distance affect public transport costs, and trade off against one another, see Volume 1: Choices Report.

Map of Proposed New Coverage Areas



How to Learn About the Draft New Network

In this Report

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

- Maps showing the draft routes, colour-coded based on their midday frequency. A map showing the central part of the service area is on the right, and additional maps appear on the following pages.
- A large table showing proposed frequencies and approximate hours of service for each draft route. This table starts on page 47.
- Snapshots of the network at sample times of the day and week showing how many residents and jobs would be near service of various frequencies. These begin on page 38.
- Analysis of how residents' access to jobs and schools would change under the Draft New Network. This is summarised on page 15.
    - Access changes are shown by area in the online map, and for the central CMA in static maps starting on page 66.

All of the routes in the Draft New Network have been given new numbers and names. Our purpose in using all-new numbers is to avoid confusion during public engagement as people compare existing and proposed new routes. The route numbers presented at this time may not be the final route numbers used when the new network is implemented.

All routes in the Draft New Network have new numbers!

Online Map

To explore what the Draft New Network would mean for your area and for your own journeys, visit the **online map** at **https://corkdraftnetwork.s3.amazonaws.com/index.html.**

The online map allows you to:

- Zoom in and see detailed routing.
- Look at towns across the County (that are difficult to show on these small pages).
- See how average job access would change in your area.
- Create an "isochrone" comparing where you could travel in 30 or 60 minutes using the existing network or the Draft New Network.

Give us your feedback through the BusConnects Cork project website.

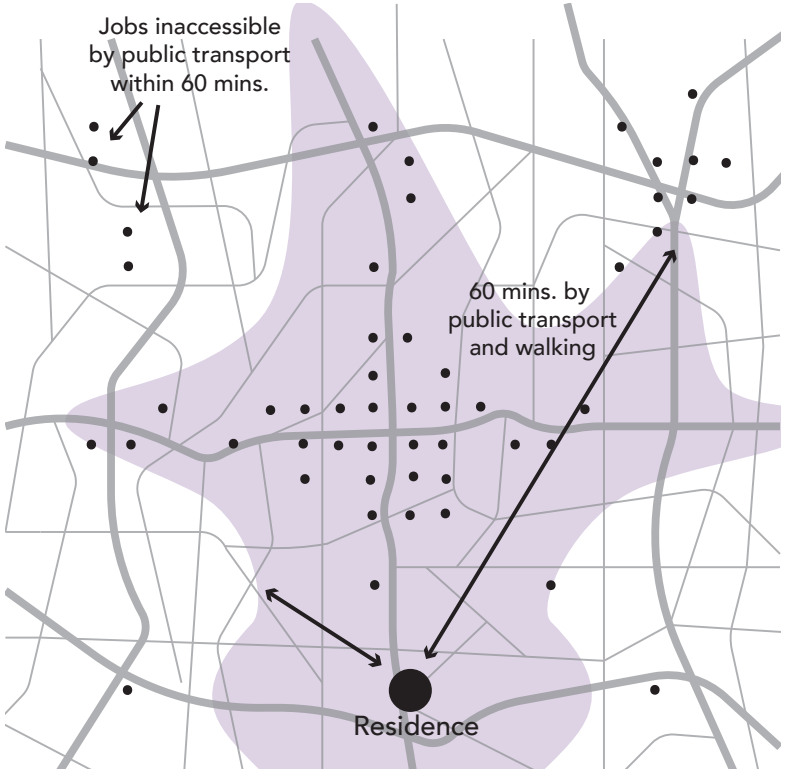
Isochrones: Visualizing Transport Access

Isochrones show the area a person could reach, in a given travel time, by a given mode of transport. The diagram on the right shows a 60-minute isochrone for a fictional place – it illustrates how far someone could travel in all directions from their residence, within an hour, and how many jobs are located in that space.

The online map of the Draft New Network allows you to make isochrones for yourself, starting in most parts of the Cork Metropolitan Area.

You can see how the Draft New Network would change the places you can go, and how many jobs and residents you could reach within that journey time.

Job access changes for each person, starting from the place they live, will vary: some people will see a positive change in the Draft New Network, some will see no change, and a few will see a negative effect. On average, across the entire CMA population, the Draft New Network would make most people's isochrones bigger, increasing most people's access.



An imaginary isochrone. The purple areas are reachable within 60 minutes of travel from the residence. The small dots are jobs.

After visiting the online map, give your feedback using the online form linked from the BusConnects Cork project website.

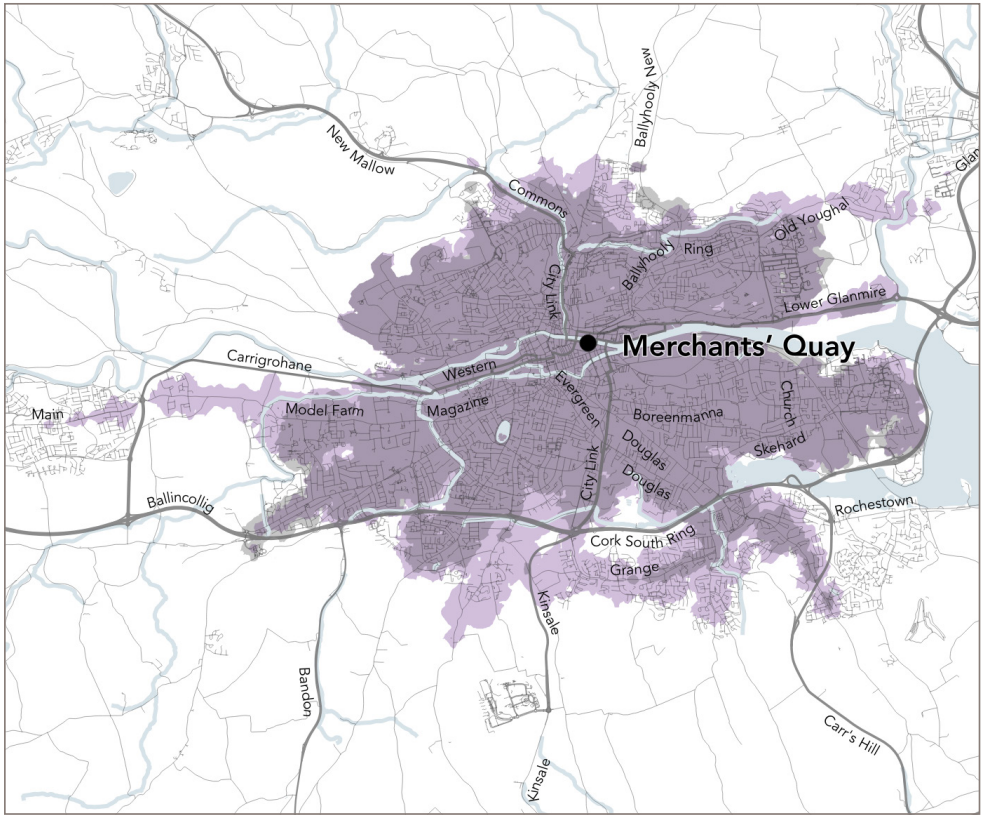
The isochrone on the right shows how access to and from Merchants' Quay within 30 minutes journey would change:

- The light purple areas are the places from which someone could reach Merchants' Quay, by public transport, in 30 minutes or less.
- The grey areas are places that are reachable within 30 minutes in the existing network that would take more than 30 minutes to reach in the Draft New Network.
- Where the two colours overlap, people's ability to reach Merchants' Quay within 30 minutes wouldn't change.

The four isochrones on the following pages show 30- or 60-minute examples from Blackpool, Ballincollig, Mahon Point and Carrigaline.

Isochrones showing 30- or 60-minute average journey times, using the assumption that all passengers wait one-half of the route frequency, are appropriate in urban and suburban settings, but they do not reflect the way public transport works in a rural setting.

In a rural setting, residents' proximity to service, the timed service is offered each day, and the timed interchanges

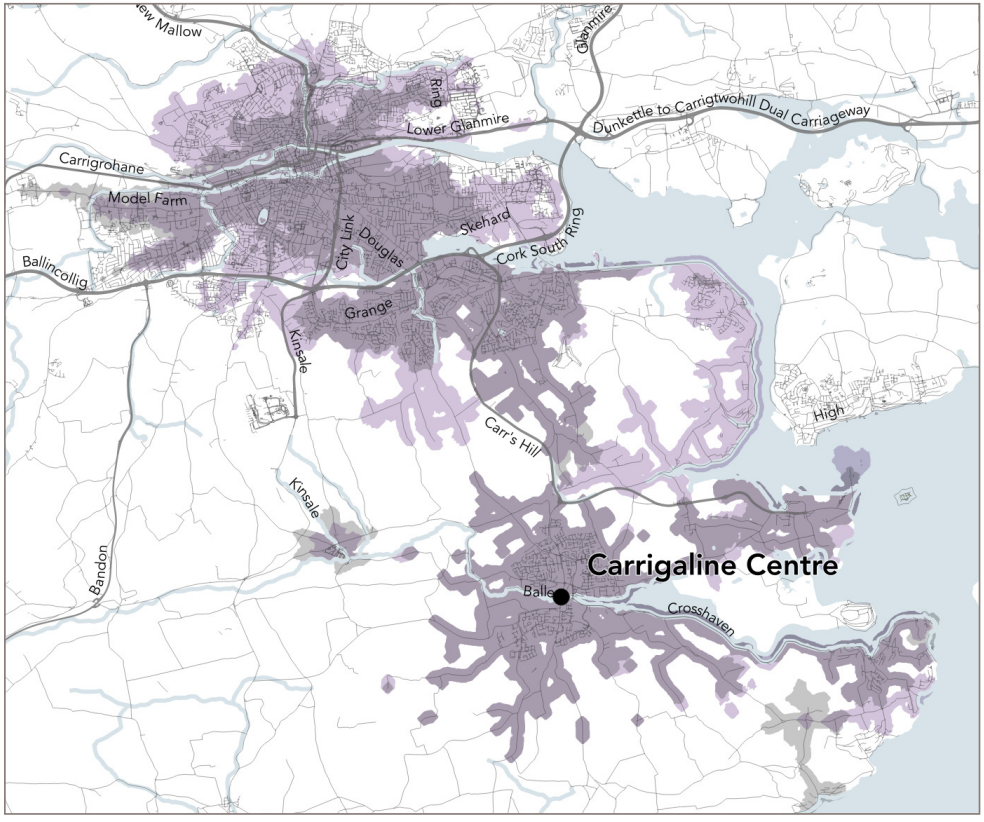


Four percent more residents in would be a 30-minute journey or less of Merchants' Quay.

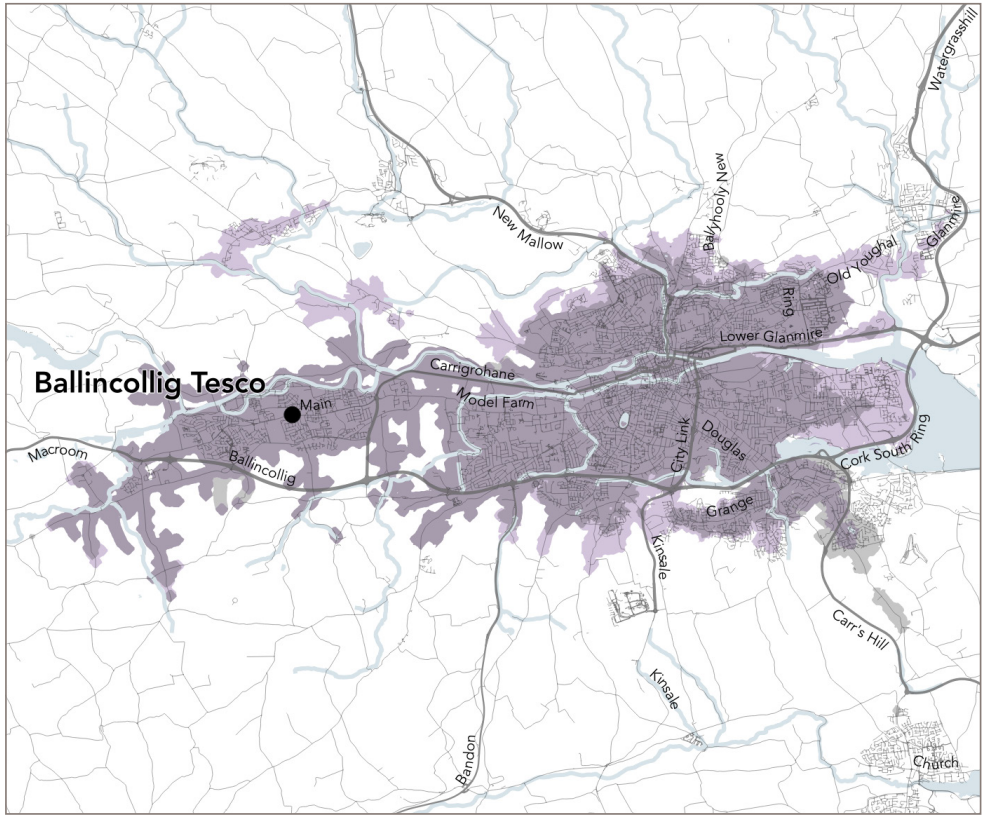
(or "pulses") between services are more important than average access for a random departure time.

For this reason isochrones are only available in the online map in towns where routes come every 60-minutes or better today.

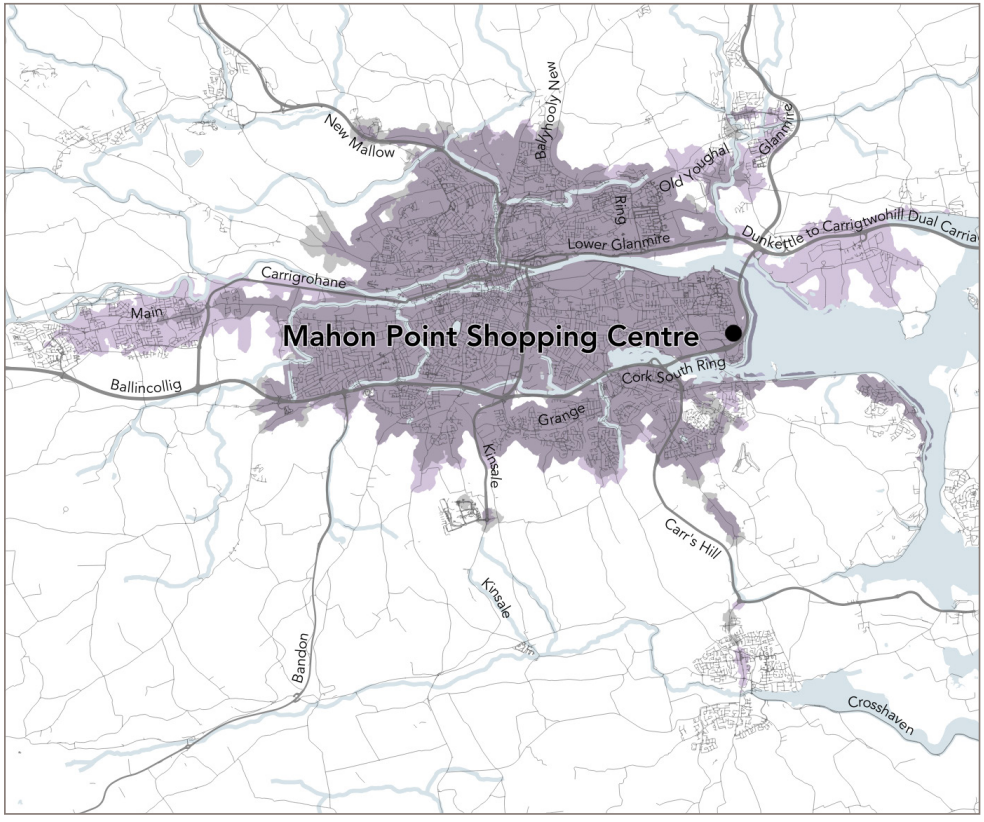
Visit the online map to make your own isochrones and see what the Draft New Network would do for you, then give your feedback using the form available on the project website.



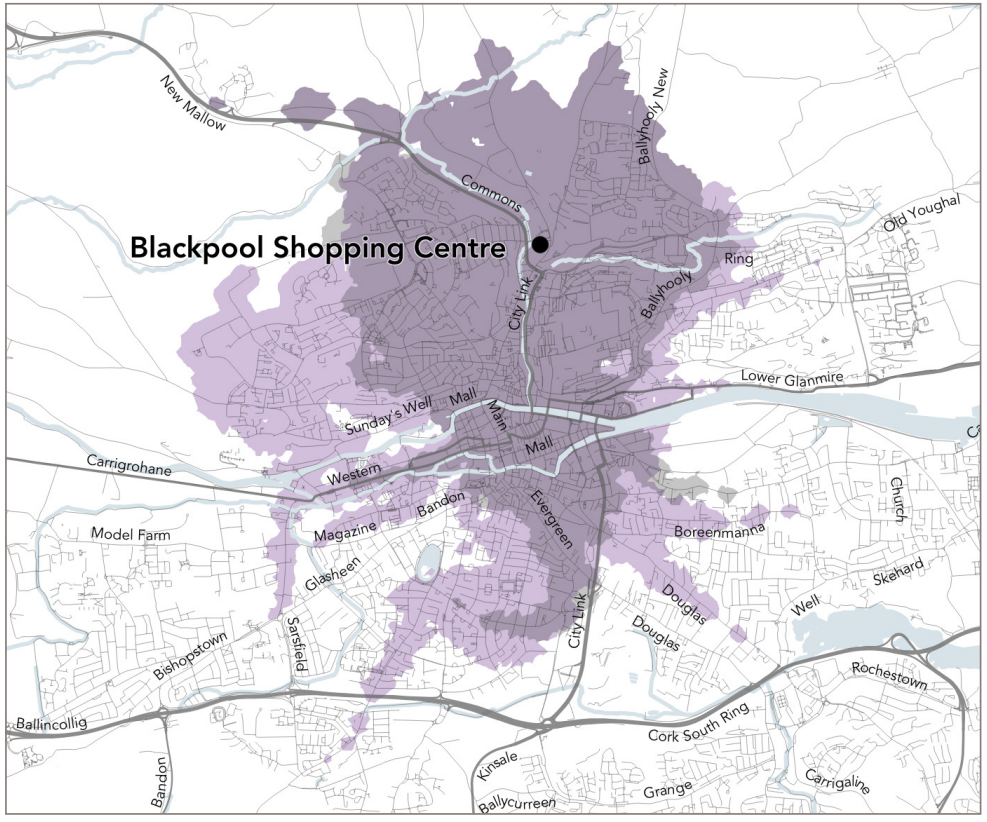
Residents near Carrigaline centre could reach 35% more jobs within 60-minutes (including all waiting time), in the Draft New Network.



The Ballincollig Tesco (and nearby businesses) would be within a 60-minute journey of 12% more residents.



The Mahon Point Shopping Centre, and nearby offices, would be within 60-minutes travel time of 9% more residents.



Eleven percent more residents could reach Blackpool Shopping Centre by bus in 30-minutes or less, including all wait time.

2 Public Input Guiding the Design

About the Phase One Consultation

To inform the Cork Network Redesign, the NTA, JWA and SYSTRA undertook an initial round of public consultation in July 2021.

Rather than start the planning process with a revised bus network, the process began with this initial consultation. A "Choices Report" was published, which reviewed the existing network and introduced choices that needed to be made in order to redesign the bus network.

In the initial consultation we sought feedback from the public about those choices. Cork residents' preferences and priorities informed development of the Draft New Network.

The consultation took place between the 1st July to the 21st July 2021. The consultation was publicised through local and national media, as well as NTA and local social media channels. A virtual public meeting was held on July 6th, comprising an information session followed by a Q&A with the planning team. The "Choices Report" was made available to the public through the BusConnects Cork website. During the three-week period, the public were invited to complete an online survey.

Submissions

1,121 completed, or partially completed, surveys were submitted to the NTA over the three-week consultation period, including a small number of responses completed on paper and submitted by post. In addition, 79 emails were sent directly to NTA.

Key Findings

- 1,200 total submissions
- 76% of respondents expressed a strong or very strong appetite for changes to the network that maximise benefits.
- Reducing vehicle travel and carbon emissions emerged as the most commonly stated goal, with nearly half of respondents selecting it.
- When given the choice between short waits or short walks to public transport, those who stated a preference for "short waits" or "whatever gets me to my destination soonest" represented 77% of the respondents (853). 19% of respondents chose "short walks."
    - "Bad weather" was the most commonly stated reason for preferring short walks
    - However, "bad weather" was also seen by many others as a reason for preferring shorter waits or getting to their destination as quickly as possible.
    - Large numbers of respondents who prefer short walks were concerned about the availability and safety of walking infrastructure.
    - In comments made by those favouring "short waits", many people mentioned that poor reliability makes it difficult to time their arrival at bus stops to minimise waits.
- The majority of respondents (76%) said they would accept more interchange if it would result in greater access and faster journeys for most people.

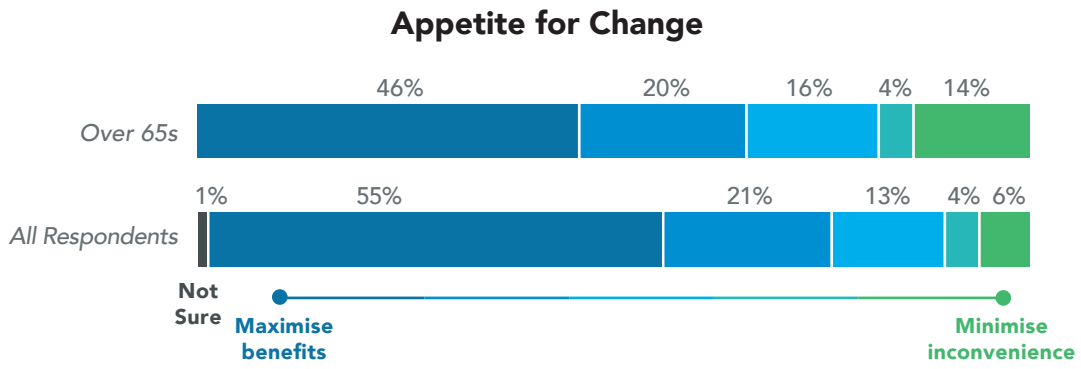
Appetite for Change

The respondents were asked to consider the level of change that is desirable and tolerable, given that any change to the network would be disruptive and cause inconvenience to some existing passengers. They were asked to respond on a scale from 1 (minimise inconvenience to existing users) to 5 (maximise benefits to large numbers of people).

The results show a very strong appetite for change with over half of respondents stating a preference for maximising benefits. 75% of respondents expressed a strong or very strong desire to maximise benefits.

10% of respondents expressed a strong or very strong preference to limit change if it were to result in possible inconveniences including having to walk a little further, or having to change buses for trip on which it's not required now.

Older respondents expressed more of a desire to minimise inconvenience than others. However, the majority (66%) stated a strong or very strong desire to maximise benefits rather than avoid inconveniencing existing passengers.



"Routes need to be revised; every bus does not need to take the longest route to reach everyone."

Defining "Success" for the Cork New Network

The public was asked what would it mean for a new Cork bus network to be "successful." Given a choice among five potential goal statements, the respondents could choose the two they considered to be the most important.

Reducing vehicle travel and carbon emissions emerged as the most commonly stated goal with nearly half of respondents selecting it as being important.

The second most-important goal for respondents was inclusion of all developed areas, regardless of patronage and regardless of need. This goal is in tension with the goal of and vehicle car travel (which requires increasing patronage).

The fact that these two goals were ranked #1 and #2 illustrates the challenge of a network redesign conducted within a limited budget. It is not possible to maximise progress towards both of these goals simultaneously – within a limited budget, even a growing budget, they must be balanced against one another.

Defining Success

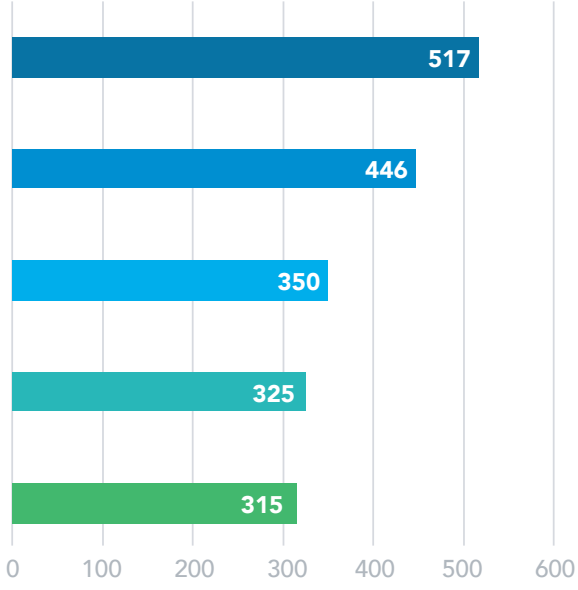
Reducing vehicle travel and carbon emissions - Fewer people traveling fewer kilometres by car, with the resulting reduction in harmful emissions.

Inclusion of all developed areas - Provision of transport in all developed parts of the Cork Metropolitan Area, regardless of the needs of people in each area and regardless of patronage.

Limiting congestion - Continued growth of Cork's population and economy without more growth in congestion.

Inclusion of people with severe needs or disadvantages - Provision of bus routes that help people in situations of disadvantage be independent and participate in society.

High patronage - Large numbers of people using transport.



"Taking the bus would be more convenient and help reduce carbon emissions."

''I for one would much rather use a bus and reduce my emissions."

"It is important to be able to get to more destinations by bus so that people don't have to use a car."

"With an ever growing population and large scale developments planned this would seem like an opportune time to have a regular bus service for the area. There will be serious congestion issues if all of these new residents are to drive into the city for work."

Shorter Walks or Shorter Waits?

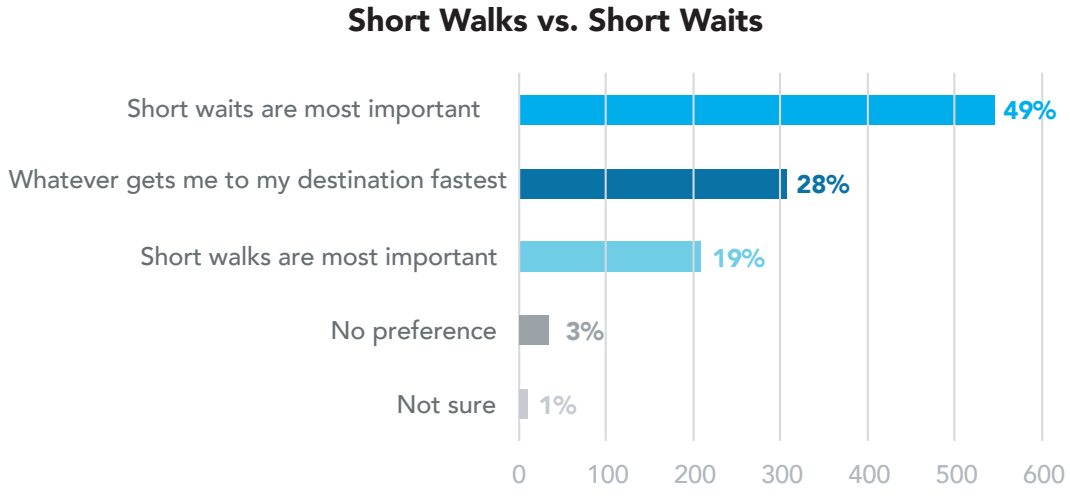
A key choice in the design of the Cork bus network is the balance between coverage and frequency of the network within an acceptable level of resource (buses). The respondents were asked to consider situations where some parts of the Cork network operate on nearby parallel roads, with the result that many people are close to two routes that are heading in the same direction. Focusing service on key corridors to make some routes more frequent can actually make people's trips faster, despite requiring longer walks.

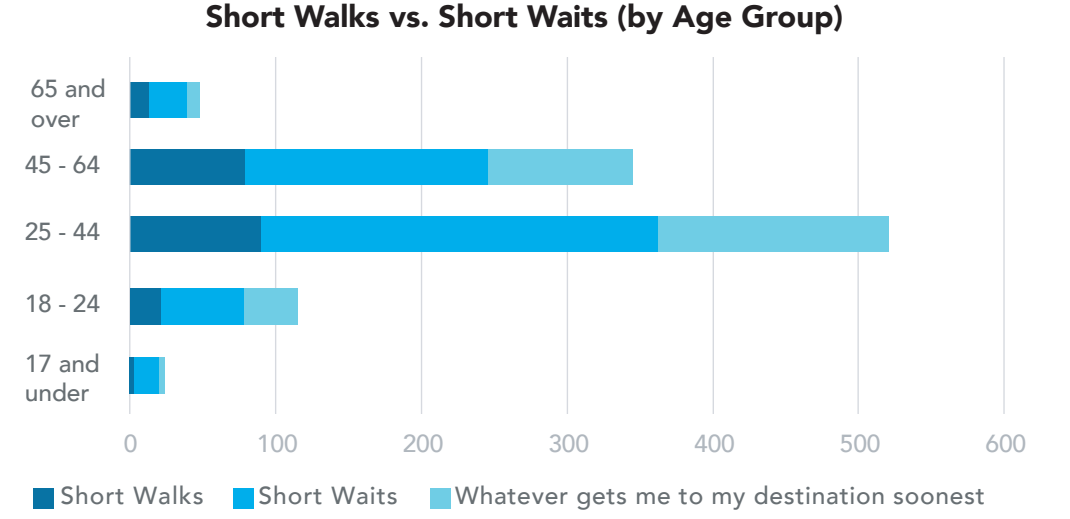
The respondents were asked about walking and waiting, and given a range of possible responses. The responses to this question are summarised in the chart to the right.

49% of respondents stated that short waits are more important to them compared, whereas 19% of respondents expressed a preference for short walks.

28% of respondents stated that they'll do whatever gets them to the destination soonest. This would include short waits where a consolidation of the network concentrates buses within higher frequency routes resulting in overall shorter journey times despite longer walks for some.

Very few respondents (only 4%) expressed no preference or were unsure.





77% of respondents said "short waits are more important" or "I'll do whatever gets me to my destination soonest" (top). Older respondents were slightly more likely to choose "short walks," though a majority of them still preferred "short waits" or getting to their destination as soon as possible (bottom).

Of those aged over 65, 69% who answered this question picked either "short waits are more important" or "I'll do whatever gets me to my destination soonest" (as shown in the chart on the previous page, at bottom). However, participation by older persons was low. Additional effort will be made during Phase Two to engage those over the age of 65.

There was no discernible variation in responses to this question by geographic location.

Reasons for wanting short walks or short waits

Subsequent to answering the question on short walks or short waits, the respondents were asked why they chose their response. A set of potential reasons was presented.

Those said they prefer having short walks represent 19% of the respondents (208). The top three reasons selected (as shown in the chart on the right) are:

- 'Bad weather' (118)
- Safety concerns: 'Not enough useful footpaths or crossings' (88), 'I'm concerned for my safety whilst walking' (71).

In additional comments, some respondents expressed that they are able to time their journey to the bus schedule, which gives them a short wait as well as a short walk.

"With online bus times available I can time when I leave."

"For the elderly, people with a disability."

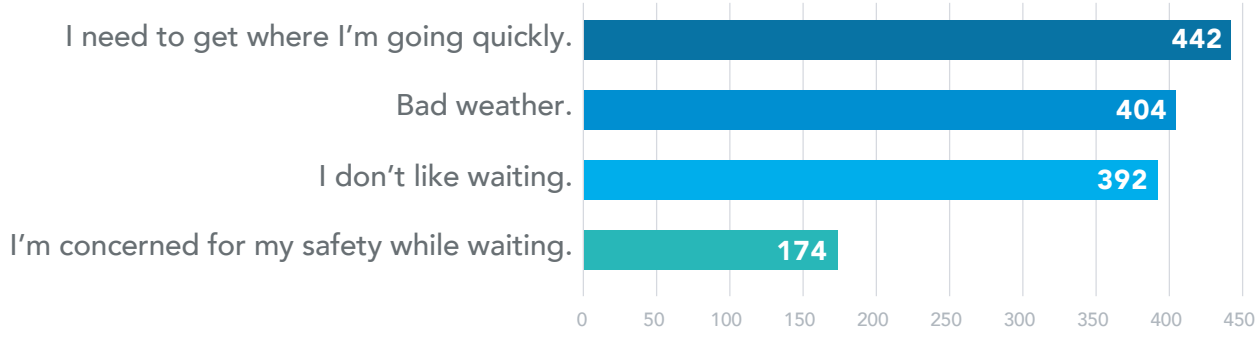
Those who stated a preference for short waits or "whatever gets me to my destination soonest" represented 77% of the respondents (853). Therefore, most of the respondents expressed that the new network should be designed for faster journeys and shorter waits, even if that meant some journeys require a longer walk.

Three main reasons were almost equally given for those who chose either of these answers (as shown in the chart on the right): 'I need to get where I'm going quickly', 'Bad weather', and 'I don't like waiting'.

In additional comments, many respondents mentioned that poor reliability makes it difficult to time arrivals at bus stops to minimise waits. The impact of cancelled or missed buses is perceived as being worse when waits between buses are longer.

Others expressed a preference for spending time walking rather than spending time waiting.

If "short waits" or "whatever gets me to my destination soonest", why?



Interchange or Complexity?

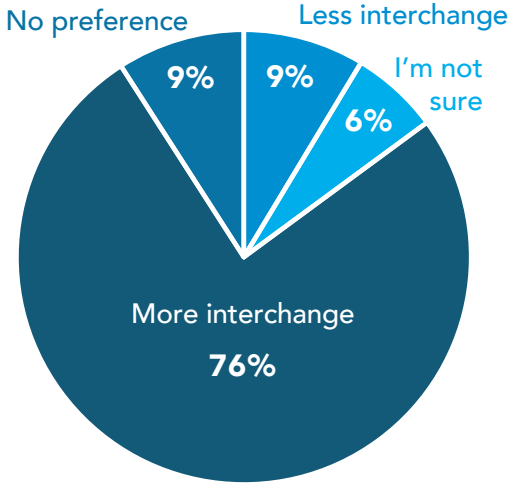
There is a trade-off between interchange and complexity that arises in many transport networks. The more a public transport network is designed to avoid interchange, the more complex it must be, and the poorer the frequency of many routes.

Respondents were asked to consider whether it would be worthwhile to incorporate more interchange if it resulted in greater access and faster journeys for most people. They were made aware that, as part of the BusConnects programme, the additional charge to interchange will be eliminated in Cork, bus stops will be improved and bus arrivals will be made more reliable.

The overwhelming majority of the respondents (76%, 836 respondents) agreed on designing a network with more interchanges to reduce journey times.

When asked why they would accept more interchange, the two main reasons mentioned were "I want the network to have higher patronage..." (415) and "I need to get to where I'm going quickly" (406).

More interchange for faster journeys?

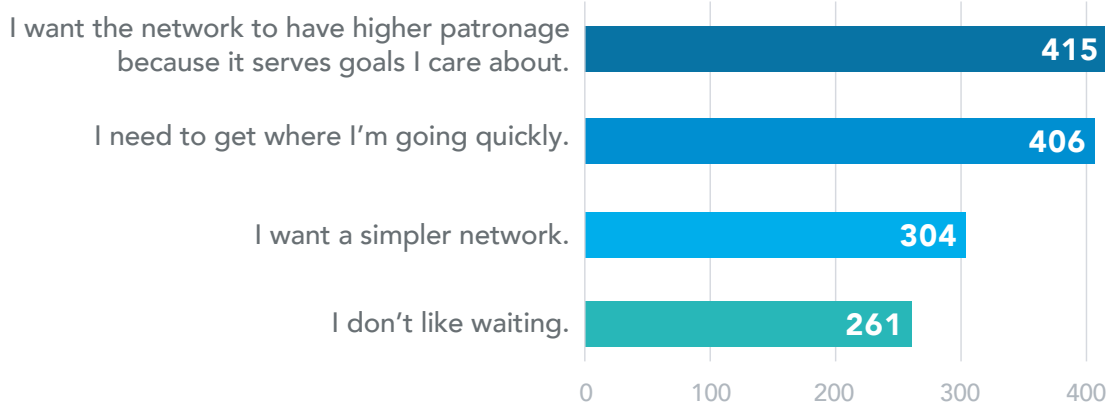


"If buses are more frequent and you're not charged for 2 separate buses then it makes sense."

"I don't want my trips to be longer than they have to be."

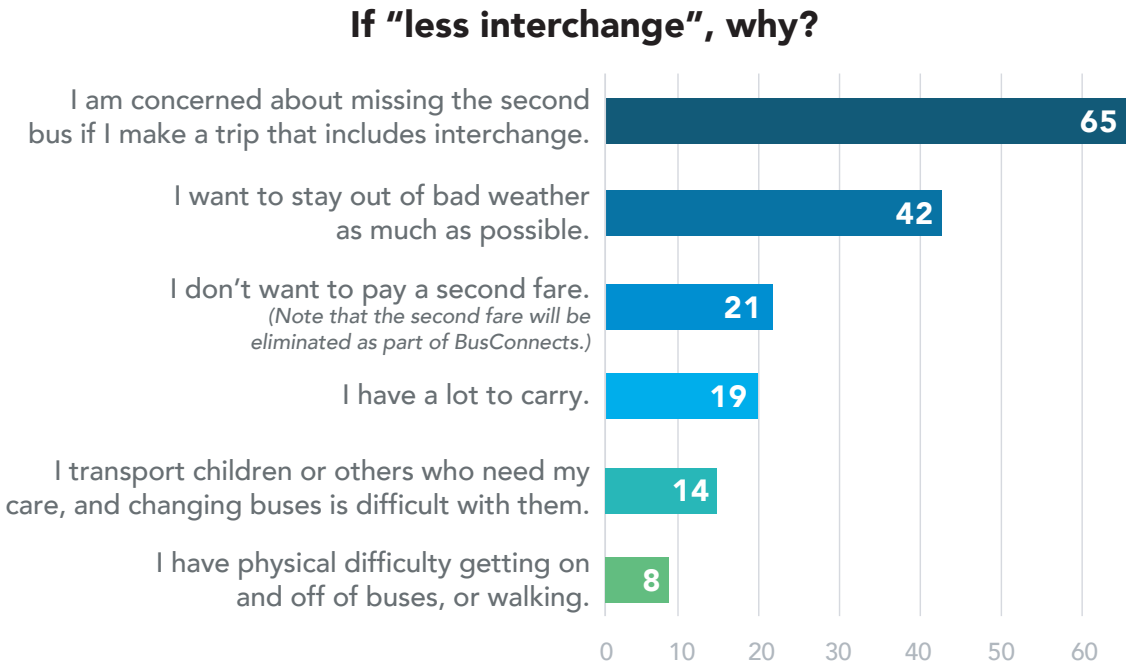
"I have lived in other European cities, where interchange WORKS! Bus/Metro/Tram and Bus to Bus."

If "more interchange", why?



Those who said that they would prefer less interchange were also asked why, with a set of responses to choose from. The most frequently stated concern was fear of missing the second bus if a trip included an interchange (65). A desire to stay out of bad weather was the second-most cited concern (42).

In additional comments, a number of respondents mentioned the disruption caused by interchange and the way it impacts their ability to make use of their time whilst travelling by bus. The stress and confusion of having to interchange mid-journey were also mentioned.



"With multiple buses coming and going I can get confused as to which bus is the correct bus for me."

"I like to read or get work done on the bus. I don't want to have to pack and unpack my belongings mid journey. I'd prefer an uninterrupted journey."

"Will there be seats on the second bus?"

Profile of Phase One Respondents

Residential area

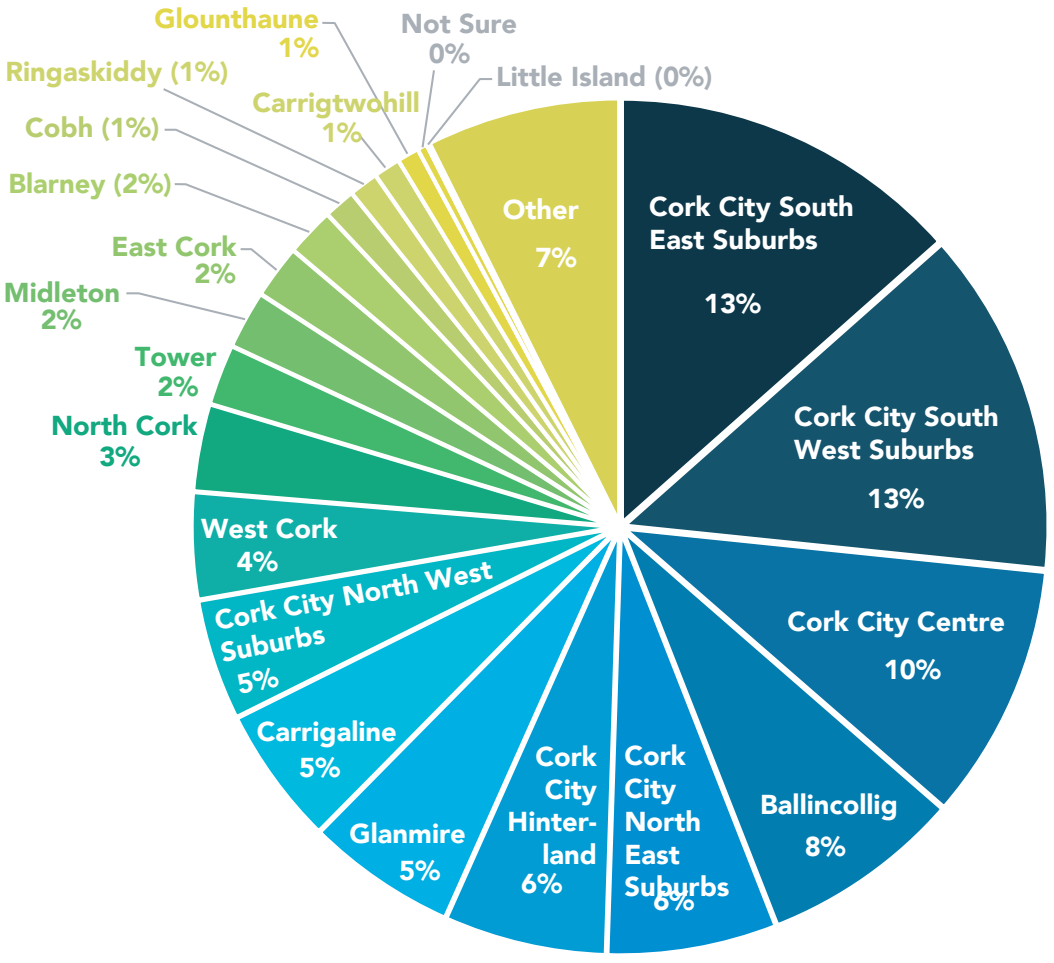
Respondents were asked to choose from a list of areas the place they live.

Over two thirds (71%) of the respondents said they were living in Cork City, with higher numbers of responses from the south city. This is consistent with the larger population within these parts of the City.

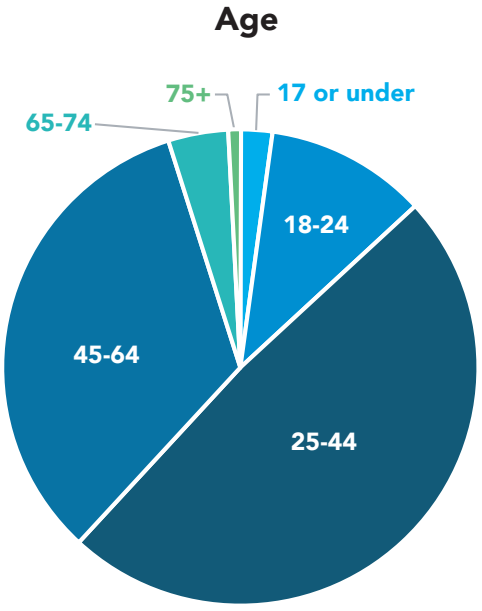
Within the Cork Metropolitan Area, there were many submissions from Carrigaline (57).

Overall, there was a wide distribution with submissions received from all parts of the CMA, roughly in proportion to residential population.

Location



Age

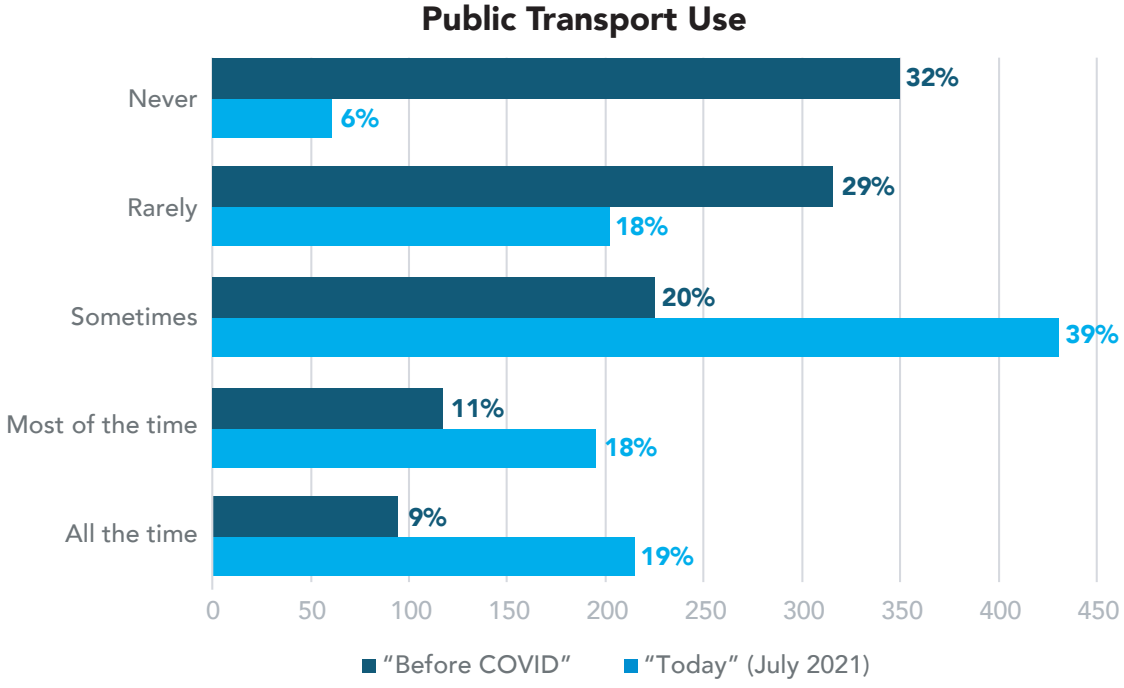


The majority of respondents were within the general working age population with 72% aged between 25 and 64.

It is important to note that only 5% of respondents were aged over 65, whereas this age group comprises around 13% of the population.[1] Additional effort will be made during Phase Two of public engagement to gather input from those over the age of 65.

1. As reported within the Cork City Socio-Economic Summary Profile, June 2020, Cork City Development Plan 2022-2028

Public transport use



Respondents were asked to indicate their level of public transport use before the COVID pandemic and at the time of the survey.

Overall, pre-COVID, around three quarters of the respondents used public transport at least sometimes, with 37% using it ''most of the time'', or ''all the time.'' This far exceeds the mode share of around 9% for public transport trips to work and education recorded in the Census in 2016.

The COVID pandemic brought a notable disruption in the usage of public transport. Only 40% of the respondents said that they used the bus at least "sometimes" in July 2021.

Additional Comments

Some respondents submitted additional information within the survey comment sections. In addition, 79 individuals and 5 organisations submitted additional information by email.

The table below shows the issues that were most often raised in emails to NTA. In general, the additional information related to requests for consideration of:

- Specific suggestions for how to change to the bus network;
- Retention of certain existing bus links; or
- Enhancement of existing bus links.

The areas mentioned most frequently were:

- White's Cross
- Upper Glanmire
- Kerry Pike Village
- Waterfall
- City Centre

In terms of destinations requiring bus access, hospitals and education facilities were highlighted by many as well as mentions of need for access to employment, shopping and leisure. A need to consider the needs of specific groups such as the elderly or those with a disability was also highlighted in some of the submissions.

Support for bus services	66
New service or service extension suggestion	49
Consider the existing network to have poor coverage	48
Bus network should serve new development areas / anticipated growth in population	14
Raised issues of poor walking environment impacting on access to buses	10
Included suggestions for higher frequency	6
Stated that the bus network needed to cater for those without access to a car or to address car dependency	6

"Looking forward to a greener more interconnected city and surrounding towns."

"The BusConnects network redesign is an opportunity to make the network simpler, more reliable and easier-to-use which in turn will attract a higher volume of users."

"We must think about all those who would use the service, and not only think about those who already do use the service..."

Conclusion

Overall, the majority of respondents expressed support for major changes to the bus network, and for a network designed to compete better with the use of cars, to provide shorter travel times for the most people, through more direct routes, and higher frequencies.

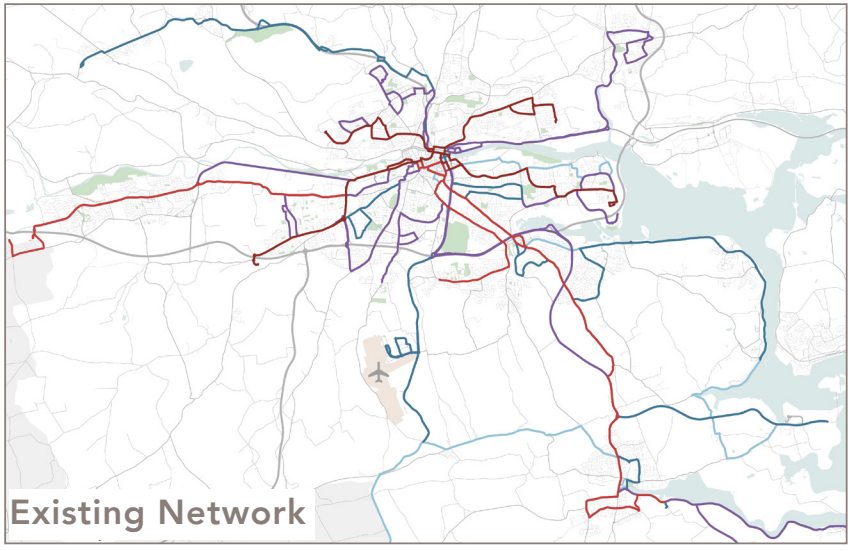
This support was expressed despite an awareness – expressed in the free-form comments submitted with the survey – about the disruptions and drawbacks associated with such changes.

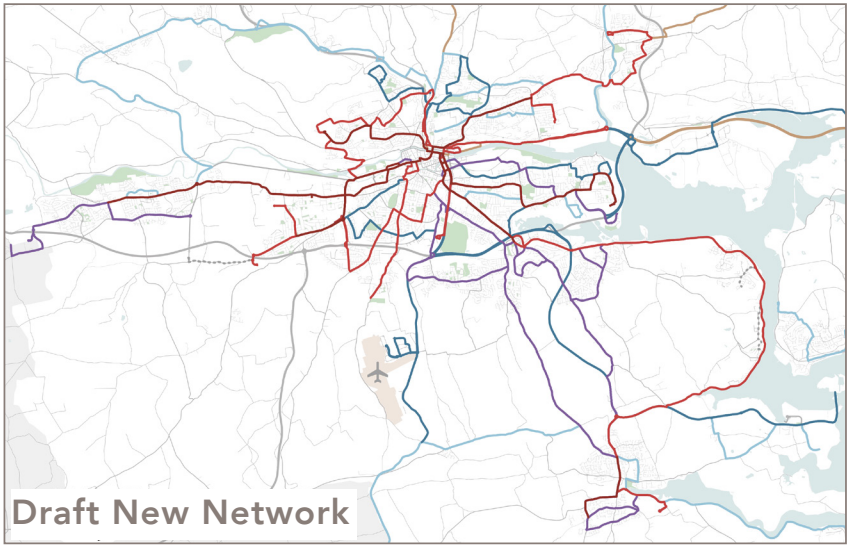
People look ready to accept longer walks to more frequent services, and more inter-changes between the routes as long as the network maximises the benefits to the many, reduces vehicle use and tackles the climate challenge.

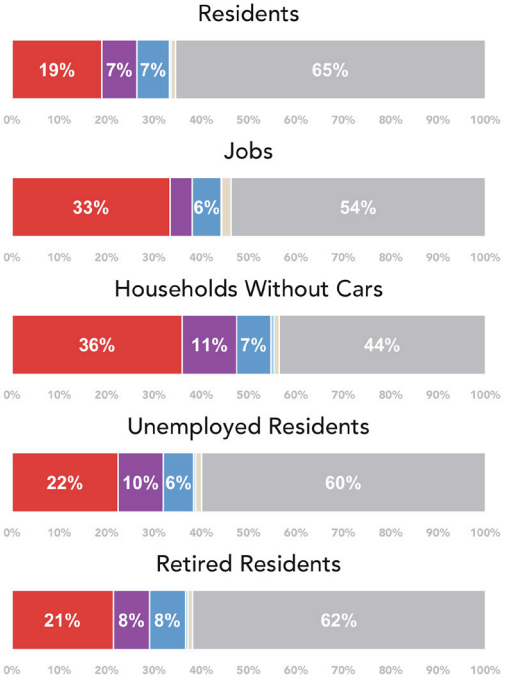
3 Snapshots of the Draft New Network

Weekday Early Morning

Some jobs and schools require an early-morning start, before all routes are running at their highest peak frequencies.

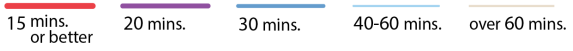






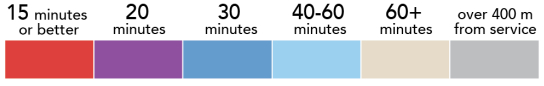
Map legend:

Cork PSO bus routes coming approx. every



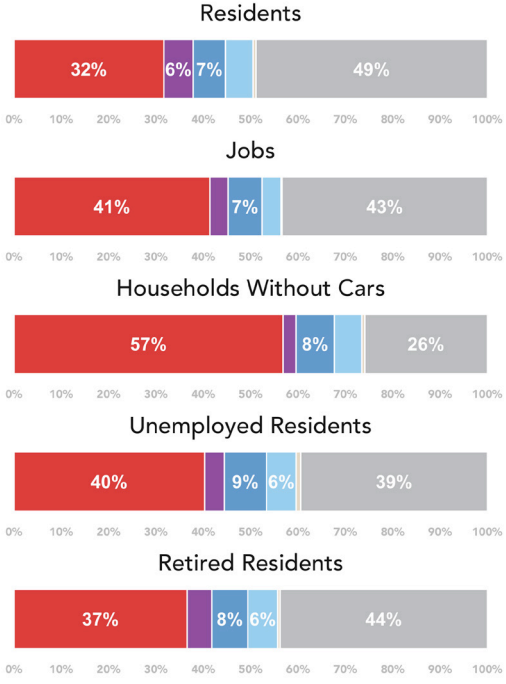
Graph legend:

Within 400 m walk of buses or trains coming approx. every

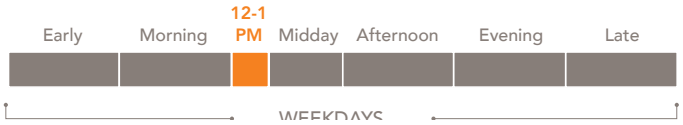


The graph at left shows the percentage of residents and jobs in the CMA that are today within a 400 metre walk of public transport, and at what frequency, between 6:00 and 7:00 am on weekdays.

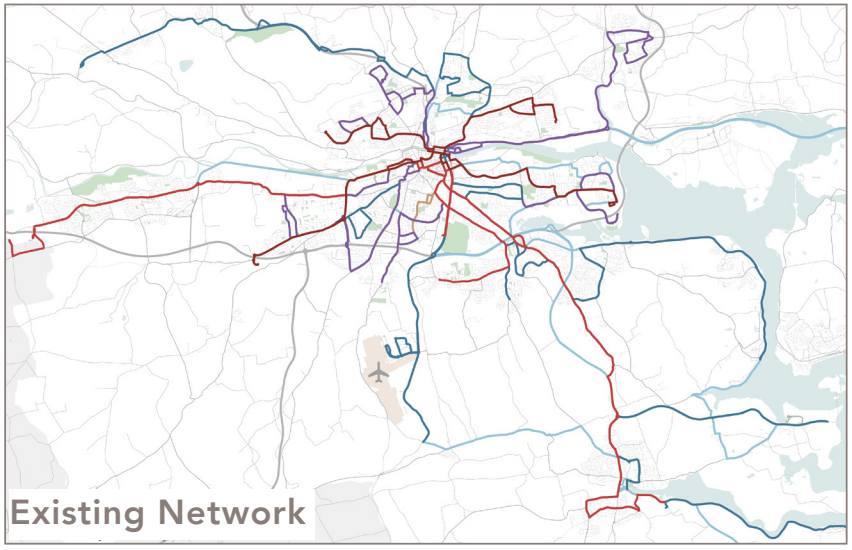
The graph on the right shows the same measure for the Draft New Network.

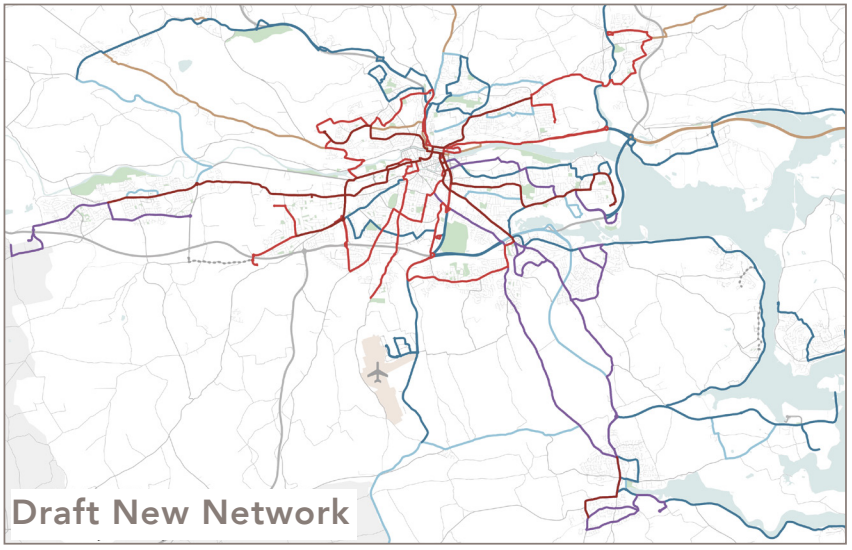


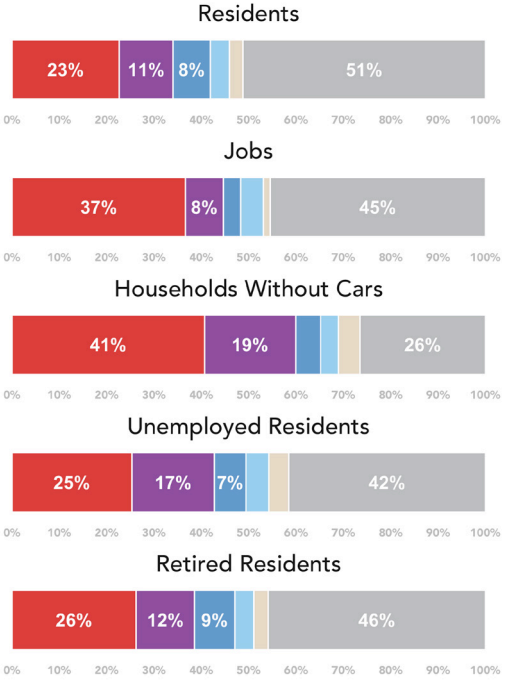
Weekday Midday



Many people need to travel at midday whether they are coming home from an early shift, getting off work or school early, going to a meeting or running an errand.

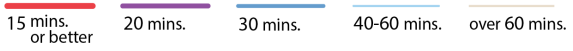






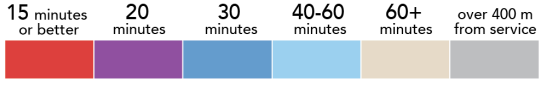
Map legend:

Cork PSO bus routes coming approx. every



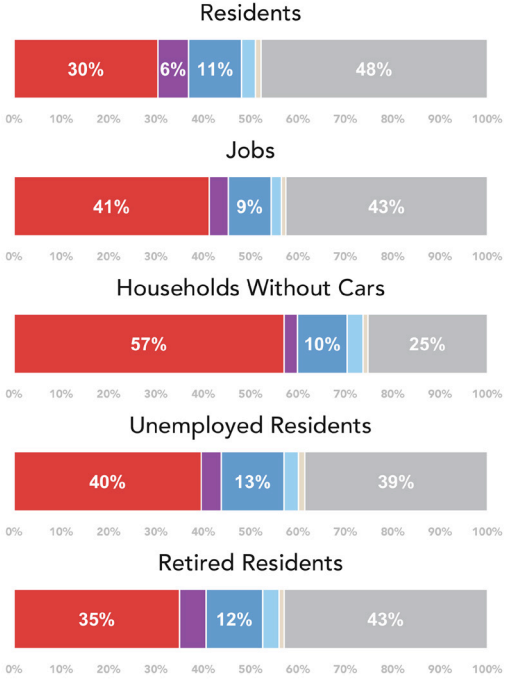
Graph legend:

Within 400 m walk of buses or trains coming approx. every

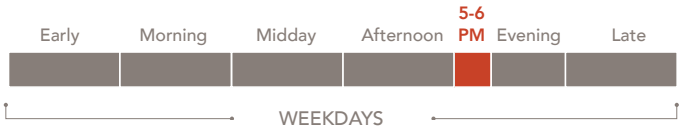


The graph at left shows the percentage of residents and jobs in the CMA that are today within a 400 metre walk of public transport, and at what frequency, at midday on weekdays.

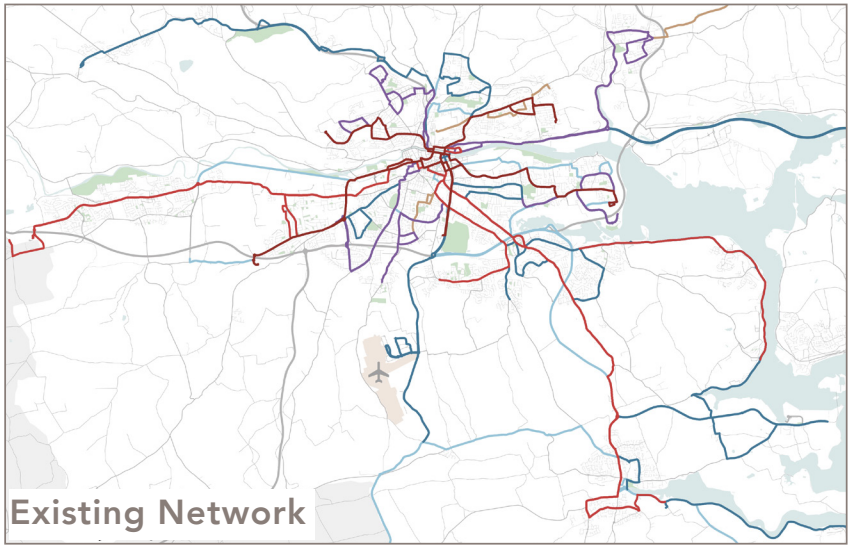
The graph on the right shows the same measure for the Draft New Network.

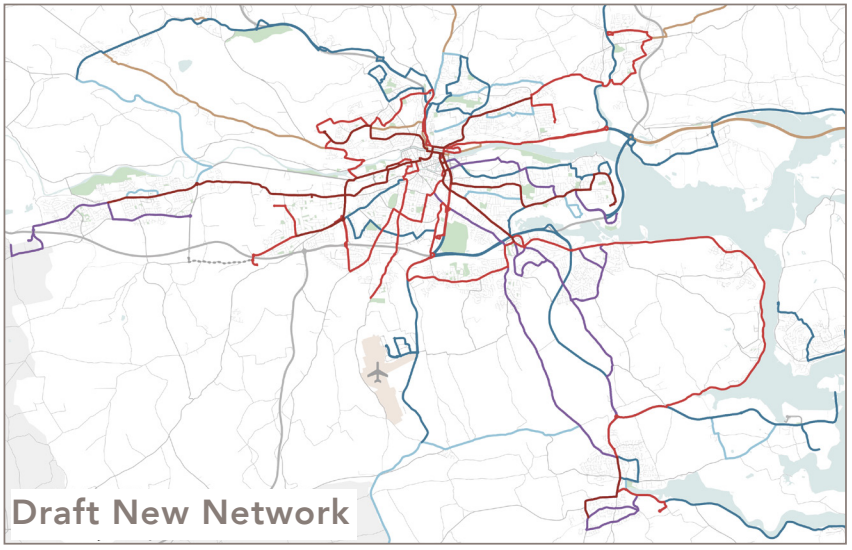


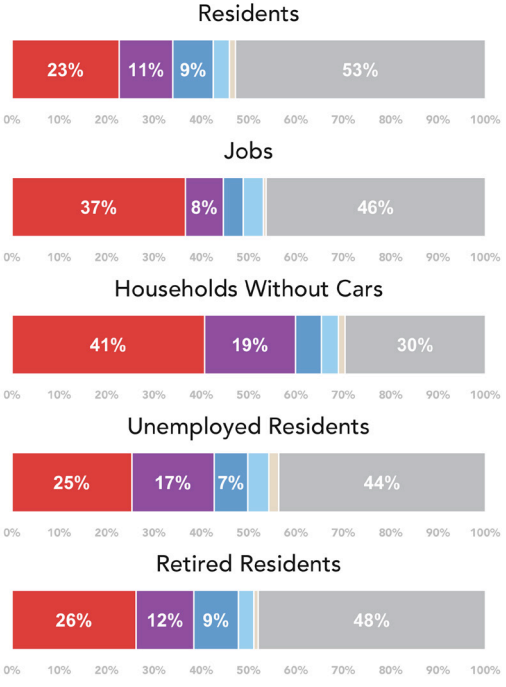
Weekday Peak



The evening rush hour is typically the busiest time for Cork's bus network. Many people journey home from work or school just as others are running errands or going out to socialise.







Map legend:

Cork PSO bus routes coming approx. every

15 mins. or better | 20 mins. | 30 mins. | 40-60 mins. | over 60 mins.

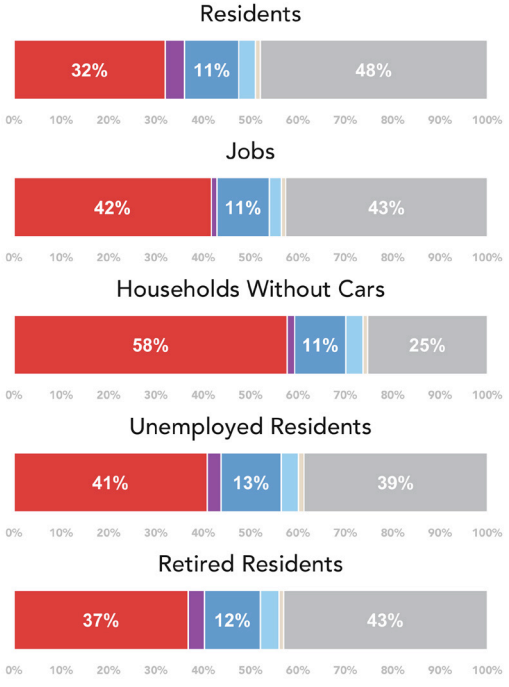
Graph legend:

Within 400 m walk of buses or trains coming approx. every

15 minutes or better | 20 minutes | 30 minutes | 40-60 minutes | 60+ minutes | over 400 m from service

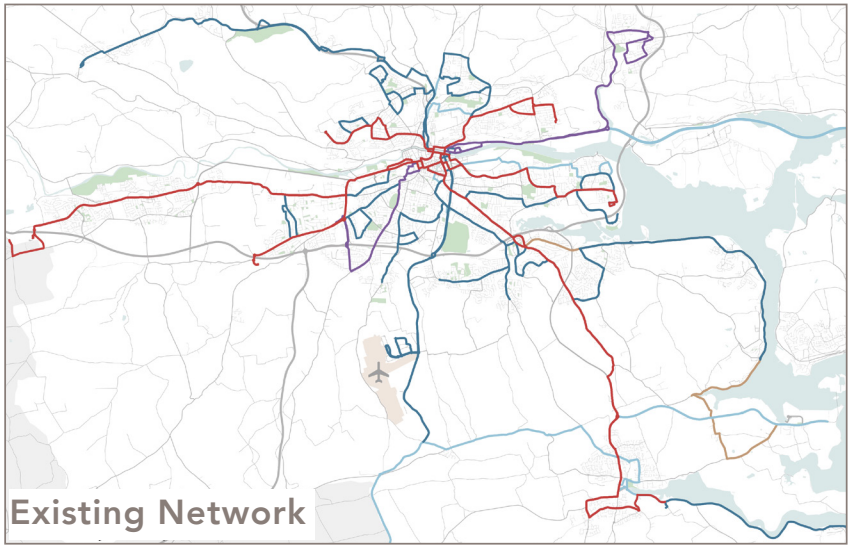
The graph at left shows the percentage of residents and jobs in the CMA that are today within a 400 metre walk of public transport, and at what frequency, between 5:00 and 6:00 pm on weekdays.

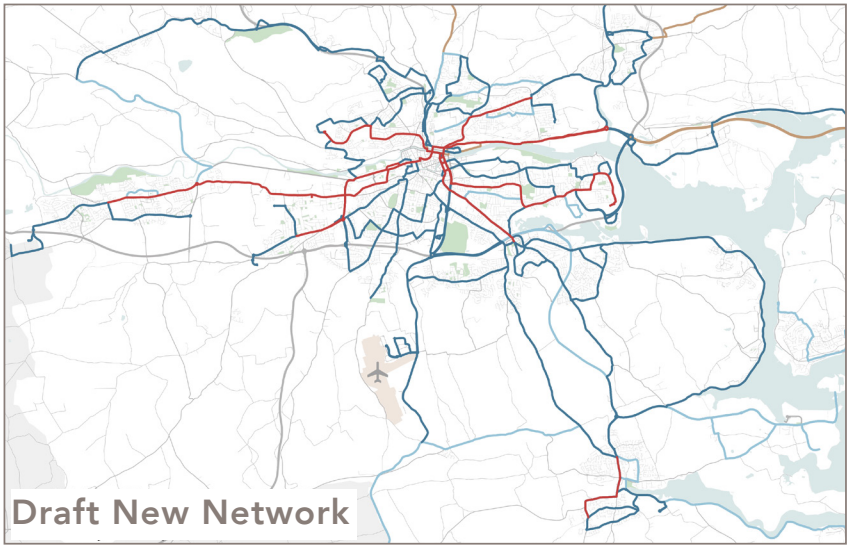
The graph on the right shows the same measure for the Draft New Network.

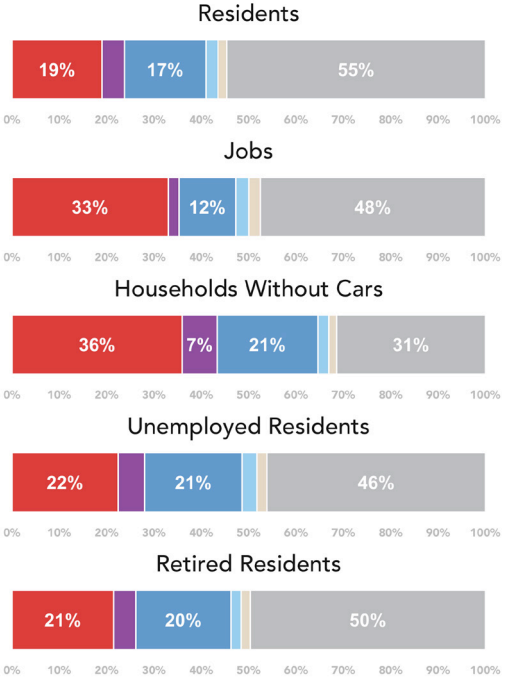


Weekday Late Evening

Late evening service rarely gets as much patronage as daytime service, but it is an important part of the network because it allows people to rely on public transport for journeys at any time of day.







Map legend:

Cork PSO bus routes coming approx. every

15 mins. or better | 20 mins. | 30 mins. | 40-60 mins. | over 60 mins.

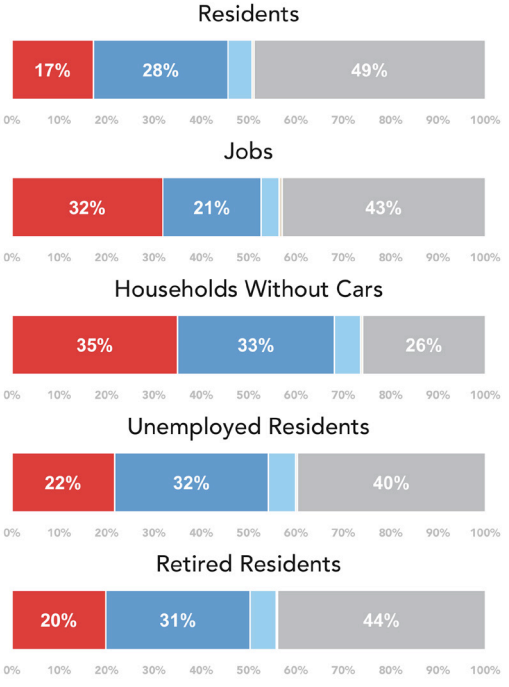
Graph legend:

Within 400 m walk of buses or trains coming approx. every

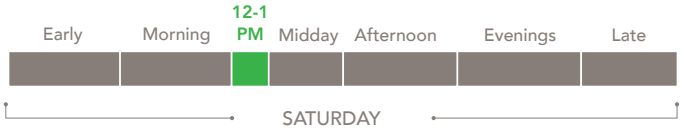
15 minutes or better | 20 minutes | 30 minutes | 40-60 minutes | 60+ minutes | over 400 m from service

The graph at left shows the percentage of residents and jobs in the CMA that are today within a 400 metre walk of public transport, and at what frequency, between 9:00 and 10:00 pm on weekdays.

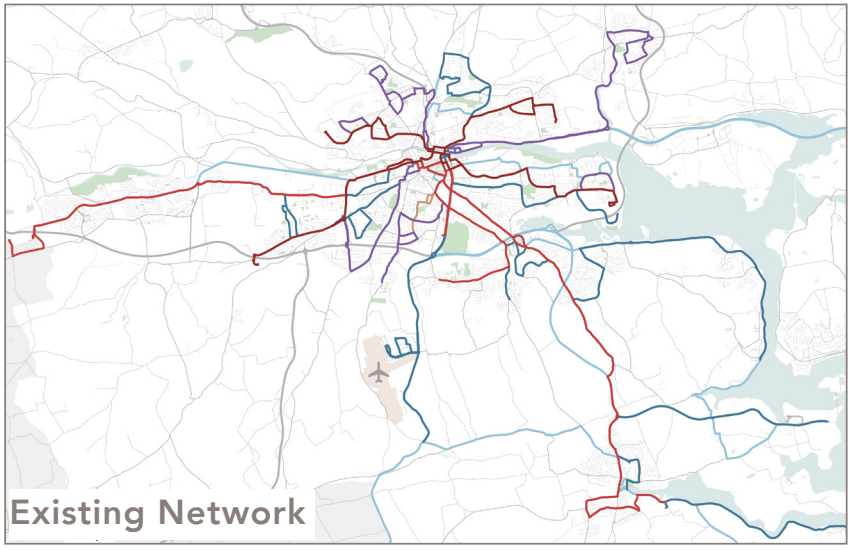
The graph on the right shows the same measure for the Draft New Network.

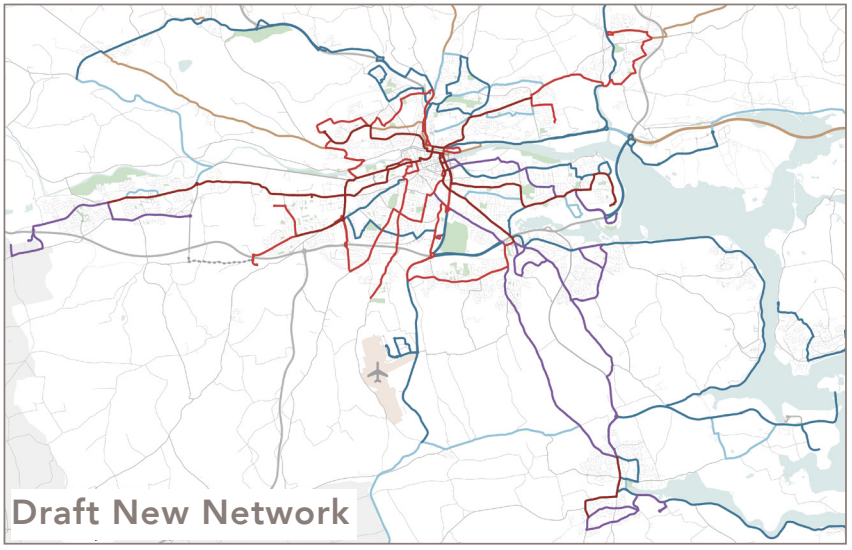


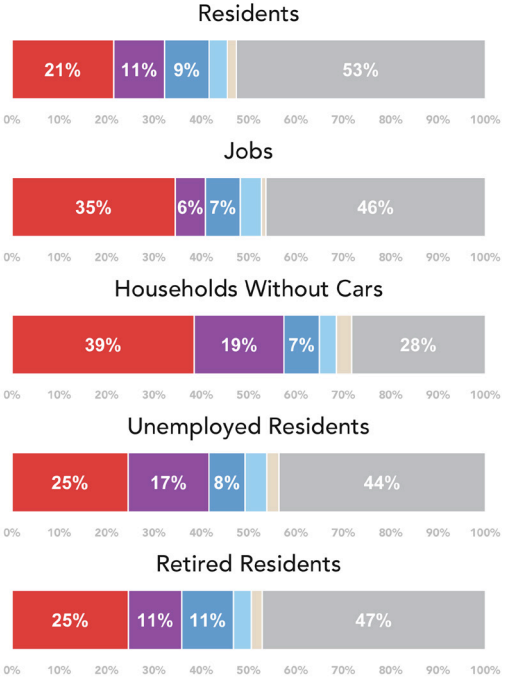
Saturday Midday



Weekend travel has grown over recent decades, as more people take journeys for shopping and socialising and as industrial and service work grows on weekends.







Map legend:

Cork PSO bus routes coming approx. every

15 mins. or better | 20 mins. | 30 mins. | 40-60 mins. | over 60 mins.

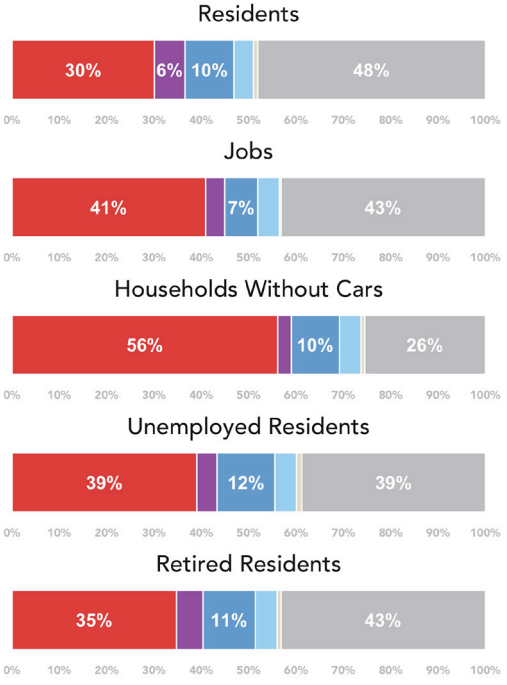
Graph legend:

Within 400 m walk of buses or trains coming approx. every

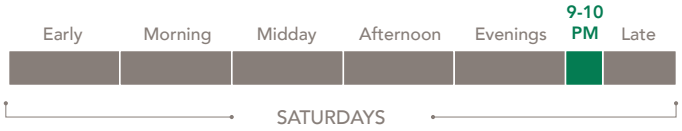
15 minutes or better | 20 minutes | 30 minutes | 40-60 minutes | 60+ minutes | over 400 m from service

The graph at left shows the percentage of residents and jobs in the CMA that are today within a 400 metre walk of public transport, and at what frequency, at midday on Saturdays.

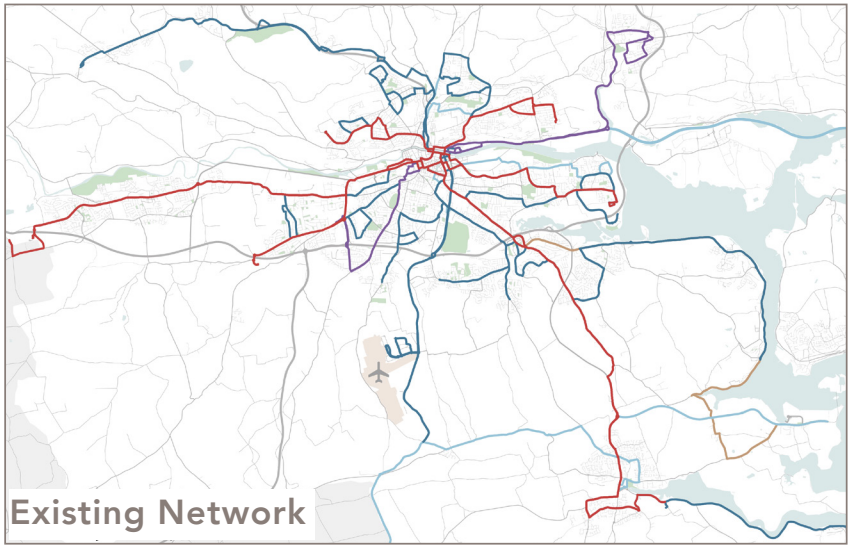
The graph on the right shows the same measure for the Draft New Network.

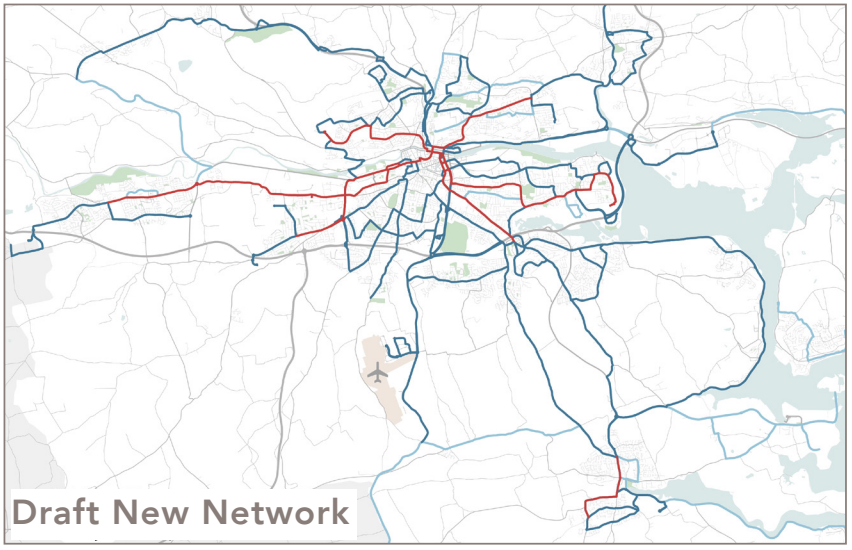


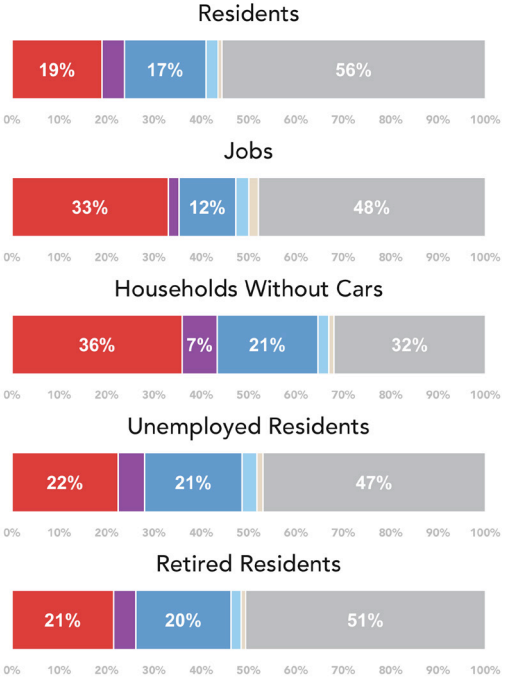
Saturday Late Evening



Weekend evening service is important not only for social outings, but also for the people who work in restaurants, bars, health care, and other all-week jobs.

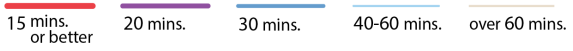






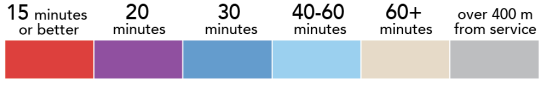
Map legend:

Cork PSO bus routes coming approx. every



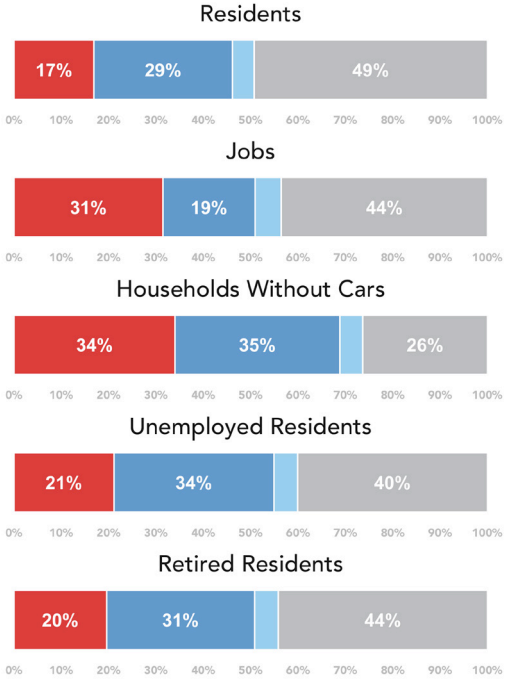
Graph legend:

Within 400 m walk of buses or trains coming approx. every

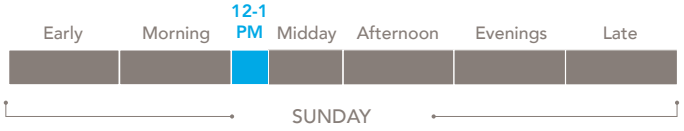


The graph at left shows the percentage of residents and jobs in the CMA that are today within a 400 metre walk of public transport, and at what frequency, between 9:00 and 10:00 pm on Saturdays.

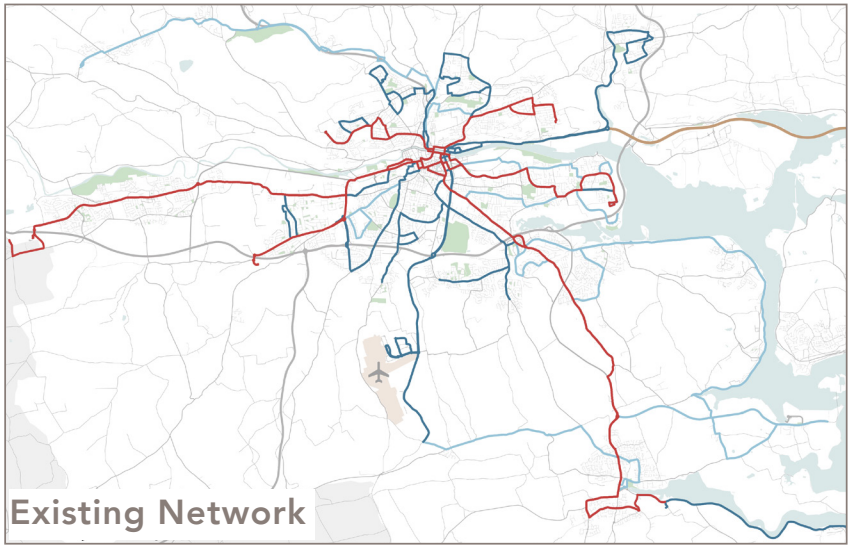
The graph on the right shows the same measure for the Draft New Network.

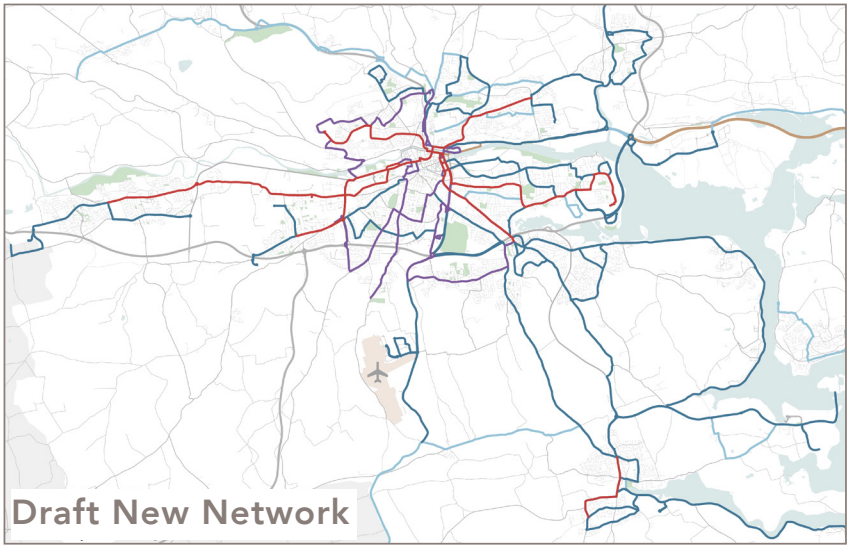


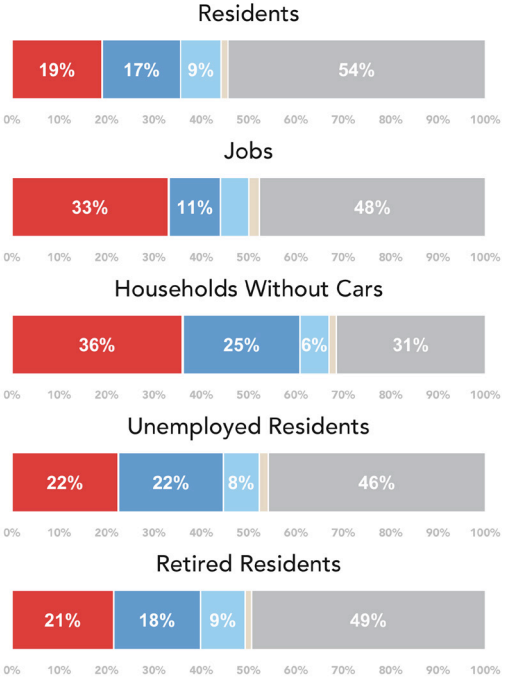
Sunday Midday



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







Map legend:

Cork PSO bus routes coming approx. every

15 mins. or better | 20 mins. | 30 mins. | 40-60 mins. | over 60 mins.

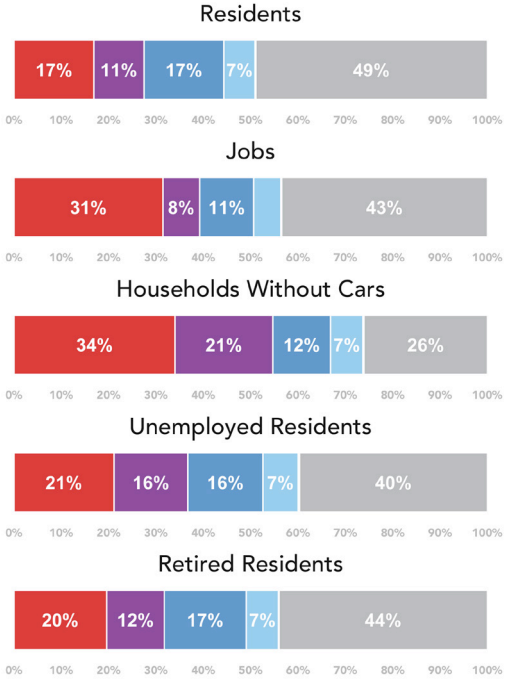
Graph legend:

Within 400 m walk of buses or trains coming approx. every

15 minutes or better | 20 minutes | 30 minutes | 40-60 minutes | 60+ minutes | over 400 m from service

The graph at left shows the percentage of residents and jobs in the CMA that are today within a 400 metre walk of public transport, and at what frequency, at midday on Sundays

The graph on the right shows the same measure for the Draft New Network.



This report continues in an Appendix, which contains many detailed maps and tables, beginning with page 46.

To control file size, the Appendix has been published separately. It is available on the project website, directly below the link to download this report.

A Appendix: Detailed Tables and Maps

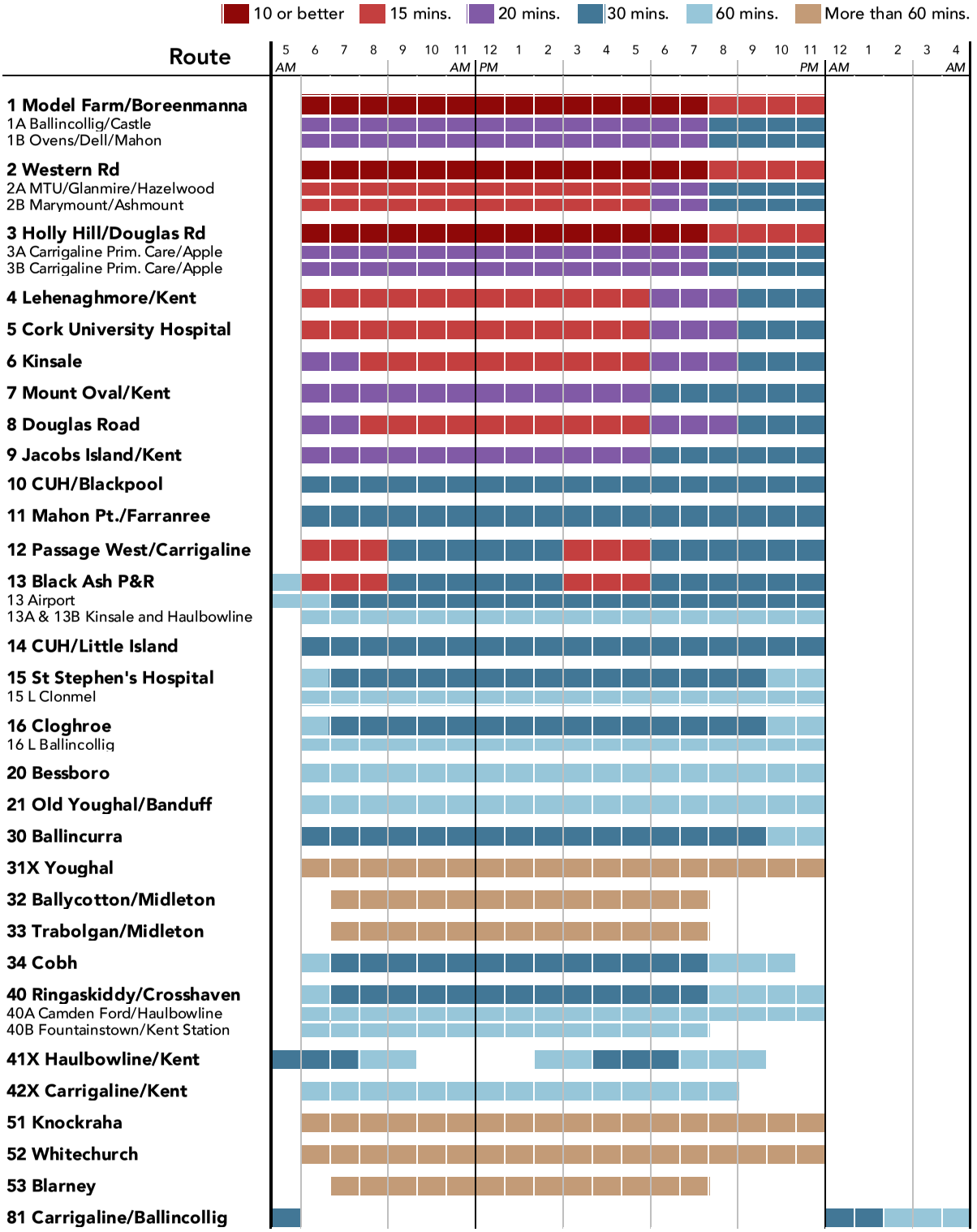
Draft Route Frequencies and Hours

This table shows the proposed frequency and hours of service for each route in the Draft New Network.

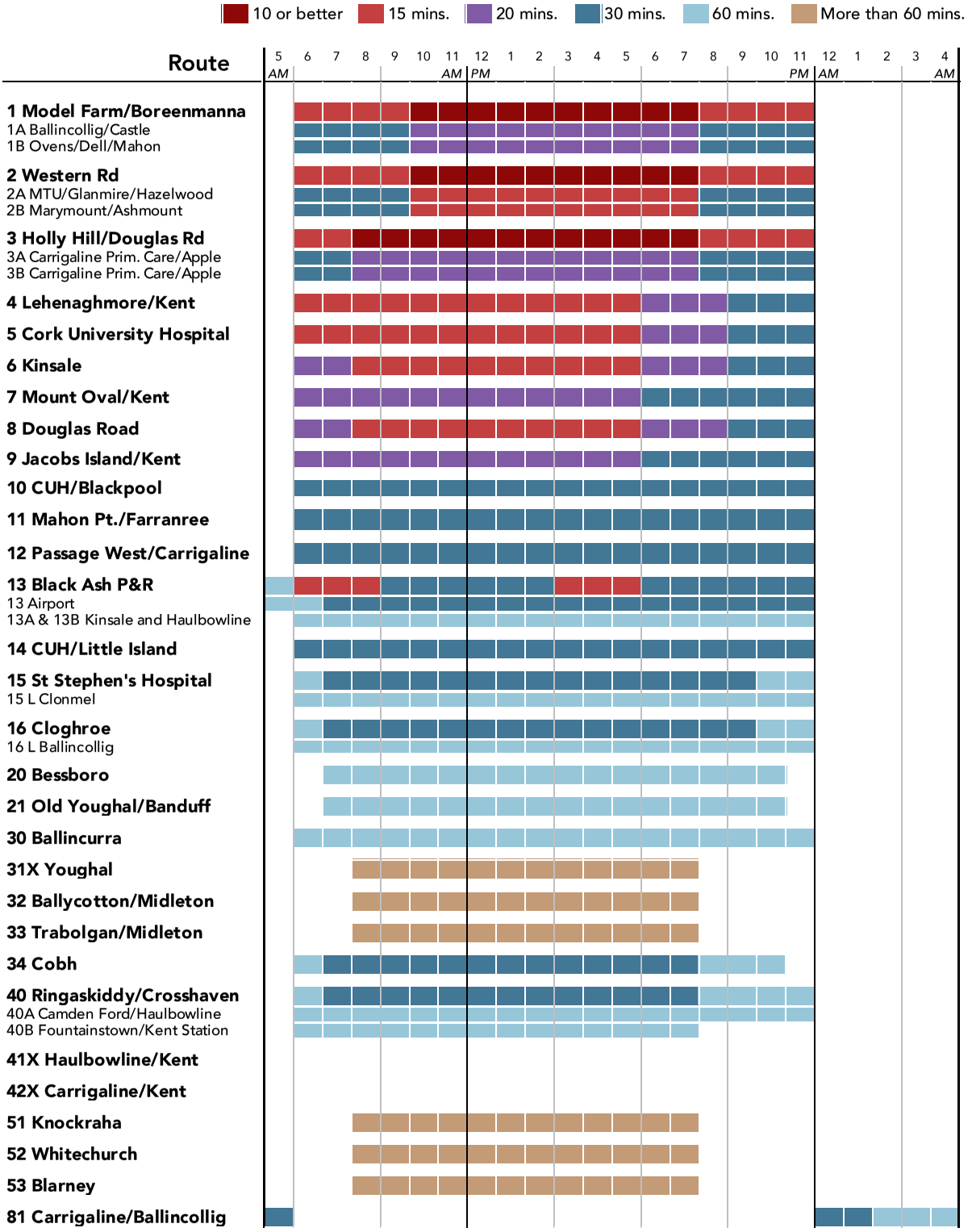
The start and end times shown here are **approximate**.

Most routes would start service at different times in each direction, from the two ends of the route, depending on the direction of prevailing demand. For example, a route shown here with service starting at 6:00 am might, in practice, have an inbound trip beginning at 5:30 am and outbound trip beginning at 6:15 am, or vice versa.

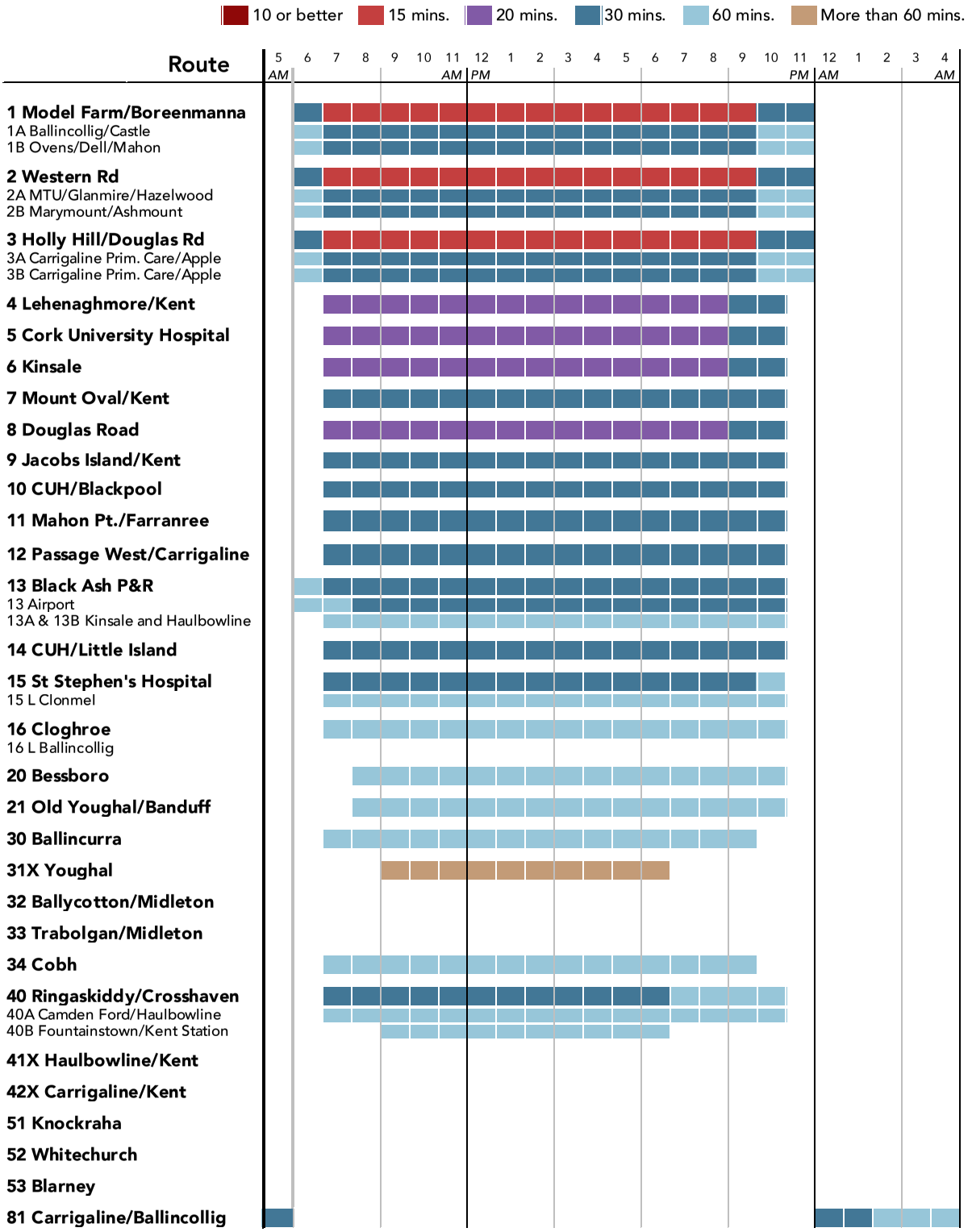
Weekdays



Saturdays in the Draft New Network

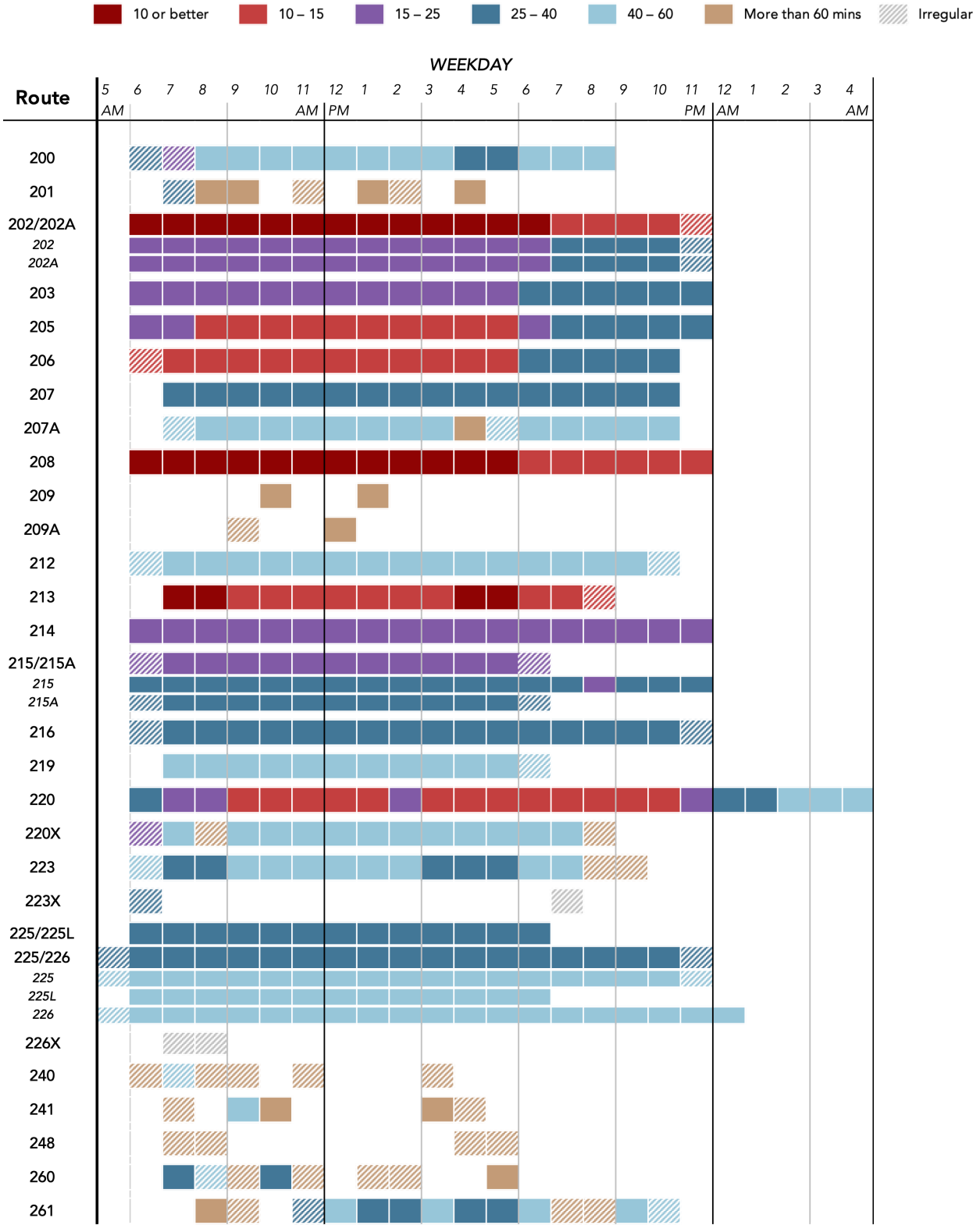


Sundays in the Draft New Network

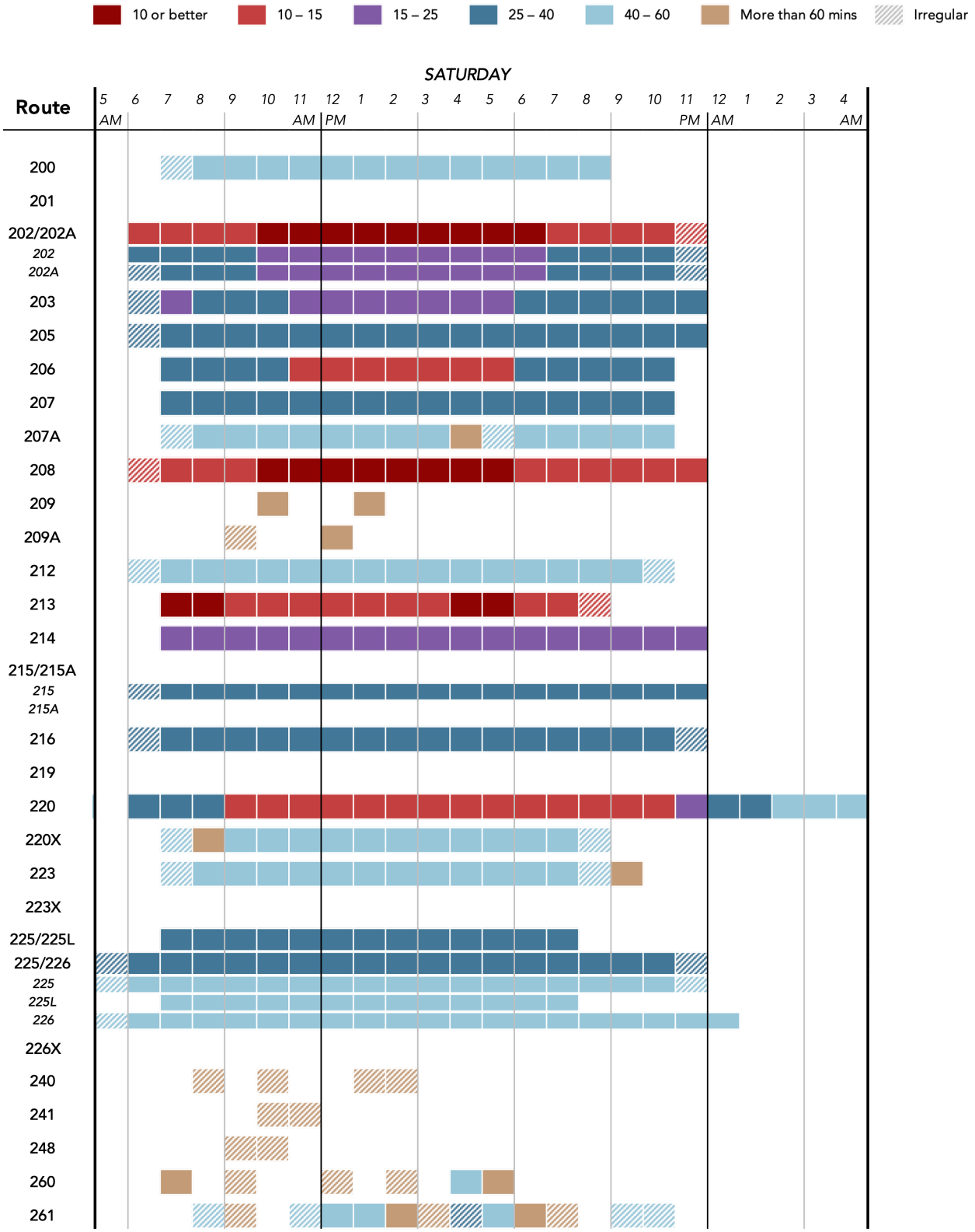


Existing Route Frequencies and Hours

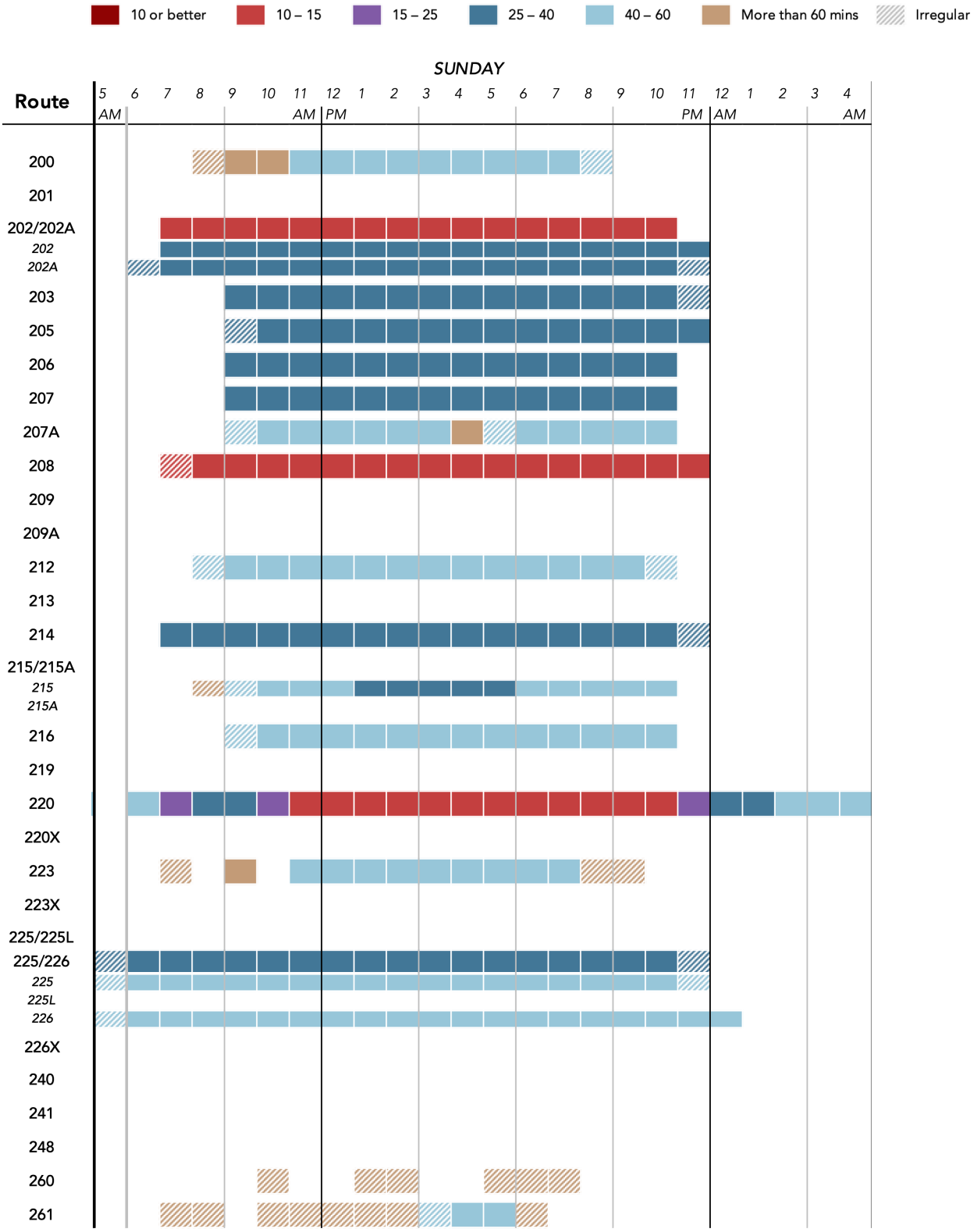
Weekdays in the Existing Network



Saturdays in the Existing Network



Sundays in the Existing Network



Network Maps

The maps on the following pages show the Draft New Network in different areas of the CMA. Subsequent maps show the existing network at three scales.

On these maps, **route colours represent weekday midday frequencies**.

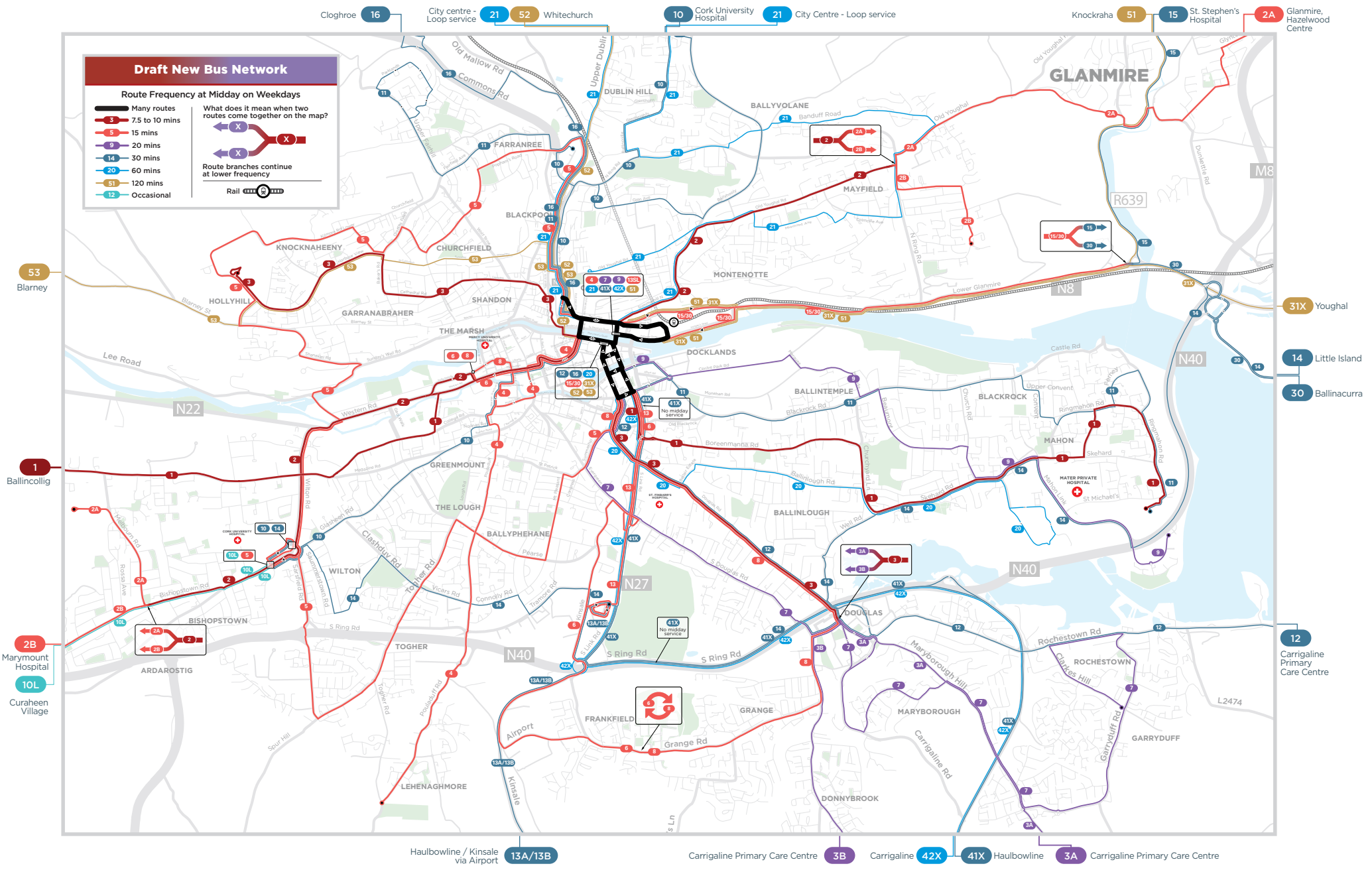
Red represents frequent service, with a bus coming every 15 minutes or better, in the midday on weekdays, and **dark red** indicates service every 7.5 or 10 minutes.

Purple is for routes coming every 20 minutes. **Dark blue** routes come every 30 minutes and **light blue** come every 60 minutes. **Brown** routes offer service at lower frequencies, such as every two hours.

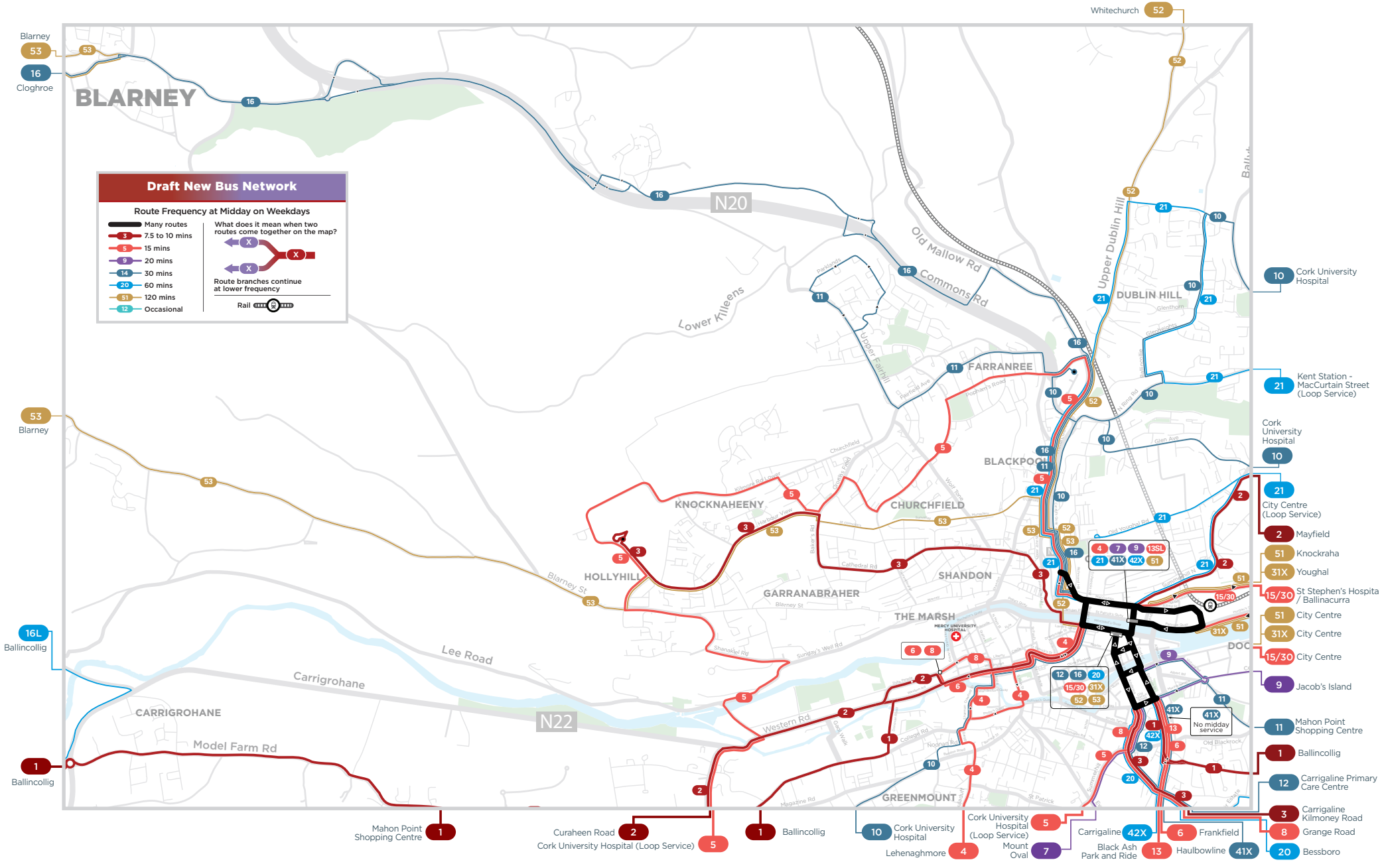
To understand routes' frequencies at all times of the week, and proposed hours of service, review the tables starting on page 47.

For even more detail, and to compare existing and proposed new routes in a given area, visit the online map.

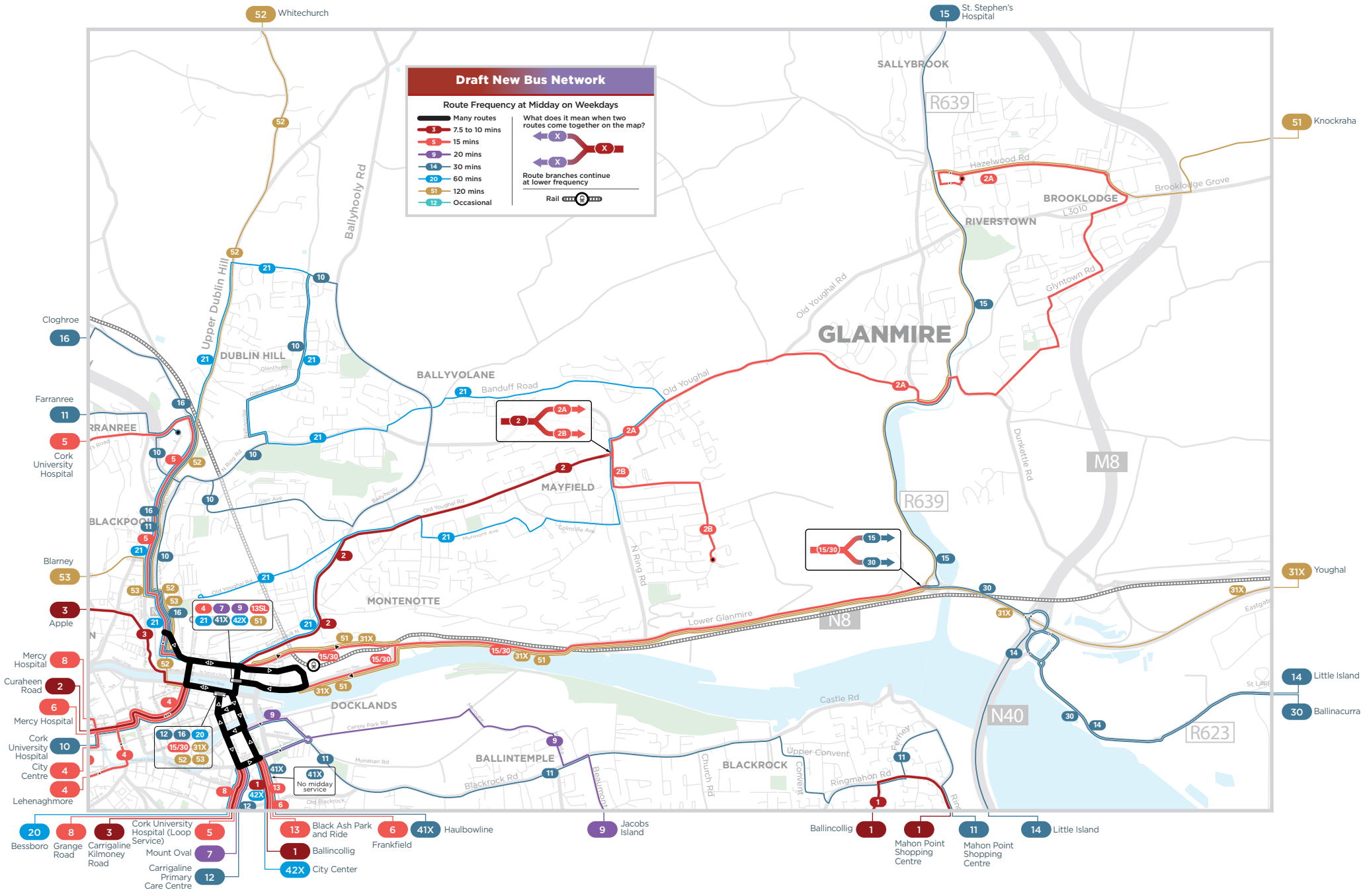
Central Map of the Draft New Network



North West Map of the Draft New Network



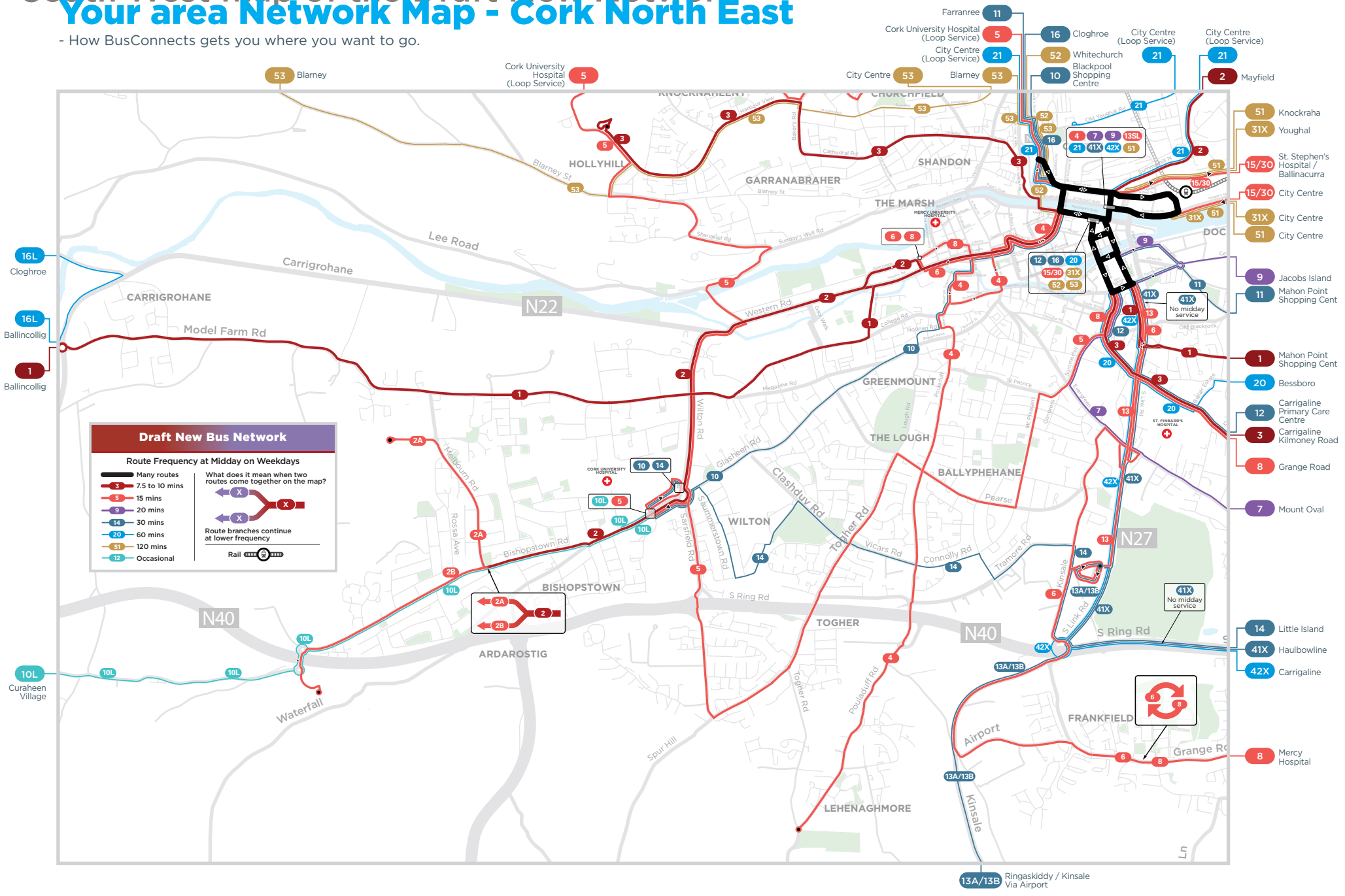
North East Map of the Draft New Network



South West Map of the Draft New Network

Your area Network Map - Cork North East

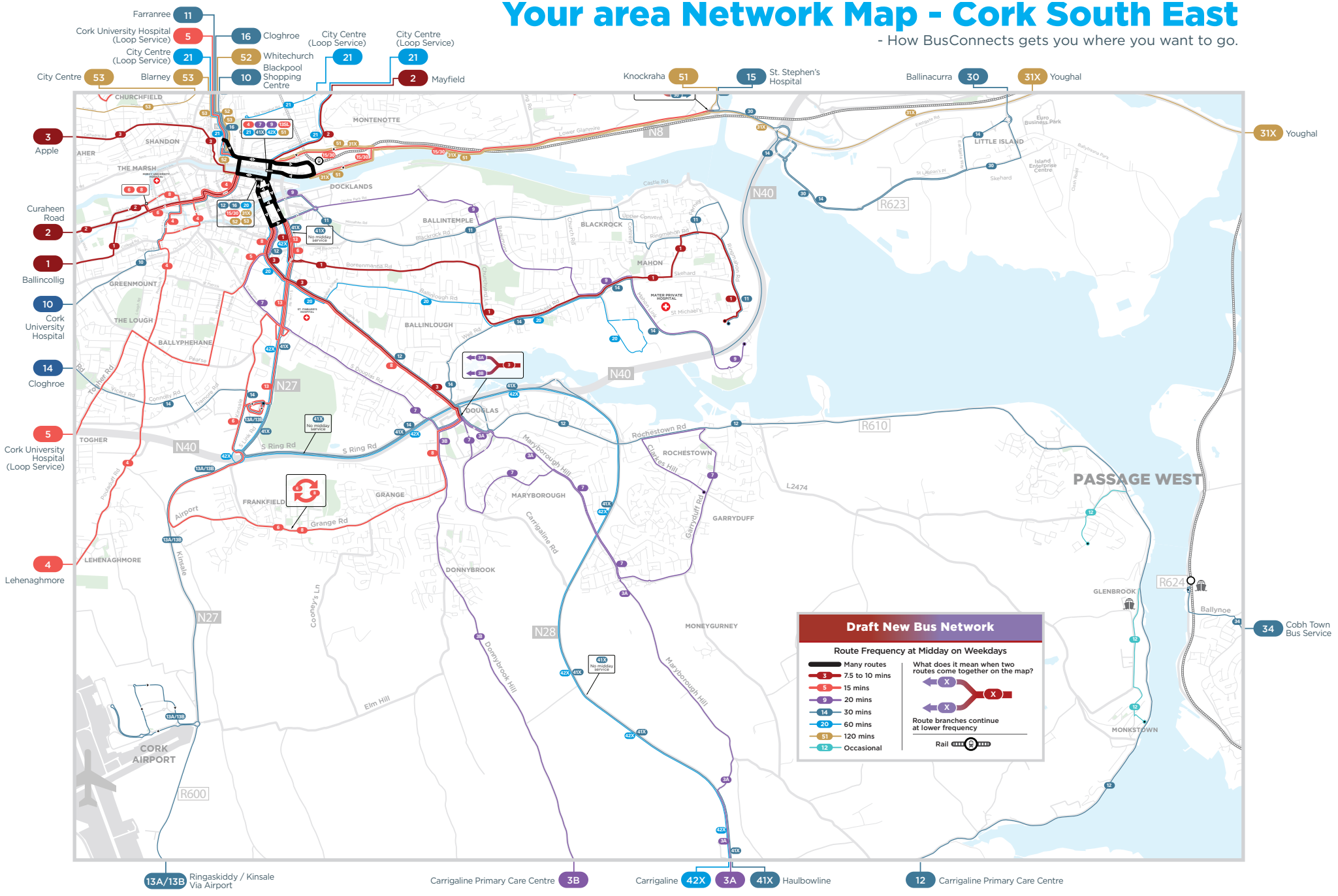
- How BusConnects gets you where you want to go.



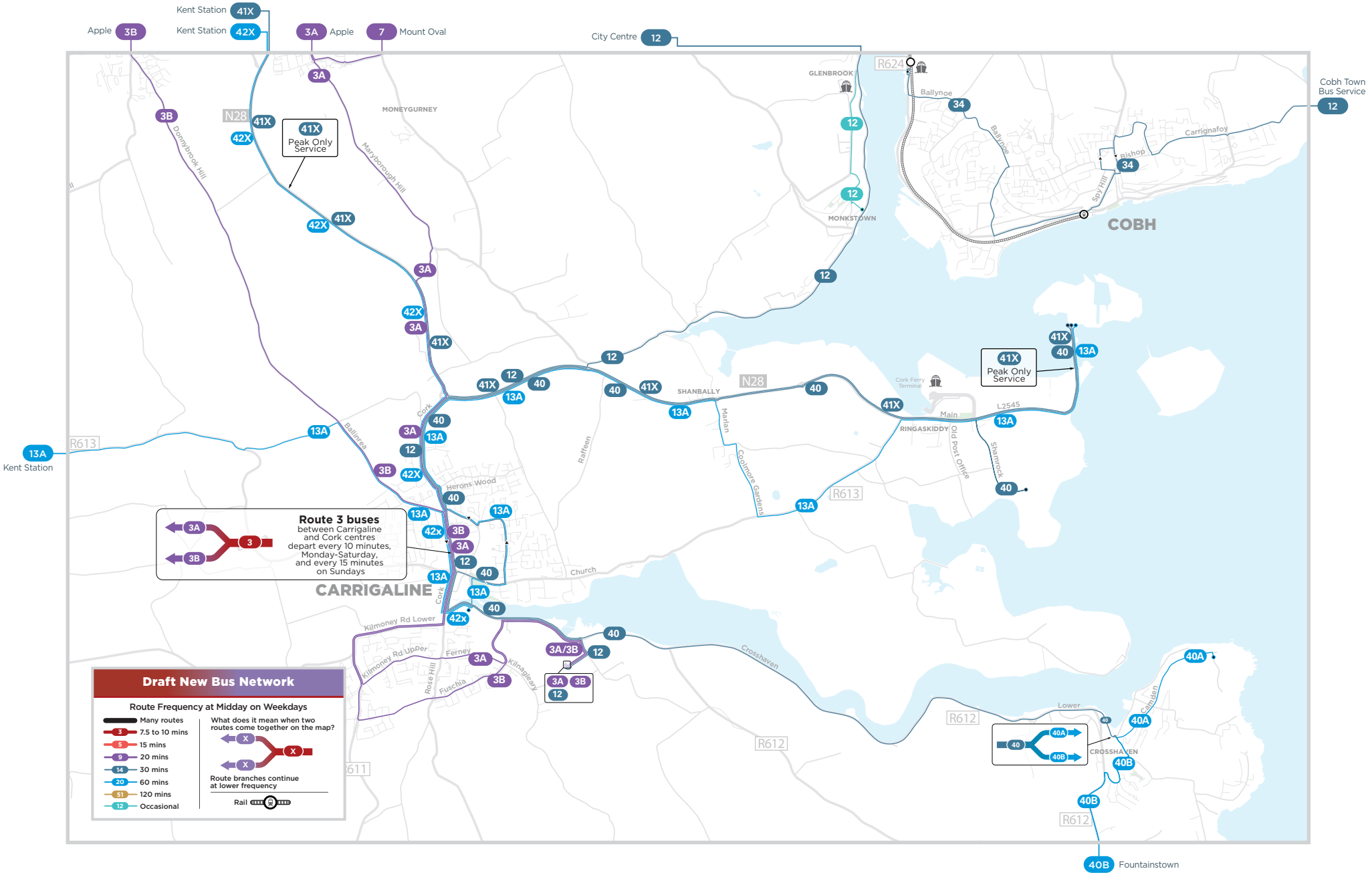
South East Map of the Draft New Network

Your area Network Map - Cork South East

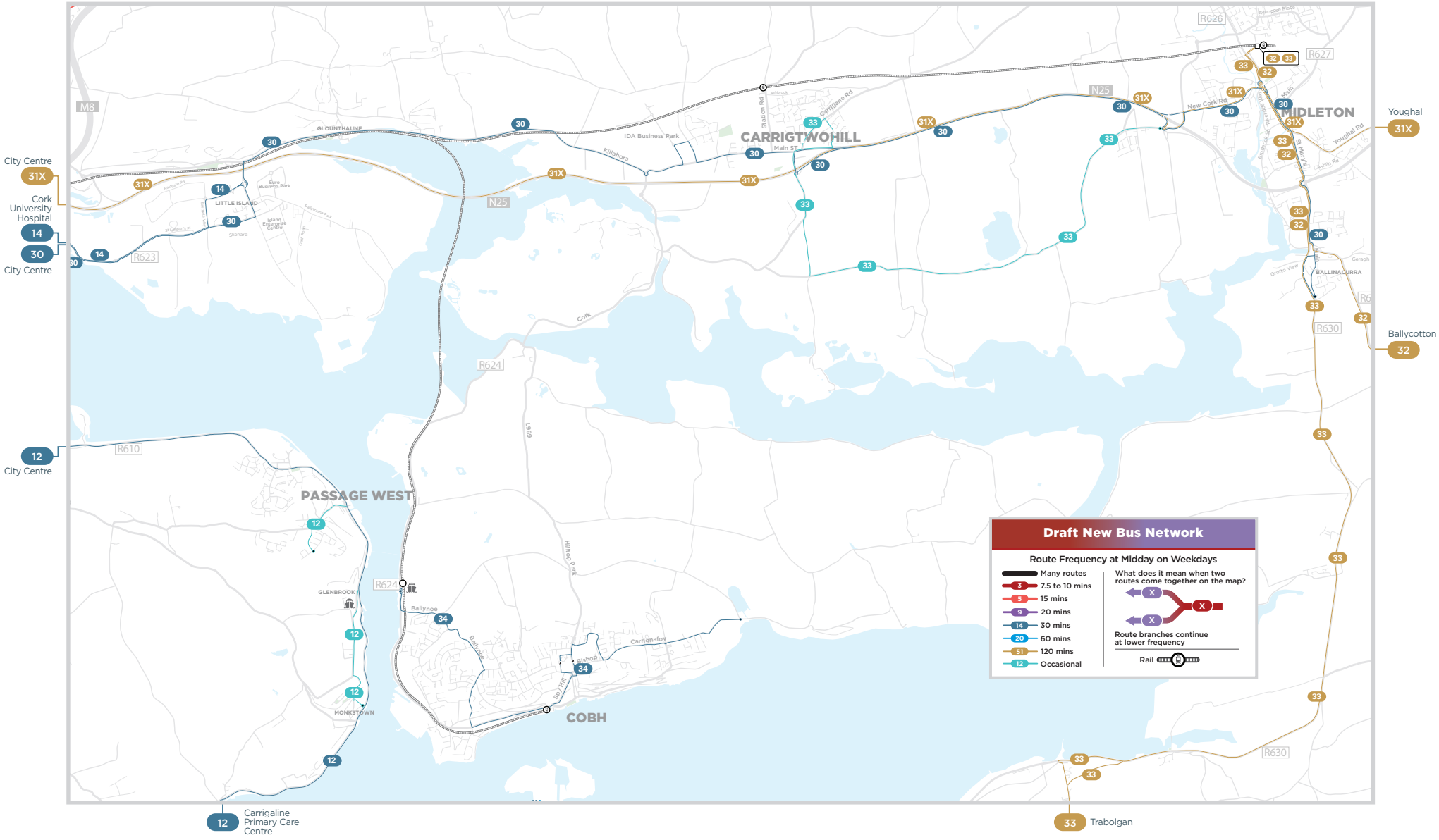
- How BusConnects gets you where you want to go.



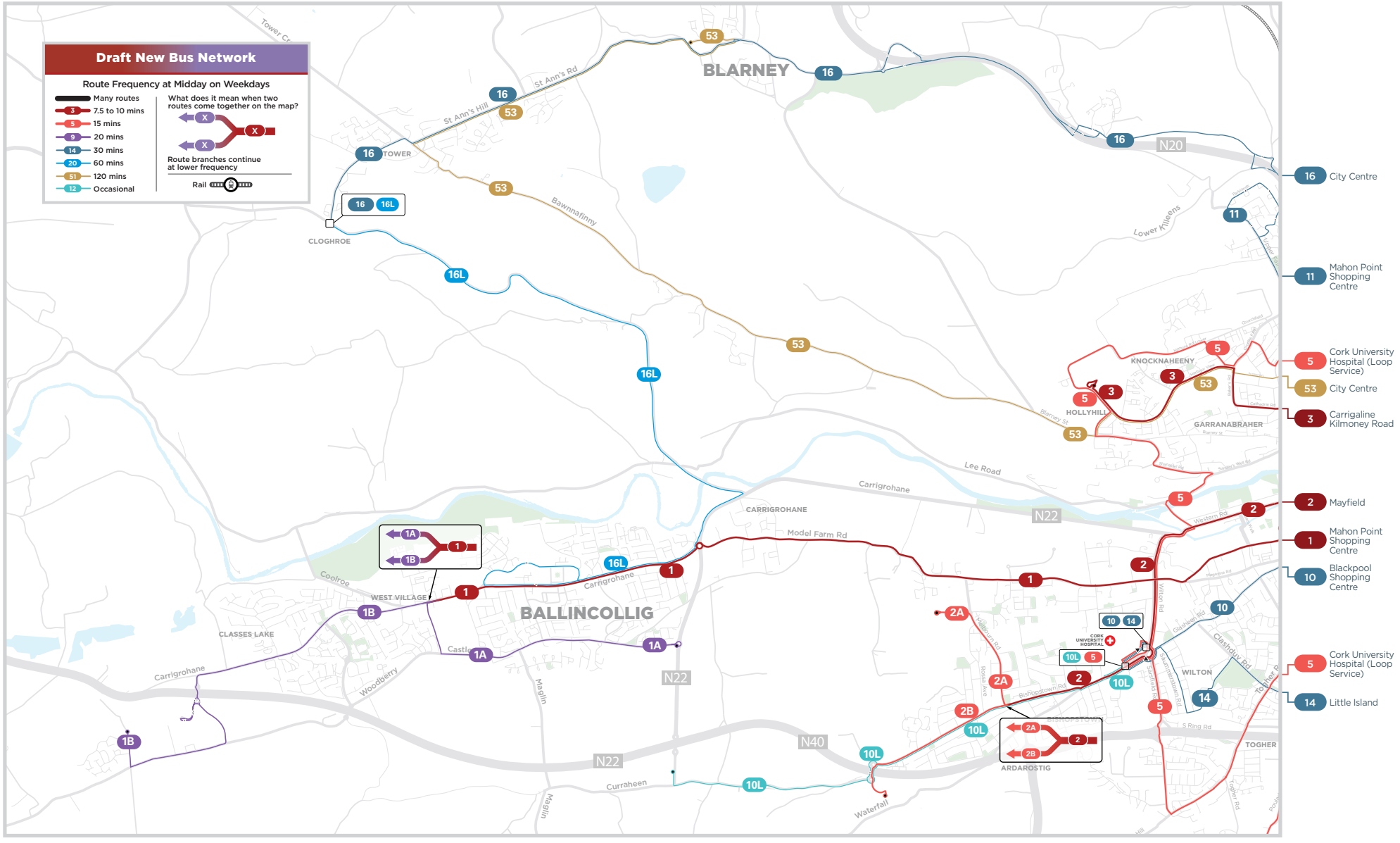
Outer South Map of the Draft New Network



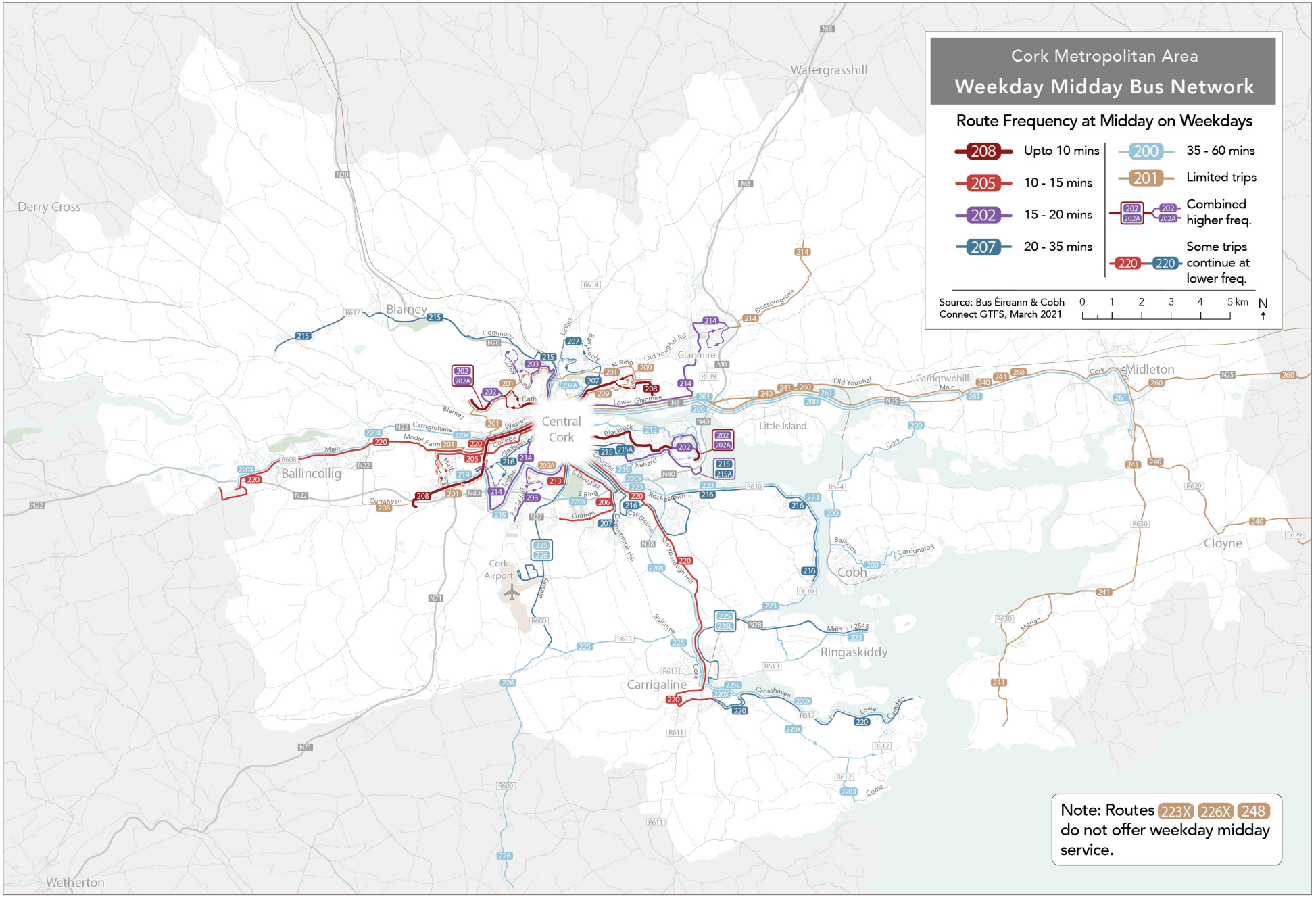
Outer East Map of the Draft New Network



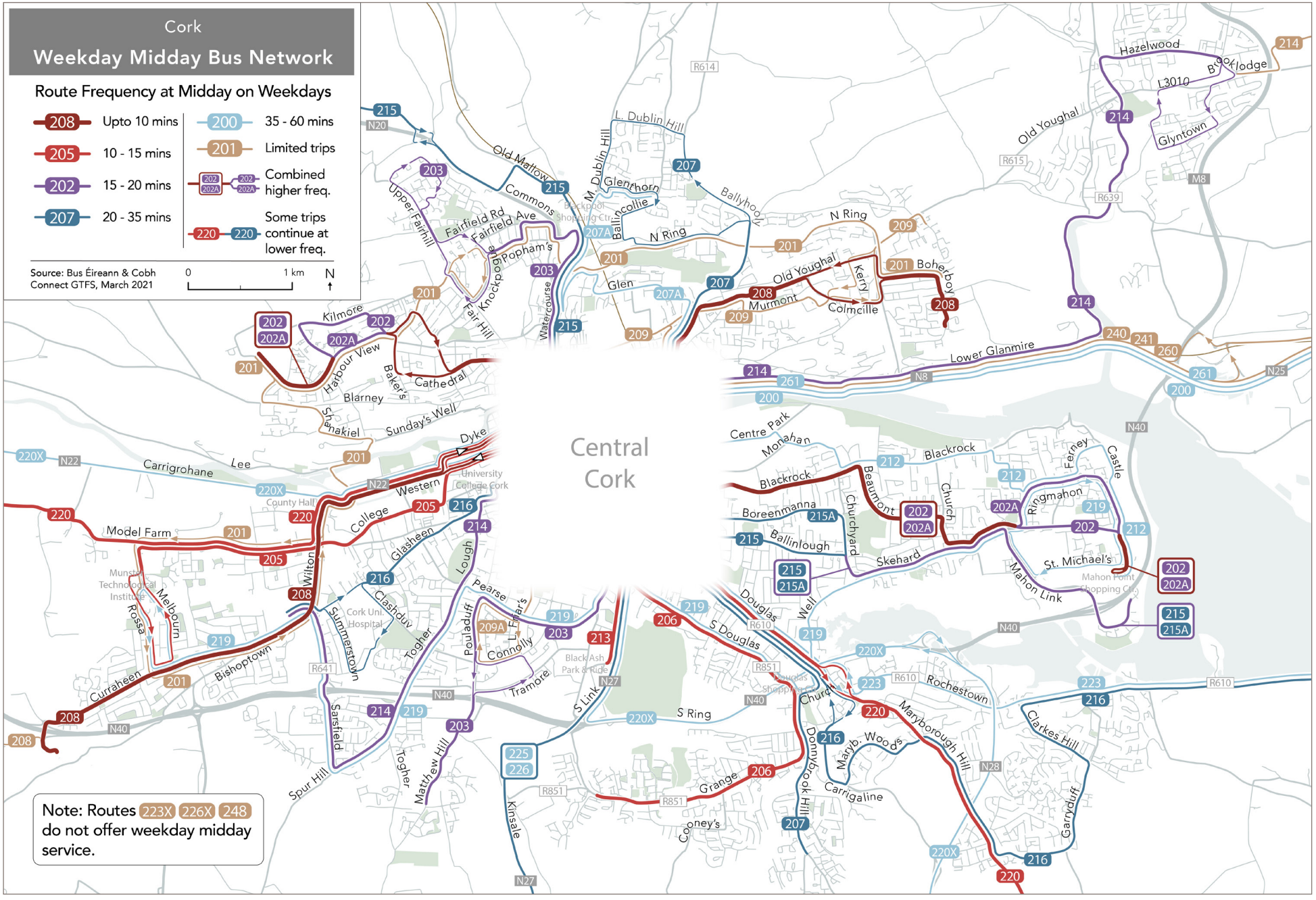
Outer West Map of the Draft New Network



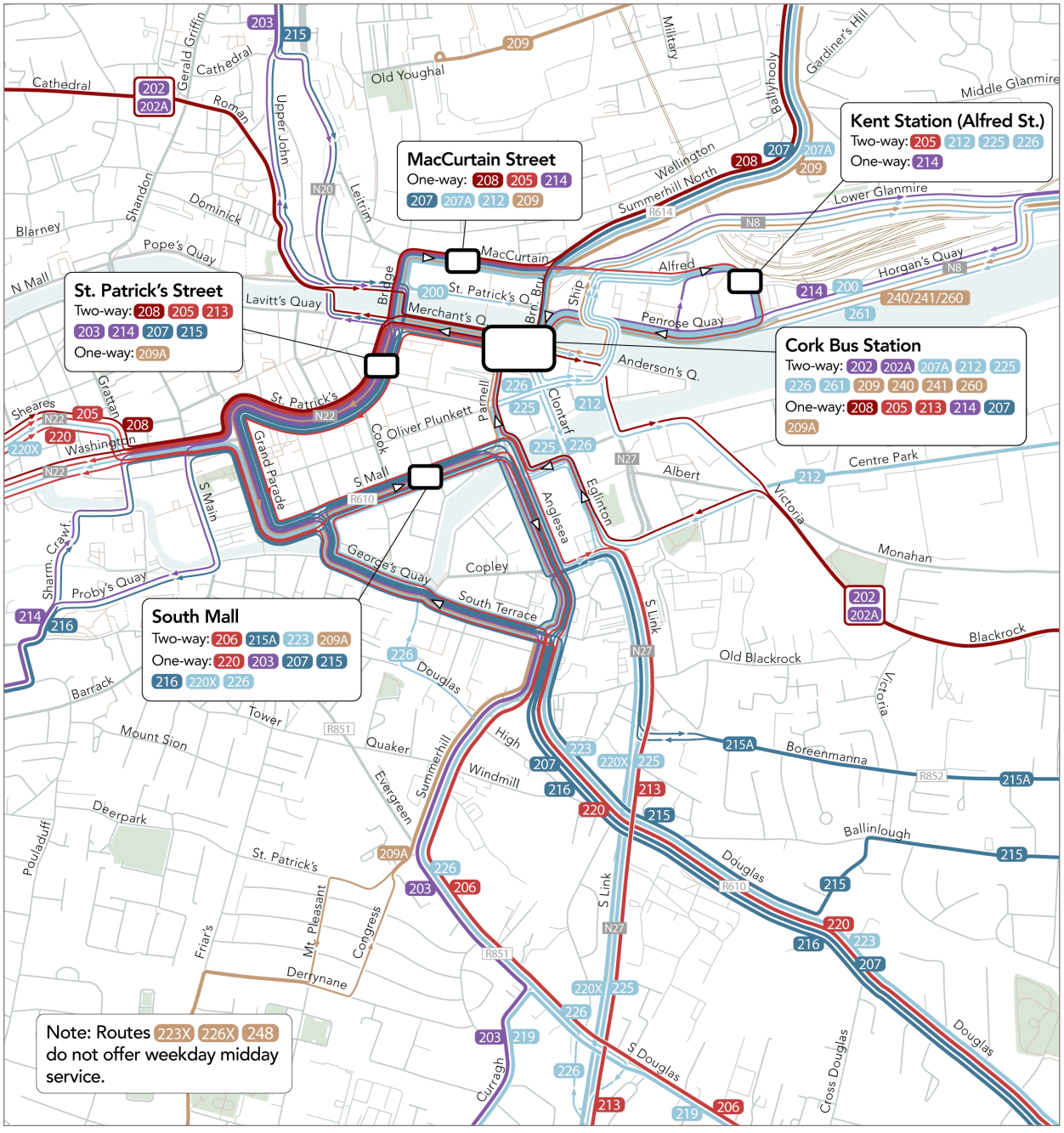
Metropolitan Area Map of the Existing Network



Central Map of the Existing Network



Cork City Centre Map of the Existing Network



Central Cork
Weekday Midday Bus Network

Route Frequency at Midday on Weekdays

- 208 Upto 10 mins
- 205 10 - 15 mins
- 202 15 - 20 mins
- 207 20 - 35 mins
- 200 35 - 60 mins
- 201 Limited trips
- 202 202A Combined higher freq.
- 220 220 Some trips continue at lower freq.

Major Bus Stop in the City Centre

Source: Bus Éireann & Cobh Connect GTFS, March 2021

Access Analysis

Average access was measured for all residents, jobs and education places in the Cork Metropolitan Area (CMA).

Summarising changes in access requires setting arbitrary limits on journey times, and measuring access within those limits. For this analysis, we analysed access within 30 and 60 minutes of travel.

To arrive at average access changes for the entire CMA, we estimated the fastest-available public transport journey times from every place in the CMA to every job or school location. The jobs or education places reachable within journeys of 30 or 60 minutes or less were summed for each place. The results for each place were then weighted by the number of residents living in that place.

Some of the maps in this chapter (starting on page 66) show the job access change, in percentage terms, for each resident according to the place they live. Other maps (starting on page 68) show access change results but according to where the jobs are located.

Measuring changes in access for journeys of 60 minutes or less shows interesting results for Cork City and the larger towns of Cork County, but the measure is not meaningful for the smallest towns and the rural areas in the CMA. In such places, where bus service is provided every-other-hour or just a few times per day, people will obviously plan their journey around the bus schedule.

An average access analysis that assumes random departure times is therefore not relevant for rural areas and small towns the way it is in urban and suburban places. The proximity and availability of service are more important data about public transport in rural areas.

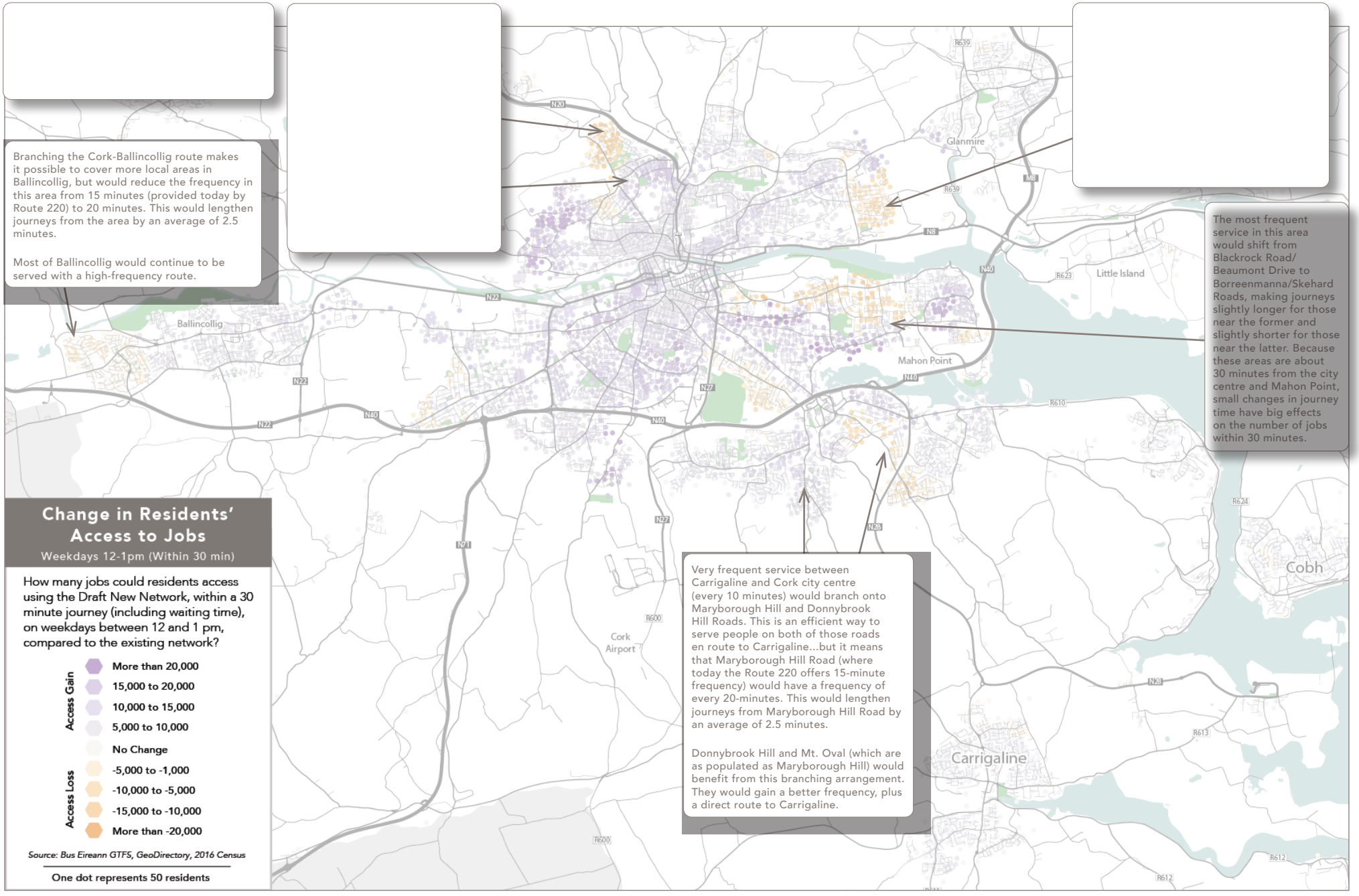
Access Change Maps

The average change in job access across the CMA can be seen in the online map. Access changes in the central parts of the CMA are mapped on the following pages:

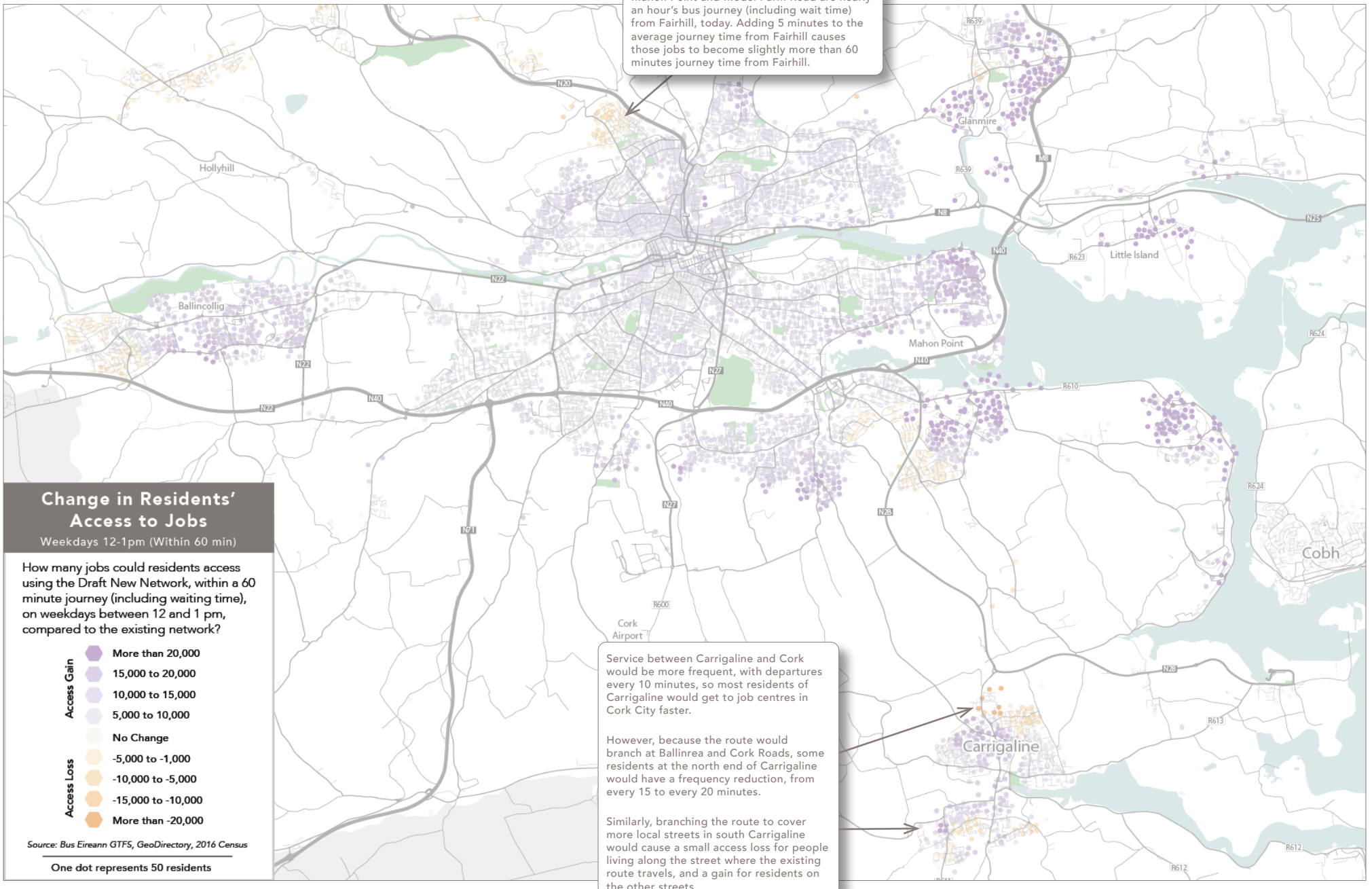
- In most places, and for the majority of residents, more jobs would be reachable; they are shown in shades of purple.
- In a few places, fewer jobs would be reachable; they are shown in shades of orange.
- On both the online and static maps, more dots mean more people. The more intense the concentration of dots, the more people would experience that gain or loss.

Notes on the following pages are too small to be read if printed (and would not fit on the maps at a print-legible size). They should be read in the PDF version of this document instead.

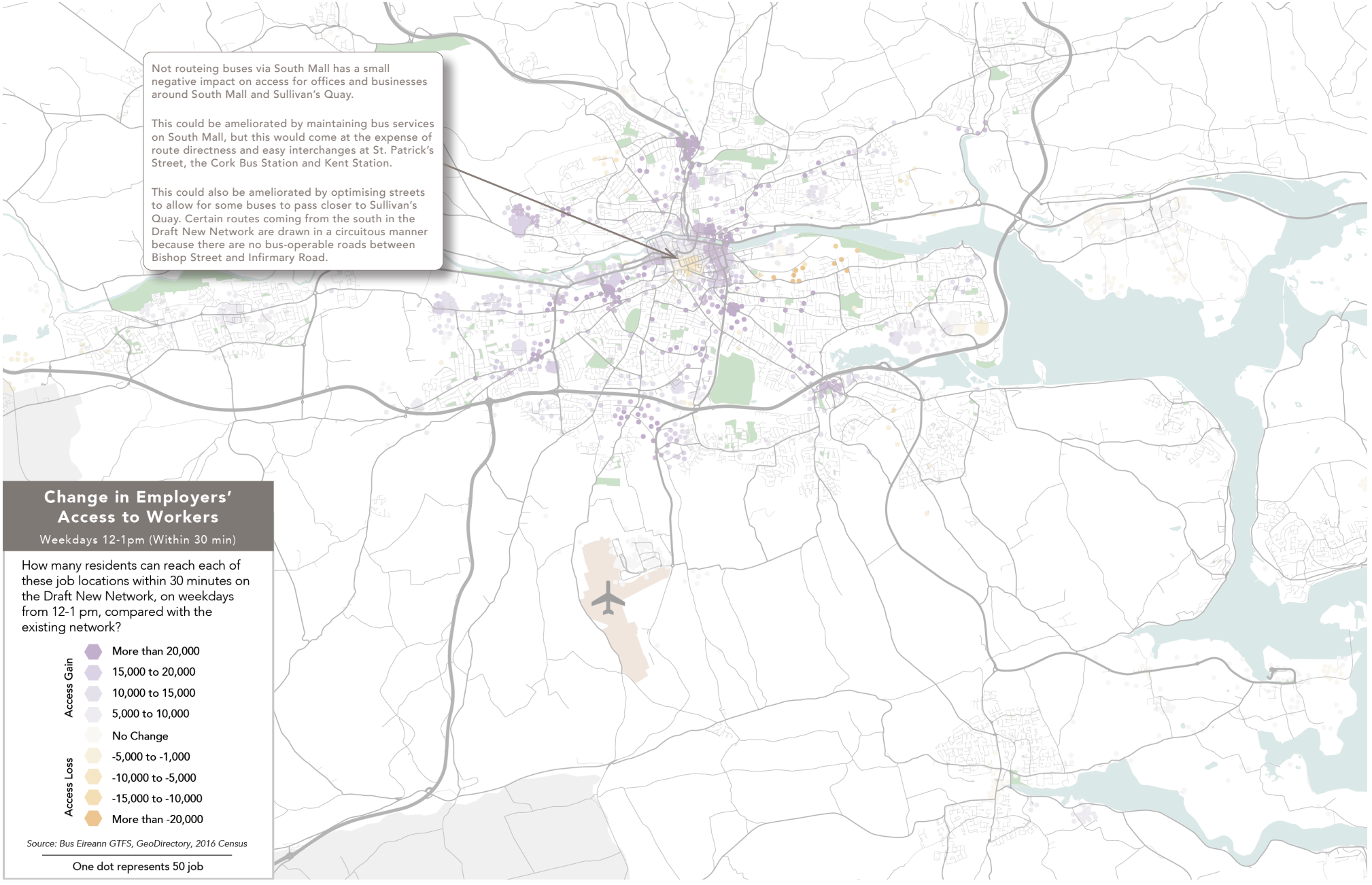
Change in Residents' Access to Jobs within 30 min., Midday on Weekdays



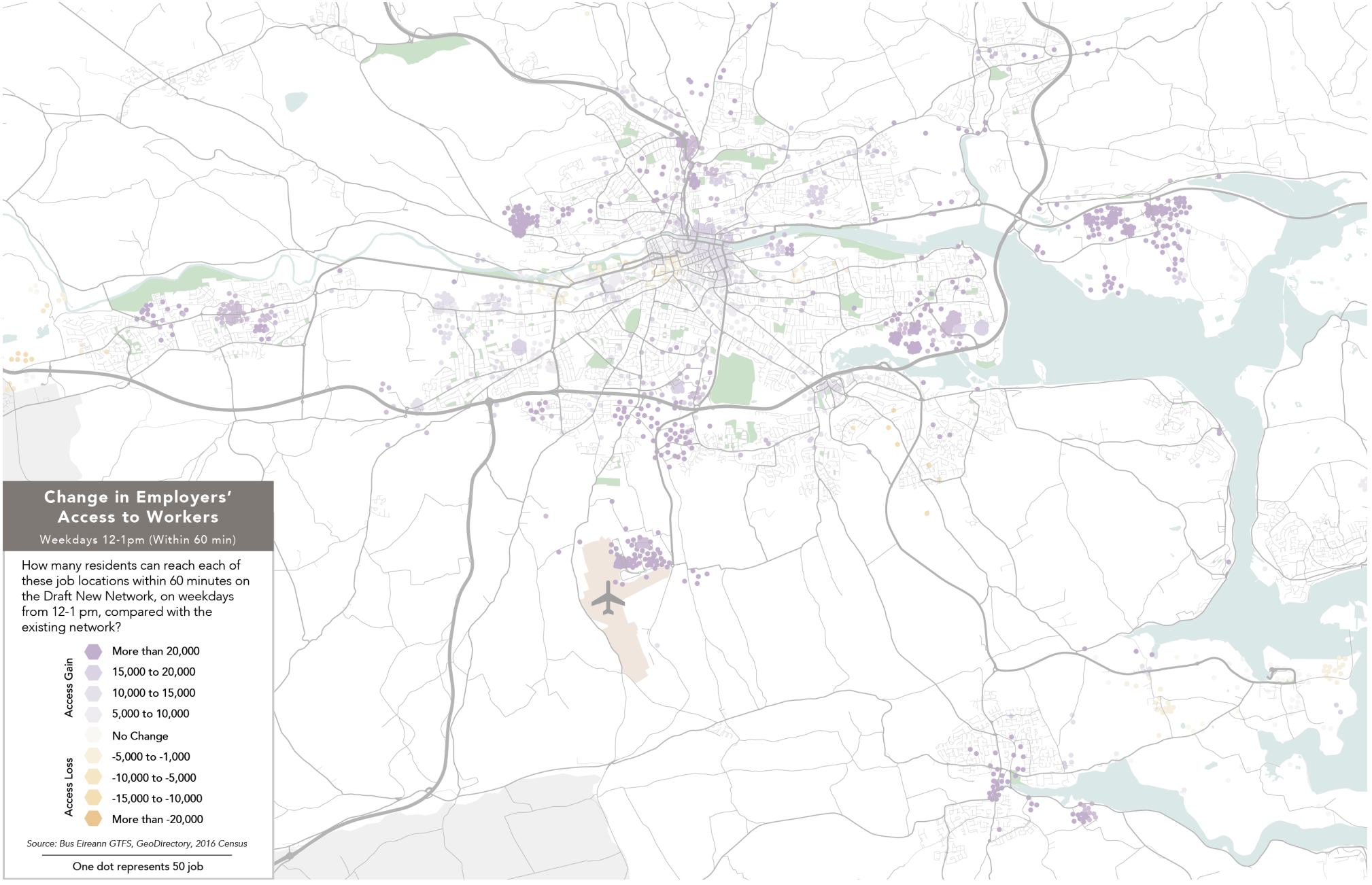
Change in Residents' Access to Jobs within 60 min., Midday on Weekdays



Change in Employers' Access to Workers in 30 min., Midday on Weekdays



Change in Employers' Access to Workers in 60 min., Midday on Weekdays



Change in Residents' Access to Jobs within 30 min., PM Peak on Weekdays

Change in Residents' Access to Jobs within 60 min., PM Peak on Weekdays

Change in Residents' Access to Jobs within 30 min., Midday on Saturdays

Change in Residents' Access to Jobs within 60 min., Midday on Saturdays

Change in Residents' Access to Jobs within 30 min., Midday on Sundays

Change in Residents' Access to Jobs within 60 min., Midday on Sundays

Change in Residents' Access to Jobs

Sundays 12-1pm (Within 60 min)

How many jobs could residents access using the Draft New Network, within a 60 minute journey (including waiting time), on Sundays between 12 and 1 pm, compared to the existing network?

Access Gain
- More than 20,000
- 15,000 to 20,000
- 10,000 to 15,000
- 5,000 to 10,000

No Change

Access Loss
- -5,000 to -1,000
- -10,000 to -5,000
- -15,000 to -10,000
- More than -20,000

Source: Bus Eireann GTFS, GeoDirectory, 2016 Census

One dot represents 50 residents