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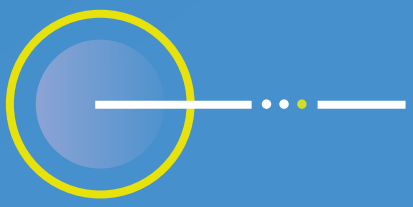
Greater Dublin Area Transport Strategy 2022 2042



Greater Dublin Area Transport Studies

North Blanchardstown

November 2021

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Executive Summary

Introduction

The National Transport Authority (NTA) commissioned Jacobs Engineering Ireland Limited (Jacobs), in collaboration with Systra, to complete a series of Area Based Studies for the Greater Area (GDA). This study will inform the NTA's review of the Transport Strategy for the Greater Dublin Area (2016-2035) which will consider the future development of the transport network in the Greater Dublin Area (GDA) for the period up to 2042.

This report details the findings for the North Blanchardstown study area which is located approximately 9km to the northwest of Dublin City Centre within the Fingal County Council boundary.

The methodology for this study is based on the Area Based Transport Assessment (ABTA) process which has been adapted and comprises the following key steps:

- Policy Context – understand the planning and transport policy context within which this study sits;
- Baseline Assessment – provide a clear understanding of the existing spatial characteristics, land uses, transport conditions and constraints in the study area;
- Establish Context – understand the future growth proposals for the study area as well as future travel patterns which proposed transport options need to serve;
- Options Development and Assessment – identify high-level transport options to serve demand in the study area and assess them via a multi-criteria analysis against the objectives of the study; and
- Final Summary – present the options to be taken forward and investigated further as part of the detailed preparation of the Draft Transport Strategy.

Policy Context

A comprehensive review of existing national, regional and local level legislation, policy and guidance relevant to this study has been undertaken in order to provide context for the identification of interventions which align with wider policy goals. Key documents include:

- Project Ireland 2040 – National Planning Framework;
- Project Ireland 2040 – National Development Plan;.
- Strategic Investment Framework for Land Transport (2014);
- Draft National Investment Framework for Transport in Ireland;
- Smarter Travel: A Sustainable Transport Future (2009 to 2020);
- The Climate Action Plan (2019);
- The Regional Spatial and Economic Strategy for the Eastern and Midland Region (2019 to 2031);
- Dublin Metropolitan Area Spatial Plan; and
- Transport Strategy for the Greater Dublin Area (2016 to 2035).

Baseline Assessment

The North Blanchardstown study area is located adjacent to the M50 Motorway Ring Road and the River Tolka, the second largest river in Dublin which runs through the area to the south. It is part of the Dublin City and suburbs respectively, according to RSES. It also forms part of the larger Blanchardstown area, which is considered a Metropolitan Consolidation Town. This is because it has strong active urban places within its area as well as strong transport links with the rest of the Dublin Metropolitan Area.

The study area consists of mixed land uses, with industry being the most dominant land use. Key trip attractors include University: Institute of Technology Blanchardstown (ITB), part of TU Dublin, Connolly Hospital Blanchardstown and Corduff Primary Care Centre located to the south-east; National Sports Campus located to the south-east; Dublin Airport Logistics park, Ballycoolin, Millennium, Hollywood, Rosemount and Northwest

Business Parks, College Business and Technology, Blanchardstown Corporate and Damastown Industrial Parks located throughout the study area; and Huntstown quarry located to the east.

North Blanchardstown includes the following settlements:

- *Tyrrelstown* which is a commercial and residential area located to the west of the R121 Church Road. The wider area includes new planned development at Kilmartin (LAP 12.B);
- *Hollystown* is a residential area located just above Tyrrelstown. Hollystown Golf Club is inside this area as well. An area of LC zoning is identified in the centre of the village to provide additional facilities to serve the emerging residential population, including that of Kilmartin. The proximity of rural lands and groups of mature trees contribute to the attractive setting of this area; and
- *Mulhuddart Village* is a commercial, retail and local services centre, located to the south of the study area and close to Damastown Industrial Park. The River Tolka and the Pinkeen stream pass through the village which has been regenerated in recent years.

The study area is bounded by three National Roads (the M50, N2 and N3) including two major interchanges; the N3 / M50 and the N2 / M50. Network performance data obtained from Transport Infrastructure Ireland suggests there is ample capacity for traffic growth on the N2, but that the N3 Navan Road already experiences significant congestion problems in the inbound direction to the M50 interchange in the AM peak period.

The Maynooth Rail Line runs east-to-west to the south of the study area, with the closest station at Castleknock (500m from the study area boundary), providing up to 7 trains per hour in each direction. However, connectivity to the station is limited to indirect bus services. Two other rail stations are located within 2km of the study area: Coolmine (situated 2km to the south) and Navan Road Parkway (situated 1.4km from the study area).

The study area is not currently served by a light rail service; indeed, the Luas Green Line terminates at Broombridge which is located approximately 4km to the south west of the study area. The New Dublin Area Bus Network provides a number of connections to the study area including the B Spine connection from Ongar and Tyrrelstown to the City Centre via Blanchardstown Centre which runs buses every 4 minutes on weekdays. There are also orbital links to Clongriffin Station via Dublin Airport, Spencer Dock, Tallaght and Finglas, however the routes serve only the southern extents of the study area. However, a number of gaps in the bus network have been identified; namely:

- Relatively poor bus service permeability into North Blanchardstown from Blanchardstown Centre which is the main terminus here for many services.
- Bus connectively to North Blanchardstown from areas to the east and expressly those north of or close to the M50 corridor is weak.
- Whilst the 'F Spine' or BusConnects Route 4 provides a good level of bus service provision between the City Centre and Finglas (Charlestown Shopping Centre), the linkages northward into the North Blanchardstown lands are poor and/or indirect.
- Public transport linkage and capacity between Blanchardstown and South West Dublin is effectively limited to the orbital W4 service operating along the M50 to Tallaght.

Existing cycling facilities within North Blanchardstown generally provide strong links to the business and industrial parks in the western part of the study area. However, a number of barriers currently exist:

- The limited crossing facilities at major roads (i.e. N2 and M50);
- No access to the R135 west of the N2 from the study area;
- Limited cycle connectivity to the north-west, particularly links between the study area and Damastown Industrial Park and Clonee;
- No formal facilities on the R843 Snugborough Road between Watervale Road roundabout and the signal-controlled junction with the R806 Main Street on the west side of the N3;

- A lack of physical segregation from vehicles at heavily trafficked locations i.e. N3 Junction 2 bridge.

Car use for travel to work purposes in North Blanchardstown (58% vs. 55% in the GDA), as well as car ownership, is broadly in line with the wider GDA, while trips by active modes are lower than the GDA averages (6% vs. 10% on foot and 3% vs 5% on bicycle). Active modes are also less popular choices for trips to school in North Blanchardstown, with only 25% of trips to school on foot (compared to 31% in the GDA) and 3% by cycle (compared to 4% in the GDA).

Context

Future land use

In North Blanchardstown, there is anticipated to be:

- A 14% increase in the resident population – the majority of growth is expected to occur in the northwest of the study area;
- A 44% increase in the number of jobs – the highest concentrations of jobs are anticipated to remain in the central and eastern parts of the area which encompass the Rosemount and Northwest Business Parks and Damastown, while the larger changes are expected to occur in the central and eastern parts of the area; and
- A 21% increase in the number of education places – education places are mainly located in Mulhuddart at the Institute of Technology Blanchardstown, the College Business and Technology Park, Lady's Well National School and the Riversdale Community College.

Future proposals for transport interventions

Roads

The Transport Strategy for the GDA (2016-2035) includes *"Widening of the N3 between Junction 1 (M50) and Junction 4 (Clonee), plus related junction and necessary changes to the existing national road network"*. While no specific details are provided, proposals for improvements to the N3 Snugborough Road interchange (Junction 2) have been subsequently developed in detail and the contract was awarded in February 2021, with an expected construction programme of 2-years. Key features include:

The developing BusConnects proposals for 'Route 5 - Blanchardstown to City Centre' will also affect the part of the N3 between Blanchardstown Road (R121) and the M50. Examination of the current highway proposals for this part of the corridor shows that the addition of bus lanes does not impact on the number of existing mainline running lanes on the N3 in either direction. However, to the east of the M50 interchange where Navan Road becomes the R147, the bus lane impact on the existing available highway capacity is potentially greater, with general traffic reduced to use of just a single lane in each direction just east of the interchange at Navan Road Parkway.

Heavy Rail

In the vicinity of the study area, the Maynooth and M3 Parkway Lines are proposed to benefit from the expansion of the DART+ Programme which will introduce more frequent services for all stations between Maynooth / M3 Parkway and Dublin City centre. According to the proposals, frequencies on these lines will increase from 7 to 15 trains per hour per direction. While there are no proposals to connect North Blanchardstown to the heavy rail network, enhanced levels of service on nearby lines presents an opportunity to enhance connectivity from the study area to the heavy rail network.

Light rail

There is a proposal in the Transport Strategy for the GDA (2016-2035) to extend the Luas Green Line from its current terminus at Broombridge to the north of Finglas., terminating at Charlestown Shopping Centre. This will

provide a high-capacity radial service from this large suburb into the city centre, as well as provide a large strategic Park & Ride at the terminus of the line on the N2, within close proximity of the study area. While there are currently no direct bus links from Charlestown Shopping Centre into the study area, there exists scope for these to be developed.

Bus

As noted previously, the new Dublin Area Bus Network is being rolled out from January 2021 and has been taken as the 'base' situation within this study. What remains to be implemented as part of this new network is most of the bus priority infrastructure. According to the BusConnects programme, construction will commence on a phased basis for the 16 core corridors from 2022, each corridor taking approximately 2 years to construct, with all corridors constructed by 2027.

For the Blanchardstown Core Bus Corridor (Route 5) this infrastructure will include:

- Upgrading the existing bus laydown area in Blanchardstown Centre to a formal bus terminus/interchange; and
- Bus Rapid Transit infrastructure such as bus lanes and respective junction alterations allowing a continuous 'priority' route for buses operating along the 'B Spine' (N3/R147) from the study area into the city centre.

It was noted in the Transport Strategy for the GDA (2016 – 2035), that originally Corridor 4, Finglas to Phibsborough, was going to include a spur off the route that connected into Tyrrelstown via Charlestown. However, this was not reflected in the most recent Corridor plans and no explanation was given as to why this was no longer included.

Cycle network

The *GDA Cycle Network Plan* outlines a number of proposed cycle routes within the North Blanchardstown study area. These include routes within existing urban areas, largely to connect missing links between existing routes and key destinations, and importantly routes within the employment areas (i.e. industrial parks) which could facilitate the movement of people to and from their workplaces.

Future travel patterns

- **Trips from the study area** are largely to areas immediately adjacent to the study area such as South Blanchardstown and Dublin Airport area and surrounding commercial land uses. However, there are also strong outward movements to other destinations along the N3 Navan Road / R147 corridor, notably the City Centre and locations adjacent to Phoenix Park.
- **Trips to the study area** have destinations in Damastown, Mulhuddart, Northwest Business Park and Rosemount Business Park. The analysis demonstrates that there are high proportions of trips originating in South Blanchardstown and County Meath to the northwest of the study area, and mainly traveling for work purposes to the industrial area/business parks in the centre of the study area.
- The **Car mode share** is high for trips originating in the study area, with 70% of trips in the AM peak period by car. The **Public transport mode share** is highest in the residential areas close to the N3 Navan Road, where there is convenient walk access to the 'B Spine' services operating from Blanchardstown Centre. Tyrellstown which is more remote has a lower PT mode share, even though Service B3 provides a direct and high capacity 'spine' connection with Blanchardstown Centre and the City Centre. The **Cycle mode share** is at its highest in Abbotstown, close to the M50, and in parts of Tyrrelstown. This reflects the proximity of these locations to neighbourhood centres and key trip attractors. The **walking mode share** is highest in Corduff and Mulhuddart. This reflects the proximity of these areas to key trip attractors and neighbourhood centres.
- **Junctions** within the study area experience a volume over capacity ratio higher than 60% in 2042; indeed, a large number of junctions which are reaching capacity (over 85% volume / capacity) are evident on the M50 and N3 corridors.

- A number of bus services within and near to the study area are anticipated to operate close to or over their **design capacity**[1] in 2042; these include: B2, B3, B4, F2, N8, W8, N4.
- **Trip length** data shows that the number of short car trips is anticipated to increase, with over 50% of car trips under 6km in length.
- **Journey times** by public transport are significantly higher than equivalent trips by car. For trips from North Blanchardstown to Dublin City Centre, only in a few cases were trips faster by public transport. This demonstrates that there is poor provision of direct public transport services and bus priority measures.
- **Bus speeds** are high throughout the study area, but a number of key areas in the network experience low to medium speeds which thus increase bus journey times and inhibits mode shift from car to bus. The key areas experiencing low speeds include: Mill Road, Waterville Road and Old Navan Road.

Mode shift analysis

Methodology

A process has been developed to simulate how a change in mode shift could increase the demand for public transport trips. The potential number of public transport trips from the shift can then be used to indicate the level of public transport improvements which would be needed to accommodate a mode shift.

This process has been undertaken for two key movement corridors which affect trips entering and leaving the North Blanchardstown study area. The corridors were identified by identifying key origins and destinations using the data discussed previously, alongside analysis of the network capacity utilisation. The two key movement corridors are listed below.

- Radial corridor from Blanchardstown to Dublin City Centre ('B Spine'); and
- Orbital M50 corridor from Tallaght to Swords.

Results

Radial 'B Spine' corridor

To achieve a car mode shift of 50%, provision for approximately 10,700 trips would be required to cater for southbound or 'inbound' demand across the City Centre screenline, which is the highest level of directional demand across both screenlines. The directional 'shift' to be accommodated at both screenlines is in fact similar, so a service capacity uplift of around 1,400.

Orbital M50 corridor

To achieve a car mode shift of 50%, provision for approximately 5,100 public transport trips would be required to cater for northbound demand across the N3 screenline, which is the highest level of directional demand across the three screenlines. The demand uplift is 3,200, which will likely include a lot of transferred car trips with origins in South Blanchardstown.

Options Development

Table 1 provides a summary of the options developed to serve the North Blanchardstown study area.

[1] Calculated at 85% of the crush capacity

Table 1: Options long list

Ref.	Type of option (REF)	Description
H1	Highway	Create a new internal access road between the Cherryhound-Tyrrelstown Link Road and the part of the R135 west of the N2.
B1	Bus	Create **NEW** local orbital bus connection (**B5**) between Ongar and Charlestown Shopping Centre ('F Spine') via Blanchardstown Centre. Rail Interchange with Maynooth Line at Clonsilla
B2	Bus	Create a **NEW L65** '2-way loop' Service operating between South Blanchardstown (Ongar) and through North Blanchardstown to the Cherryhound development lands. Rail Interchange with Maynooth Line at Clonsilla. NOTE: Bus contraflow SB required at N3/R156 bridge.
B3	Bus	**EXTEND** the 'F Spine' corridor and one of the services (F1, F2 or F3) northwards into North Blanchardstown, preferably using the Option H1 road connection with the N2/R135 partial interchange to improve 'directness' and accessibility
B4	Bus	Create a **NEW** orbital **Service N8A** between the M50/N2 interchange and Blanchardstown Centre via North Blanchardstown, preferably using the Option H1 road connection with the N2/R135 partial interchange.
B5	Bus	Create a **NEW** 'direct' Service between Swords and Blanchardstown Centre via the Airport, Horizon Logistics Park, DALP and North Blanchardstown (R132, R108 and R135-Option H1 Link)
B6	Bus	**INCREASE 'PEAK' FREQENCY** of the single Service **W4** currently proposed from SW Dublin (M50). Additionally, consider **EXTENDING** Service W2 to Blanchardstown Centre or add **NEW** Service W2A Variant
B7	Bus	**EXTEND** orbital Service **N6** from Finglas to Blanchardstown Centre via North Blanchardstown.
C1	Cycling	**NEW** cyclist/pedestrian linkage between the Tyrellstown-Cherryhound Link Road and the R135 across the eastern part of the North Blanchardstown area (with Option H1)
C2	Cycling	**NEW** cycle path and allied crossing facilities to the N2 interchange and extension eastwards to the R135 junction
C3	Cycling	**IMPROVE** cycle facilities between Ongar and Tyrellstown via the N3/156 interchange, Damastown Road, Damastown Close and Damastown Avenue (to R121)
L1	LRT (Luas)	EXTEND the proposed Luas line extension to Finglas further north into the North Blanchardstown area.
M1	Metro	Construct the originally considered Metro-West line from the Metro-North line extension (Swords) to Blanchardstown Centre

Options taken forward for consideration

<u>Public transport options</u>

Radial Corridor

The radial corridor demand for the 'B Spine' has been used to inform the identification of appropriate options to serve this corridor. Different public transport modes have theoretical capacity ranges, and so demand level viabilities, which have been used as the basis by which to short-list options to progress through to the assessment stage. The capacity range for each mode is based on UITP's 'Making the right mobility choices.' The options taken forward to the MCA stage for the radial corridor include Option B1, B2 and B3. for the radial

Within the MCA, consideration will extend to cover the 'F Spine' corridor to Finglas, insofar as both Options B1 and B3 provide connection from the existing Charlestown Shopping Centre terminus for the 'F Spine' services into North Blanchardstown, so providing further capacity for movements to/from North Blanchardstown and the City Centre.

Orbital corridor

The orbital demand along the M50 corridor has been used to inform the identification of appropriate options to serve this corridor. As with the consideration of the radial corridor, the suitability of the public transport mode intervention is assessed against the calculated uplift in public transport demand with an assumed 50% car mode shift.

As with the radial corridor, there is no justification for public transport improvement solutions beyond conventional bus service enhancements to better connect North Blanchardstown with South Blanchardstown, Finglas and orbitally to Swords and South Dublin.

Highway infrastructure

Highway Option H1 is considered worthy of taking forward but is not considered beyond this Chapter in the MCA. This is because providing adequate vehicular access to the 'greenfield' lands to the south of the Cherryhound-Tyrellstown Link Road will be a necessary requirement for bringing forward industrial/commercial development. As such, a road link will be required to this end, and whilst this may not follow the alignment shown, there would be clear benefit in achieving a junction connection with the southernmost part of the R135 within North Blanchardstown. This opens-up better bus penetration opportunities for services routing via the M50/N2 interchange.

Cycling interventions

Based on the assessment of 'gaps' in the cycle network connectivity three options are considered in the long list as follows:

Option C1: In association with Option H1, introduce a new cyclist/pedestrian linkage between the Cherryhound-Tyrellstown Link Road and the R135 across the eastern part of the North Blanchardstown area. As noted, this would sensibly be done as part of new highway link proposals to achieve suitable access through the NE area reserved for new general employment. This would also enable direct cycle connectively between Finglas and North Blanchardstown to be achieved using the ramped cycle-bridge already present at the M50/N2 interchange.

Option C2: Introduce cycle path and allied crossing facilities to the N2 interchange and extend provision eastward to the R135 junction

Option C3: Improve off-road cycle facilities between Ongar and Tyrellstown via the R156/N3 interchange, Damastown Road, Damastown Close and Damastown Avenue. Damastown Avenue between Damastown Close and the R121 has on-carriageway mandatory cycle lanes. There is, however, opportunity to introduce 'shared' off-road footway/cycleways on one or both sides to achieve compatibility with segregation already in place on the R121 at Tyrelletown. The N3/R156 overbridge is one-way northbound with three traffic lanes, with the footway on the east side allowing for 'contra-flow' 'shared' cyclist use. Removing one traffic lane would allow footway widths to be improved both sides, whilst allowing 'shared' use to be considered on the west (NB) side. The primary aim of improving this corridor for cyclists would reduce dependency on the use of the heavily trafficked N3/R121 interchange.

None of the above are considered as part of the MCA within this report. However, Option C1 and C2 are alternatives to improving connectivity across the N2 Whilst Option C2 is a shorter connection to the R135 from the Cherryhound-Tyrellstown Link Road , it would take cyclists routing from/to Finglas and the airport zone well off the 'desire line' and would fail to achieve any penetration to the development lands south of the link. Mindful that highway infrastructure will be required to service this land, Option C1 is preferred, and in any event an off-line 'shared use' footway/cycleway could be provided in isolation. As such, Options C1 and C3 should be taken forward and long-list option C2 dismissed.

Options assessment

Results

The 'packages' that incorporate Option B3 score best in the MCA in terms of decarbonisation and encouraging sustainable growth. Those that combine Option B3 with either B1 or B2 rank highest in improving local accessibility to public transport services. As noted earlier, B2-B3 is potentially the best combination, as the orbital options B4 or B5 could be re-configured to mimic Option B1 in terms of local routing through North Blanchardstown and Blanchardstown Centre to Ongar. In terms of improving safety and physical activity, all options are broadly similar.

In the case of the northern orbital bus improvements, Option B4 which re-routes the existing N8 Service through North Blanchardstown (and supplements it with additional 'peak' service provision) ranks highest in terms of decarbonisation, encouraging sustainable growth and integration. If the Metrolink scheme is implemented between the new Swords development area and the City Centre, then interchange with N8 Services at the airport 'hub' can be used to create a step-change increase in orbital bus capacity from the north (M50) to Blanchardstown as a whole.

Rerouting N8 Services via North Blanchardstown, rather than via the M50 to the N3 Navan Road interchange as now, will also improve the directness of service in serving the new development lands and avoid a need for interchange at Blanchardstown Centre. Option B5 scores moderately well but does not have the same potential for capturing and accommodating additional PT demand from both the North Dublin suburbs and the Swords area.

In the case of orbital connection to the south (M50) the assessed demand between SW Dublin/Lucan and Blanchardstown as a whole (assumed 50% car mode shift) dictates wholly new service provision between the Liffey Valley Shopping Centre (C-Spine 'hub') and Blanchardstown Centre. As such, the Option package B6b-B6c ranks highest in terms of decarbonisation and promoting sustainable growth, as it is the only one that could reasonably match or get close to satisfying the level of demand with assumed car mode shift.

Summary

This report has outlined the approach and results from the study of the North Blanchardstown area, as defined by the NTA for the purposes of providing input into the preparation of the Transport Strategy for the Greater Dublin Area. The study area is heavily reliant on the existing road network which is forecast to operate with an overall moderate level of congestion in 2042, aside from congestion hotspots on the N3 Navan Road and the M50 which bound the area.

This, alongside the study area's proximity to key trip attractors in South Blanchardstown (Centre) and the Dublin Airport area provide an opportunity to shift car trips to public transport and active modes through the provision of high-quality infrastructure and services. From the demand analysis, consideration of capacity along the 'B Spine' and 'F-Spine' radial routes to Blanchardstown and Finglas respectively was undertaken, as well as orbital capacity around the M50 corridor between Southwest Dublin (Tallaght) and the Swords area to the north.

Public transport options

Radial corridor

Following the development of specific long list public transport options for the radial corridor, a high level sift was undertaken using forecast trips from the Eastern Regional Model (ERM). The radial corridor demand for the 'B Spine' was used to inform the identification of appropriate options to serve this corridor. The modes considered were:

- Conventional bus;
- Bus with priority infrastructure; and
- Light rail extension (Luas)

A light rail extension of the Luas 'Green Line' from Finglas was rejected as the expected public transport uplift demand was insufficient to justify this intervention and cost. As such three bus improvement options (B1-B3)

were examined individually and in combination to address capacity and connectively issues. These were as follows:

- **Option B1**: Create new local orbital bus connection (B5) between Ongar and Charlestown Shopping Centre ('F Spine') via Blanchardstown Centre. Rail Interchange with Maynooth Line at Clonsilla;
- **Option B2**: Create a new L65 '2-way loop' Service operating between South Blanchardstown (Ongar) and through North Blanchardstown to the Cherryhound development lands. Rail Interchange with Maynooth Line at Clonsilla. Bus contraflow SB required at N3/R156 over-bridge; and
- **Option B3**: Extend the 'F Spine' corridor northwards into North Blanchardstown, preferably using the new road connection with the N2/R135 partial interchange to improve 'directness' and accessibility. Add a new 'spine' service (F4) to Tyrellstown given predicted at-capacity conditions on this 'Spine' between Finglas and the City Centre.

Comparative review indicated that Options B1 to B3 in isolation could all provide useful but different public transport network benefits in improving 'local' bus permeability between South Blanchardstown/Finglas and North Blanchardstown and contributing to radial public transport capacity enhancement to the City Centre.

However, of the three, Option B3 is the only one that would directly enhance radial public transport capacity (F-Spine), whilst at the same time improving connectivity to North Blanchardstown by extension of this 'Spine' corridor to Tyrellstown. Improved connectively with Option B3 alone largely benefits Finglas, with connectively with South Blanchardstown (and expressly Ongar) remaining less than ideal (despite lateral connection of the 'B-Spine' (B3) and 'F-Spine' corridors (F4) via Tyrellstown).

As such, supplementing Option B3 with either B1 or B2 would be a better 'package'. Not unexpectedly, the 'packages' that incorporate Option B3 score best in the MCA in terms of decarbonisation and encouraging sustainable growth. Those that combined Option B3 with either B1 or B2 ranked highest in improving local accessibility to public transport services.

Orbital corridor

A similar exercise was used to sift options for orbital PT improvements. In this case the variants considered were:

- Conventional bus;
- Bus with priority infrastructure; and
- Metro

A Metro extension from the MetroLink corridor to Blanchardstown Centre was rejected as the expected public transport uplift demand was insufficient to justify this intervention and cost. As such four bus improvement options (B4-B7) were examined individually and in combination to address capacity and connectively issues. These were as follows:

- **Option B4**: Create a new 'peak period' orbital Service N8A between the M50/N2 interchange and Blanchardstown Centre via North Blanchardstown, preferably using the Option H1 road connection with the N2/R135 partial interchange. Re-route existing Service N8 the same way;
- **Option B5**: Create a new 'direct' Service between Swords and Blanchardstown Centre via the Airport, Horizon Logistics Park, DALP and North Blanchardstown (R132, R108 and R135-Option H1 Link);
- **Option B6**: Increase the peak frequency of the single Service W4 currently proposed from SW Dublin (**B6a**). Additionally, consider Extending Service W2 to Blanchardstown Centre (**B6b**) or add new Service W2A Variant (**B6c**)
- **Option B7**: Extend orbital Service N6 from Finglas to Blanchardstown Centre via North Blanchardstown.

The options for improving orbital bus capacity to the north of North Blanchardstown are more 'stand-alone' than those considered for improving 'local' connectivity/radial enhancement. There is, however, a degree of overlap,

as implementing either Option B4 or B5 would also achieve the improved cross-link between South Blanchardstown and North Blanchardstown which Option B1 proposes. However, Options B4 or B5 would need to extend beyond Blanchardstown Centre to Ongar and the railway station at Clonsilla to achieve the same 'local' linkages. Options B4 and B5 both improve bus connections to different areas in North Dublin and Swords respectively. However, Option B4 (by improving/supplementing the N8 Service) has an opportunity to cater for both, particularly with MetroLink in place and interchange possible at the airport 'hub'. In contrast, Option B5 is unable to service demand from the North Dublin area without complementary bus enhancements.

improvements or enhancements to Services W2 and W4 (Option B6 variants) will realistically cater for and be attractive to movements between SW Dublin/Lucan and the wider Blanchardstown area. Using a car shift transfer assumption of 50%, the northbound and southbound demand 'uplifts' emerge as 1,800 and 1,700 respectively. Based on this assessment, Options B6b and B6c which both extend existing Service W2 to Blanchardstown Centre and supplement it, would both be required to make a material headway in catering for this level of public transport demand. By way of comparison the 2042 ERM public transport demand is only 700 and 800 in the northbound and southbound directions.

In summary, the above analysis has identified a range of opportunities for public transport connections to enhance connectivity to and from the North Blanchardstown study area. From this analysis, it is clear that a bus-based solution will be sufficient to cater for future demand, including required mode shift away from private car.

Supplementary options

A series of supplementary options are also outlined and taken for further consideration as part of the Transport Strategy for the GDA. These include:

- Creation of a new internal access road between the Cherryhound-Tyrrelstown Link Road and the part of the R135 west of the N2;
- A new cycle / pedestrian linkage between the Cherryhound-Tyrellstown Link Road and the R135 across the eastern part of the North Blanchardstown area;
- Improving off-road cycle facilities between Ongar and Tyrellstown via the R156 / N3 interchange, Damastown Road, Dmastown Close and Damastown Avenue.

1. Introduction

1.1 Background to the study

The National Transport Authority (NTA) commissioned Jacobs Engineering Ireland Limited (Jacobs) in collaboration with Systra to complete an Area Based Study for North Blanchardstown.

This study was commissioned in order to inform the NTA's review of the Transport Strategy for the Greater Dublin Area (2016 – 2035), which will consider the future development of the transport system for the period up to 2042. In this context, the purpose of this study is to:

- Provide a comprehensive assessment of future travel demand in the North Blanchardstown area;
- Identify realistic potential options to meet future travel demand to and from this area, and in particular to cater for demand into Dublin City Centre and other key destinations;
- Focus in particular on options for public transport and active modes provision, taking account of emerging proposals;
- Assess potential options using a multi-criteria assessment framework; and
- Recommend options which can be taken forward for further assessment as part of the development of the revised Transport Strategy.

1.2 Overview of the study area

The North Blanchardstown study area, as defined by the NTA, is approximately 9km to the northwest of Dublin City Centre, as shown in Figure 1.1.

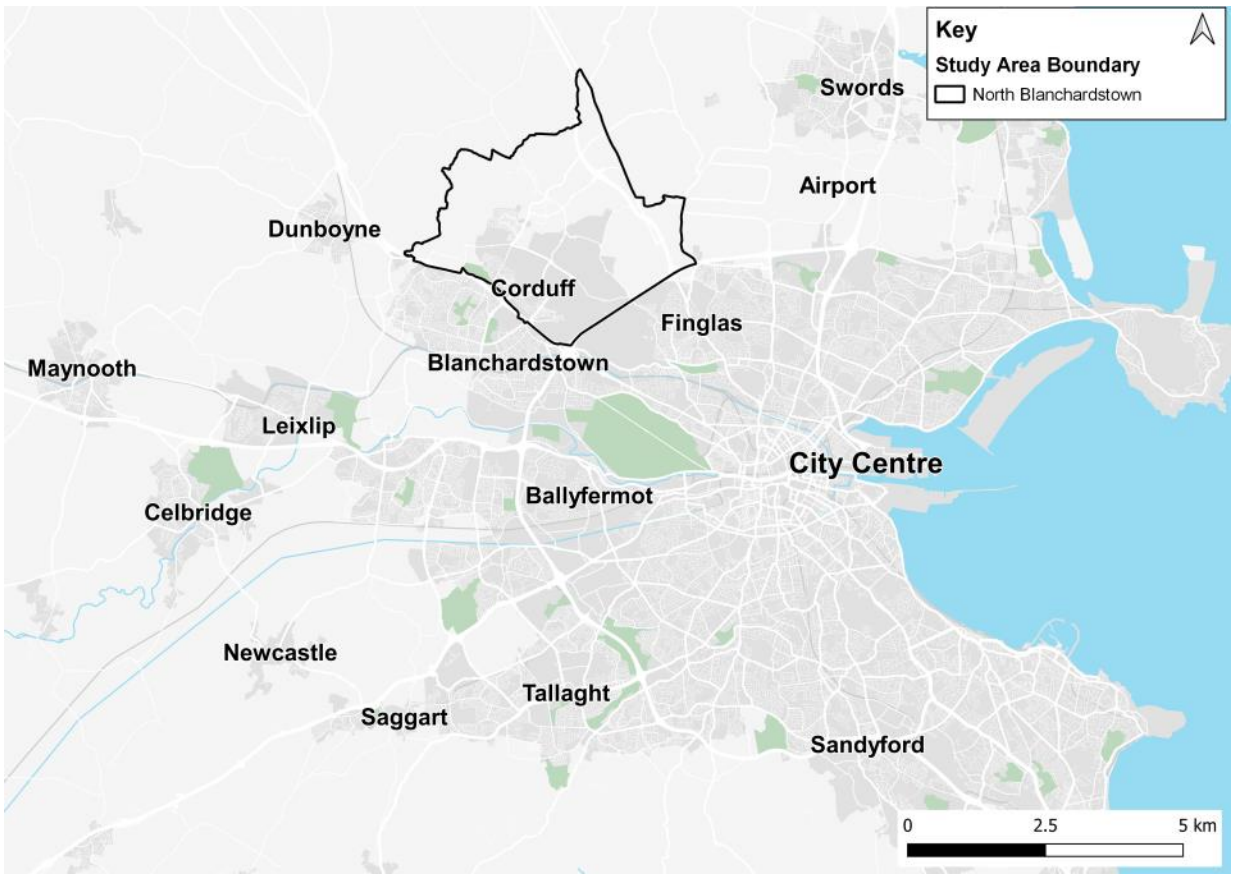


Figure 1.1: North Blanchardstown Study Area

Figure 1.2 provides a more detailed overview of the study area which falls into Fingal County Council. The study area covers just over 35 km^2 and includes the electoral divisions of Blanchardstown-Corduff, Blanchardstown-Mulhuddart, Blanchardstown-Tyrrelstown, the Ward, and parts of the electoral divisions of Blanchardstown-Abbotstown and Dubber. It lies on the north-western edge of the Dublin urban area, Phoenix Park lies close to the area to the southeast, as well as the Royal Canal and surrounding countryside.

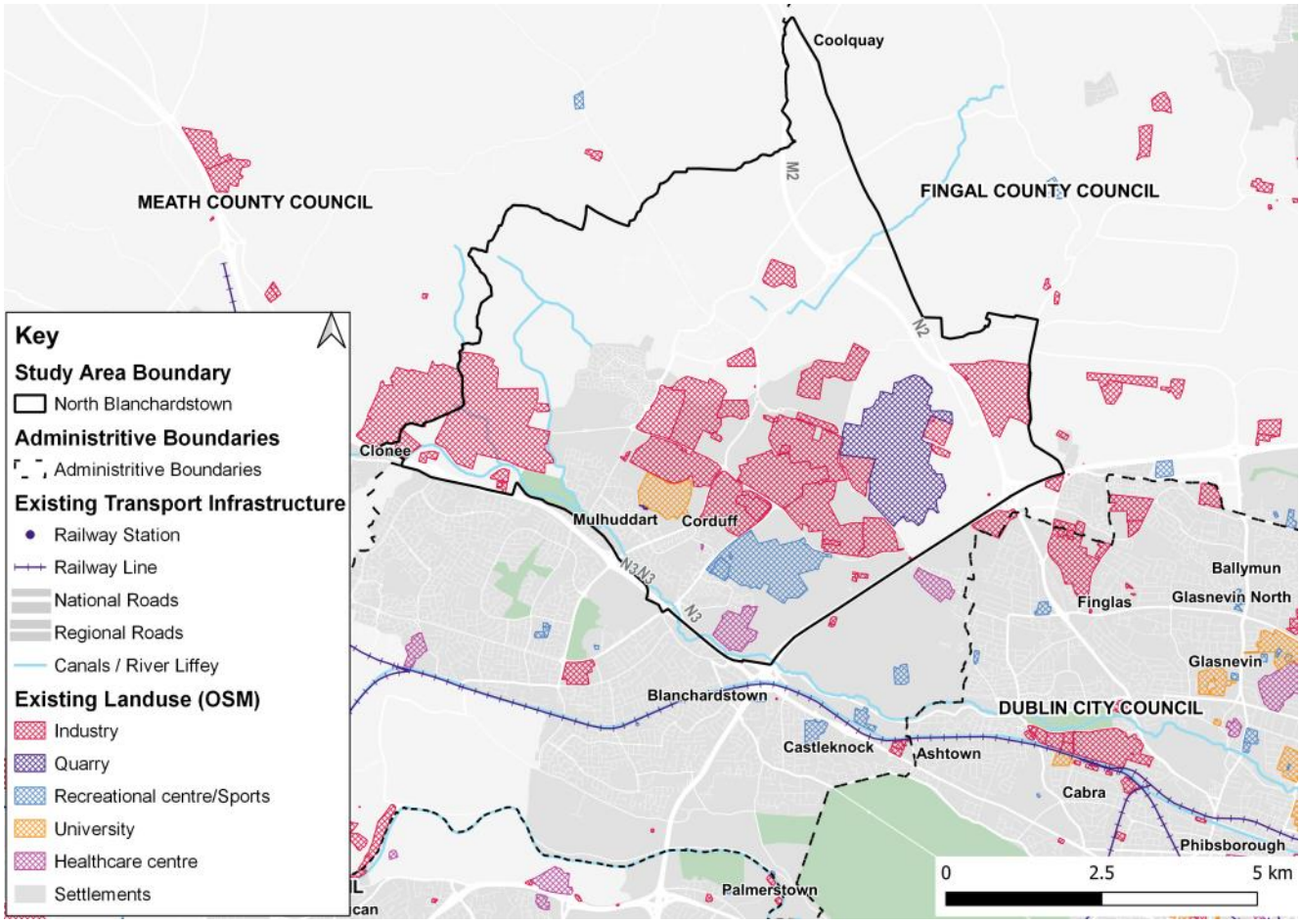


Figure 1.2: North Blanchardstown Study Area (Study Area Context)

The study area is bounded by three National Roads (the M50, N2 and N3). This includes two major interchanges; the N3 / M50 to the south and the N2 / M50 to the east. Some Regional Roads route through or close to the area as follows.

- R121 Blanchardstown Road North/Cruiserath Road/Church Road/Ward Road;
- R122 Saint Margaret's Road;
- R135 North Road; and
- R843 Snugborough Road.

The Dublin Maynooth and Dunboyne Railway lines and Royal Canal run from east to west through the southern part of Blanchardstown to the south of the study area. The closest rail station is Castleknock, which is approximately 0.5 km from the N3/M50 interchange and is served by the R806 running south-west from Blanchardstown Centre to Castleknock and Phoenix Park. Facebook Clonee Data Centre, in County Meath, borders with the study area to the west of Damastown Industrial Park. The main bus 'hub' is situated in Blanchardstown Centre, which lies to the south of the N3 and adjacent to the R121 and R843 'Snugborough' interchanges (N3 Junctions 2 and 3). This will be further upgraded as part of BusConnects.

As can be seen in Figure 1.2, the area consists of mixed land uses with industry being predominant. Key attractors include:

- University: Institute of Technology Blanchardstown (ITB), part of TU Dublin, located to the south-west;
- Healthcare centres/hospital: Connolly Hospital Blanchardstown and Corduff Primary Care Centre located to the south-east;
- Recreational centres/sports: National Sports Campus located to the south-east;
- Employment centres/industry: Dublin Airport Logistics park, Ballycoolin, Millennium, Hollywood, Rosemount and Northwest Business Parks, College Business and Technology, Blanchardstown Corporate and Damastown Industrial Parks located throughout the study area; and
- Quarry: Huntstown quarry located to the east.

1.3 Study methodology

The methodology for this study is based on the Area Based Transport Assessment (ABTA) process, which has been developed by both the NTA and Transport Infrastructure Ireland (TII). This approach ensures that movement and accessibility of all forms, across all modes of travel, is considered in the development of areas at a local level. The ABTA approach has been adapted for the purposes of this study comprises the following key steps:

- Policy Context – understand the planning and transport policy context within which this study sits;
- Baseline Assessment – provide a clear understanding of the existing spatial characteristics, land uses, transport conditions and constraints in the study area;
- Establish Context – understand the future growth proposals for the study area as well as future travel patterns which proposed transport options need to serve;
- Options Development and Assessment – identify high-level transport options to serve demand in the study area and assess them via a multi-criteria analysis against the objectives of the study; and
- Final Summary – present the options to be taken forward and investigated further.

1.4 Report structure

This report is comprised of the following chapters:

- Chapter 2 – Policy context
- Chapter 3 – Baseline assessment;
- Chapter 4 – Future context;
- Chapter 5 – Options development;
- Chapter 6 – Options assessment; and
- Chapter 7 – Summary.

2. Policy Context

This section provides a comprehensive review of existing national, regional and local level legislation, policy, and guidance relevant to this study. It examines plans, policies and objectives at all levels in order to provide the broad context for this area study. It therefore frames the development of the study and provides a context for the identification of interventions which align with wider policy goals.

2.1 National policy

2.1.1 Project Ireland 2040 - National Planning Framework

Project Ireland 2040 was adopted by the Government in February 2018 and includes two elements:

- National Planning Framework (NPF) - shaping development in economic, environmental and social terms to 2040; and
- National Development Plan (NDP) - setting out the investment priorities that will underpin the NPF from 2018 to 2027.

Project Ireland 2040 provides the framework for future development and investment in Ireland and is the overall Plan from which other, more detailed plans will take their lead, including city and county development plans and regional strategies. The NPF is a tool to assist the achievement of more effective regional development.

The objectives of the NPF, in brief, are to:

- Guide the future development of Ireland, taking into account a projected 1 million in population and create 660,000 additional jobs and 550,000 more homes by 2040;
- Direct 25% of this growth to Dublin, 25% across Cork, Limerick, Galway and Waterford and the remaining 50% across key regional centres, towns and villages (as set out in the RSES); and
- Co-ordinate delivery of infrastructure and services in tandem with growth, helping to tackle congestion and quality of life issues.

The NPF represents the overarching national planning policy document and is underpinned by a series of core principles named National Strategic Outcomes (NSOs) which include:

- NSO 1 Compact Growth;
- NSO 2 Enhanced Regional Accessibility;
- NSO 4 Sustainable Mobility;
- NSO 7 Enhanced Amenity and Heritage; and
- NSO 8 Transition to a Low Carbon and Climate Resilient Society.

These principles are translated by supporting policies and actions at sectoral, regional and local levels.

In relation to Dublin, the NPF requires the preparation of the Dublin Metropolitan Area Strategic Plan (part of the RSESS), and notes that the identification of infrastructure required to sustain growth is a key priority of this Plan. In relation to Dublin, the NPF itself sets a clear focus on:

- Supporting future growth by better managing growth and ensuring it can be accommodated within and close to the city. This includes a focus on underutilised land within the canals and M50 ring, and a more compact urban form.
- Enabling significant population and jobs growth in the Dublin metropolitan area, together with better management of the trend towards overspill into surrounding counties.

There will be a requirement for significant greenfield development on sites which have good integration with the city and can be served by high capacity public transport. Some existing sites have already been designated as Strategic Development Zones (SDZs).

Addressing infrastructural bottlenecks, improving quality of life and increasing housing supply in the right locations.

Key transport-related growth enablers for Dublin include:

- Delivering key rail projects set out in the Transport Strategy for the GDA including Metro Link, DART expansion and the Luas green line link to Metro Link;
- The development of an improved bus-based system, with better orbital connectivity and integration with other transport networks;
- Delivering the metropolitan cycle network set out in the GDA Cycle Network Plan, including key commuter routes and urban greenways; and
- Improving access to Dublin Airport, including public transport.

This policy sets the context for the development of transport interventions, including those considered through this study. It highlights that there will be significant growth to 2040 and that improvements to public transport and active mode provision are key to supporting the levels of planned development.

2.1.2 Project Ireland 2040 - National Development Plan

The NDP sets out the enabling investment to implement the strategy set out in the NPF, for the period 2018 to 2027. Under the NDP, investment in public transport infrastructure will be accelerated to support the development of an integrated and sustainable national public transport system consistent with the NPFs NSOs of Sustainable Mobility and Company Growth. Projects with allocated funding within the NDP include:

- Continued investment in bus and train fleets and infrastructure;
- The delivery of the Dublin BusConnects programme;
- The complete construction of Metro Link;
- Delivery of the priority elements of the DART Expansion Programme;
- A Park & Ride programme; and
- Cycling and walking networks in key urban areas.

These projects will deliver significant improvements. This study, and other work the NTA is doing to review the Transport Strategy for the Greater Dublin Area will consider other longer-term interventions required to support the NPF to 2040 and beyond.

2.1.3 Investing in Our Transport Future: Strategic Investment Framework for Land Transport (2014)

The Strategic Investment Framework for Land Transport (SIFLT) sets out the strategic framework to consider the role of transport in the future development of the Irish economy and estimates the appropriate level of investment required in the land transport system. The framework establishes:

- High-level priorities for future investment in land transport; and
- Key principals, reflective of those priorities, to which transport investment proposals will be required to adhere.

Priorities include:

- Achieve steady state maintenance – emphasising the importance of efficient maintenance and management;

- Addressing urban congestion – recognising that improvements to the efficiency and sustainability of urban transport systems are a key priority. The document specifically notes that this "must be guided by demand/capacity assessments and recognise the role of urban centres as key drivers of economic activity, nationally and regionally." It goes on to say that measures should include improve and expanded public transport capacity, walking and cycling infrastructure as well as Intelligent Transport Systems to improve efficiency and capacity; and
- Maximising the contribution of land transport networks to national development.
- This framework highlights the need for this study to identify measures that address urban congestion and improve the provision of sustainable transport modes.

2.1.4 Project Ireland 2040 – Draft National Investment Framework for Transport in Ireland (NIFTI)

NIFTI is the Department of Transports new high-level strategic framework for prioritising future investment in the land transport network. At the time of writing, the public consultation for NIFTI is currently underway and expected to conclude in May 2021. Once published, NIFTI will replace SIFLT as the framework for future land transport investment. NIFTI is intended to ensure that transport investment is aligned with and supports the NPF and its NSOs. NIFTI outlines key investment priorities that future transport projects must align with to be considered for funding.

Priorities include:

- Decarbonisation – Recognises the fact transport accounts for approximately one-fifth of Irish greenhouse gas emissions, therefore decarbonisation is an urgent priority in the context of climate change targets;
- Protection and renewal – many of the challenges faced by the network can be addressed, at least partially, through protection and renewal. Adequate maintenance is necessary to ensure safety, make sustainable modes an attractive option, deliver connectivity and accessibility and ensure the resilience of key pieces of infrastructure;
- Mobility of people and goods in urban areas – requires prioritisation in order to facilitate compact and sustainable growth in towns and cities. Support will be given to projects that reduce urban congestion, especially through the use of sustainable mobility measures; and
- Enhanced regional and rural connectivity – through addressing priority bottleneck and network constraints as well as ensuring all parts of the country are well-served with access to major ports and airports.
- This framework highlights the need for this study to identify measures to address issues such as climate change and urban congestion through model shift and improved provision for sustainable modes.

2.1.5 Smarter Travel: A Sustainable Transport Future (2009 to 2020)

Smarter Travel: A Sustainable Transport Future presents an overall policy framework for sustainable transport in Ireland. The policy sets out a vision, goals and targets to be achieved and outlines 49 actions that form the basis of achieving a more sustainable transport future.

Smarter Travel acknowledges that continued growth and dependency on the private car is not sustainable and therefore sets on objective to promote a significant mode shift in favour of public transport, walking and cycling. A key target in this regard was to reduce the proportion of travel to work trips by car from 65% to 45%.

Key goals of Smarter Travel include:

- Improving quality of life and accessibility to transport for all;
- Improving economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks;

- Minimising the negative impacts of transport on the environment through reducing air pollution;
- Reducing overall travel demand and commuting distances in the private car; and
- Reducing reliance on fossil-fuel-based transport modes.

Please note, this policy is currently under review as part of the Sustainability Mobility Policy Review. Consultation on the review closed in early 2020. The consultation documents emphasised that the purpose of the review was to put in place a new policy which supports:

- A shift away from the private car to greater use of active travel and public transport;
- Travel by cleaner and greener transport; and
- Comfortable and affordable journeys to and from work, home, school, college, shops and leisure.

The new policy will align with the NPF and will replace the Smarter Travel policy, plus the National Cycle Network Policy Framework.

This policy highlights the need for this study to place key emphasis on identifying the interventions required to support mode shift.

2.1.6 National Cycle Policy Framework (2009 to 2020)

Ireland's first *National Cycle Policy Framework 2009-2020's* vision is that all cities, towns, villages and rural areas will be bicycle friendly. The overarching mission of the Framework is to create a strong national cycling culture to align with *Smarter Travel's* objective that 10% of all trips will be by bike by 2020.

The Framework sets out a comprehensive package of interventions – both 'hard' (planning and infrastructure) and 'soft' (communication and education) – to make cycling a convenient and safe option for everyone. The approach recommended is a hierarchy of measures, including:

- Reducing volumes of through-traffic, especially HGVs, in urban centres and in the vicinity of schools and colleges;
- Calming traffic/ enforcing low traffic speeds in urban areas; and
- Making junctions safe for cyclists and removing multi-lane one-way street systems.

A number of objectives relevant to this study include:

- Support the planning and design of urban centres to support cyclists and pedestrians;
- Improve integration between cycling and public transport to enable multi-modal travel;
- Provide secure parking for bikes; and
- Evaluate and monitor the implementation of measures.

Please note, this policy is currently under review as part of the Sustainable Mobility Policy Review. This policy highlights the need for this study to proactively identify the cycle infrastructure required to support future growth.

2.1.7 Building on Recovery: Infrastructure and Capital Investment (2016 to 2021)

Building on Recovery: Infrastructure and Capital Investment 2016-2021, published by the Department of Public Expenditure and Reform in 2016, presents the Government's new €42 billion framework for infrastructure investment in Ireland over the period 2016 to 2021.

The Exchequer transport capital allocation is largely framed by the recommendations and priorities set out in the *Strategic Investment Framework for Land Transport* (superseded by the *Planning Land Use and Transport Outlook 2040* in 2018). These priorities are threefold:

- Maintain and renew the strategically important elements of existing land transport system;
- Address urban congestion; and
- Improve the efficiency and safety of existing transport networks.

Under the Plan, €100 million is being committed to smarter travel and carbon reduction measures, including Greenways, to ensure that the transport sector makes a major contribution to climate change mitigation targets.

This policy highlights the need for this study to identify measures that contribute to climate change mitigation targets, whilst addressing the priorities outlined above.

2.1.8 Climate Action Plan (2019)

The *Climate Action Plan: To Tackle Climate Breakdown* was published by the Government in June 2019. The Plan identifies how Ireland will achieve its 2030 targets for reduction in carbon emissions and a pathway towards achieving a net zero emissions by 2050.

A central pillar of this plan is the role that transport can play in reducing our carbon footprint and improving air quality in our towns and cities. The plan acknowledges that the delivery of improved public transport will lead to a modal shift away from unsustainable transport choices and go a large way to the decarbonization challenge that lies ahead.

The *Climate Action Plan* sets a target reduction of 45-50% in Ireland's transport emissions by 2030. The projected increase in population and economic activity and the resulting increased travel demand from the movement of people and goods will further intensify Dublin's current decarbonisation challenge. In 2017, transport accounted for a significant proportion of Ireland's greenhouse gas emissions – approximately 20%.

Other targets in relation to transport include:

- Increasing the number of electric vehicles;
- Building the electric vehicle charging network at the rate required to meet demand;
- Require at least one recharging point in new non-residential buildings with more than 10 parking spaces; and
- Raise the blend proportion of biofuels in road transport.
- This plan highlights the need for this study to identify measures that contribute to reductions in transport related carbon emissions.

2.1.9 Road Safety Strategy (2013 to 2020)

The Road Safety Strategy set out targets to be achieved in terms of road safety in Ireland, with the primary target defined as follows:

'A reduction of road collision fatalities on Irish roads to 25 per million population or less by 2020 is required to close the gap between Ireland and the safest countries. This means reducing deaths from 162 in 2012 to 124 or fewer by 2020. A provisional target for the reduction of serious injuries by 30% from 472 (2011) to 330 or fewer by 2020 or 61 per million population has also been set.'

The Strategy goes on to state that 'the attractiveness of walking depends strongly on the safety of the infrastructure provided. Collisions involving pedestrians account for 1 in 5 fatalities annually.' It also notes that 'collisions involving cyclists account for 1 in 25 road deaths annually, and many collisions involving cyclists lead to serious head injuries.'

The Road Safety Authority (RSA) undertook a consultation on their new strategy 2021-2030, which closed in November 2020. The new strategy is proposed to have an end date of 2030 to align with the EU Road Safety

Policy. The review document notes that while the long-term trend shows that roads in Ireland have become safer for road users overall, this has not been the case for all road user groups. It notes that the biggest decrease in fatalities was among pedestrians and that there were 68% fewer pedestrian causalities in 2019 compared to 2000, but that pedestrians are still the second largest fatality group, behind car occupants. The new strategy will look at how to further reduce fatalities and serious injuries and how to deal with new issues in road safety.

2.1.10 UN Convention for the Rights of People with Disabilities

In March 2019, Ireland ratified the *UN Convention on the Rights of People with Disabilities*. Article 9 of the 'UNCRPD' includes the right to transport and creating an accessible end to end journey, with the user focus central to this approach. Its focus is:

"To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas. These measures, which shall include the identification and elimination of obstacles and barriers to accessibility, shall apply to, inter alia:

Buildings, roads, transportation and other indoor and outdoor facilities, including schools, housing, medical facilities and workplaces.

Information, communications and other services, including electronic services and emergency services."

Article 9 for the first time enshrines the right to transport within Irish legislation. The focus on Usability and Accessibility has implications and opportunities across transport planning and provision, including the National Planning Framework and the way that schemes are appraised to capture wider benefits associated with ensuring this Right.

2.1.11 Other national guidance

The following national guidance has also been considered:

- Area Based Transport Assessment Guidance (ABTA), NTA/TII, 2018;
- Design Manual for Urban Roads and Streets (DMURS), Department of Transport, Tourism and Sport, 2013 (updated 2019);
- National Physical Activity Plan, Healthy Ireland, 2019 (updated 2021);
- National Cycle Manual, National Transport Authority, 2011;
- Permeability: A Best Practice Guide, National Transport Authority, 2015;
- Five Cities Demand Management Study (Government of Ireland, 2021);
- Achieving Effective Workplace Travel Plans; Guidance for Local Authorities, National Transport Authority[2].

2.2 Regional policy

2.2.1 Regional Spatial and Economic Strategy for the Eastern and Midland Region (2019 to 2031)

The *Regional Spatial and Economic Strategy for the Eastern and Midland Region* (RSES) translates the objectives of the NPF at a regional level and provides a link between the NPF and local plans. Overall, it provides a

[2] https://www.nationaltransport.ie/wp-content/uploads/2012/03/Achieving-Effective-Workplace-Travel-Plans-Guidance-for-Local-Authorities11.pdf

framework for investment to better manage spatial planning and economic development throughout the Region to 2031, and beyond to 2040.

The RSES identifies 16 regional strategic outcomes (RSOs). Integrated transport and land use is one of these, aiming to promote best use of transport infrastructure and promote sustainable and active modes of travel. The key challenge facing the region is identified as the transition to a low carbon society. The RSES therefore identified a number of primary areas of transition – with sustainable transport systems being one of these.

Dublin Metropolitan Area Strategic Plan

The Metropolitan Area Strategic Plan (MASP) for Dublin sets out a strategic planning and investment framework for the Dublin metropolitan area covering the short term (to 2026), medium term (to 2031) and longer term (to 2040). It includes a vision for future growth to 2031 including large scale development opportunities and a sequence of infrastructure priorities. It envisages a 250,000 increase in population of the metropolitan area between 2016 and 2031.

The vision is underpinned by a spatial framework in line with the overall settlement strategy focussed on:

- Consolidation of Dublin City and suburbs;
- Key towns of Swords, Maynooth and Bray; and
- Planned development in strategic development areas in Donabate, Dunboyne, Leixlip and Greystones.

The MASP includes a number of guiding principles for development, with a key focus on integrated transport and land use, focussing growth on public transport corridors and nodes. It aims to see 50% of all new homes within or adjoining the existing built up area in Dublin and 50% in other settlements. To unlock development capacity in strategic development areas, the MASP identifies sequencing of enabling infrastructure and directs the cross sectoral investment required to deliver development.

The MASP identifies five strategic development corridors and areas and for each, highlights the:

- Population capacity (as opposed to targets) in the short, medium, and longer term;
- The strategic residential development opportunities;
- The strategic employment opportunities; and
- The infrastructure required to enable this development in the short to medium and medium to longer term.

The MASP recognises that "Facilitating modal shift to more sustainable transport options, including walking and cycling is a key element in promoting better traffic management and climate change strategies in the metropolitan area." It supports the NTA Greater Dublin Area Cycle Network Plan and recognises that Greenways (such as the Dodder Valley Greenway) are of strategic value as routes.

2.2.2 Transport Strategy for the Greater Dublin Area (2016 to 2035)

The *Transport Strategy for the Greater Dublin Area 2016-2035* provides a framework for the planning and delivery of transport infrastructure and services in the GDA up to 2035. It provides a transport planning policy around which other agencies involved in land use planning, environmental protection, and delivery of other infrastructure such as housing, water and power, can align their investment priorities.

The GDA's transport infrastructure must be planned for and invested in on the basis of the following:

- Assumed sustained economic growth;
- Substantial population growth;
- Full employment;
- That no one is excluded from society, by virtue of the design and layout of transport infrastructure and services or by the cost of public transport use; and
- That the environment in the GDA is protected and enhanced.

The Strategy set out high-level proposals for the walking, cycling, public transport and road networks, as well as parking management measures and other supporting measures for the entire GDA. This study looks to update work done as part of this strategy with a new forecast year of 2042.

2.2.3 Transport Strategy for the Greater Dublin Area Review

The NTA is required by legislation to review the Transport Strategy for the Greater Dublin Area every six years. The ongoing review will assess the implementation of the current plan and look to produce an updated strategy which will set out the framework for investment in transport infrastructure and services, through to 2042. The NTA aims to complete the review by the end of 2021, so that the new strategy can be approved by the Minister for Transport in early 2022.

The review process recognises that the following are particular challenges and considerations for the new strategy:

- Climate change and the environment – recognising the need for transport to lead the way towards a net zero emissions future;
- Growth and change – ensuring the public transport investment aligns with changes in the location of population, jobs and schools;
- Health and quality – recognising that transport can open up opportunities and have a positive impact on health and wellbeing;
- The economy – with effective public transport being a major driver of economic activity; and

This transport study will feed into the review process currently being undertaken by the NTA.

2.2.4 Greater Dublin Area Cycle Network Plan

The Greater Dublin Area Cycle Network Plan was adopted by the NTA in early 2014 and is identified as a key future growth enabler for Dublin in the NPF.

The plan forms the strategy for the implementation of a high quality, integrated cycle network for the GDA. This involves the expansion of the urban cycle network from 500km to 2,480km, comprising a mix of cycle tracks and lanes, cycle ways and infrastructure-free cycle routes in low traffic environments. Within the urban network this will consist of a series of routes categorised as follows:

- **Primary** – main cycle arteries that cross the urban area and carry most cycle traffic – target quality of service (QoS) of two abreast plus overtaking width = 2.5m

- **Secondary** – link between principle cycle routes and local zones – target QoS of single file plus overtaking width = 1.75m
- **Feeder** – cycle routes within local zones and/or connection from zones to the network levels above.

2.3 Local policy

The primary policy document guiding development in North Blanchardstown is the Fingal County Development Plan (2017 – 2023). Sheet 12 of the Plan shows the specific land use proposals in North Blanchardstown. Not unexpectedly given the existing level of employment land use in the area, most of the land to the east of the existing residential centres of Waterville, Corduff and Tyrellstown is zoned for either commercial, general industrial or heavy industrial uses. As part of this, a significant area of greenfield land served by the Cherryhound-Tyrellstown Link Road is allocated for general industry use and subject to a Local Area Plan (12.A) which is still in development. Most of the new residential development in the area is expected to occur to the north of the existing 'built' Tyrellstown area, with a large land allocation extending at its eastern end to the Cherryhound-Tyrellstown Link Road. The is subject to a separate Local Area Plan (12.B), with development having commenced at the eastern end already.

3. Baseline Assessment

3.1 Description of the study area

3.1.1 General

The North Blanchardstown Study Area is largely bounded by the M50, N/M2, N/M3 and the Fingal / Meath County Boundary. It forms part of the larger Blanchardstown area, which is a Metropolitan Consolidation Town.

The bus is the only form of public transport in the area. The closest major bus hub is located at Blanchardstown Town Centre, which is just outside and south of the study area. In terms of cycling, the NTA has plans to implement more primary, secondary and greenway cycle routes in the area.

The areas close to the N3 Navan Road corridor are more concentrated in terms of built development, consisting of mixed land uses, whilst the rest is more industrial and agricultural. Also, there is some dispersed farmland to the south and east. Mulhuddart, Corduff and Tyrrelstown are the main local centres in the area.

The Institute of Technology Blanchardstown, which is part of TU Dublin, is the most significant third level Institution in Fingal, and is located on Blanchardstown Road. The National Sport Campus, which includes the Aquatic Centre and other pitches and arenas is located nearby at Abbotstown and is served by the R843 Snugborough Road. Connolly Hospital, situated close to the N3 Navan Road, is one of the biggest in Dublin and operates as a major teaching hospital as well. In addition, a number of business and technology parks and pharmaceutical companies have long established operations in the area. Huntstown Quarry is located to the east of the study area.

North Blanchardstown, and its expansion to the west, includes the following settlements:

- *Tyrrelstown* which is a residential area located to the west of the R121 Church Road. The wider area includes new planned development at Kilmartin (LAP 12.B);
- *Hollystown* is a residential area located north of Tyrrelstown. Hollystown Golf Club is inside this area as well. An area of LC zoning is identified in the centre of the village to provide additional facilities to serve the emerging residential population, including that of Kilmartin; and
- *Mulhuddart Village* is a commercial, retail and local services centre, located to the south of the study area and close to Damastown Industrial Park.

3.1.2 Transport network and services

Road network

The North Blanchardstown study area is bounded on its southern side by the M50 motorway, the N2 to the east and the N3 Navan Road to the southwest. The N3 splits the area from the remainder of the Blanchardstown area, with the commercial centre located to the south. The northern perimeter of the area is bounded by the Fingal County boundary. Figure 3.1 shows the main highway network surrounding and within the North Blanchardstown area.

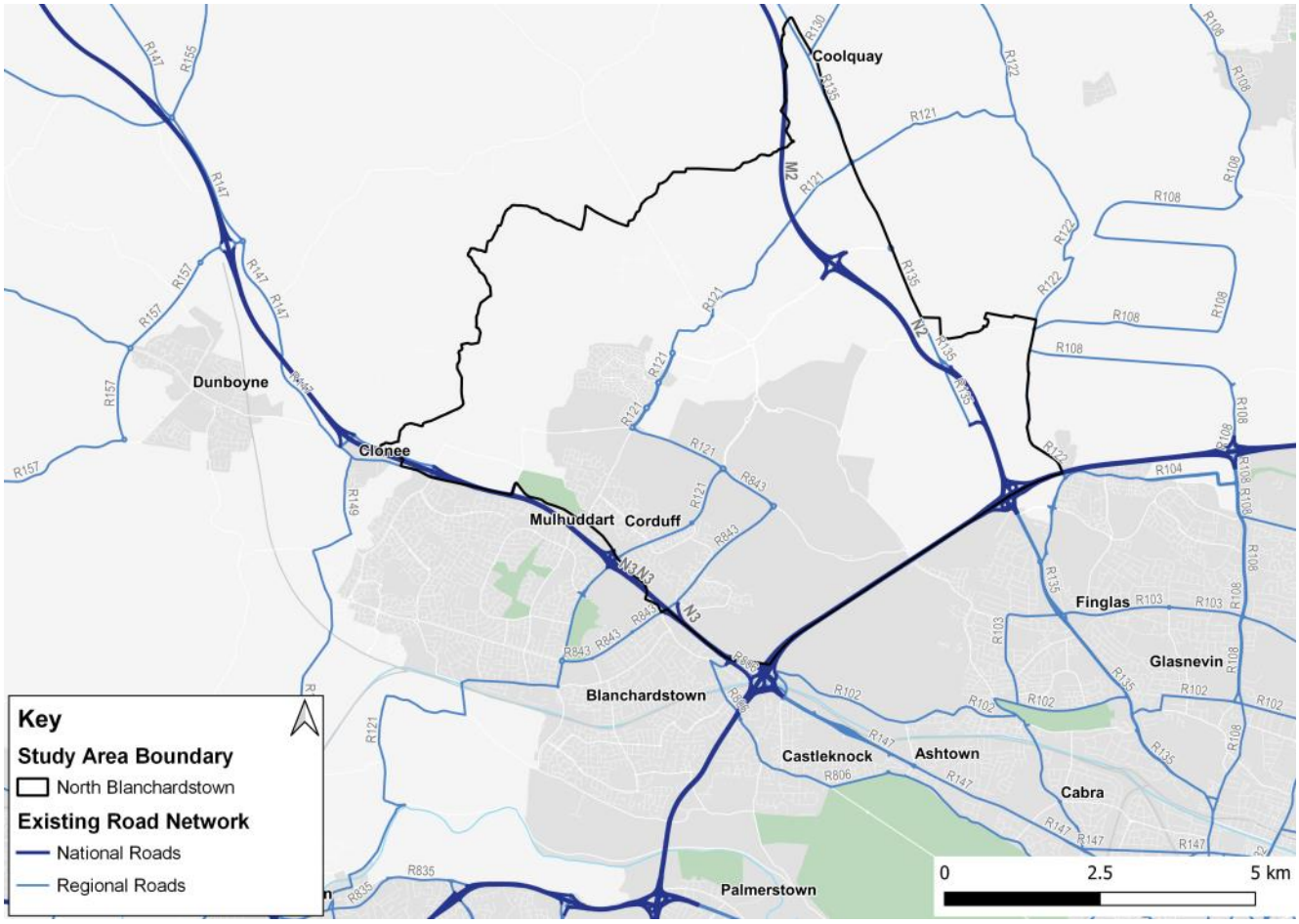


Figure 3.1: North Blanchardstown road network

National road network

The national road network provides the basis for Dublin's wider national-level and inter-regional connectivity. As noted above, there are Motorway and National roads bounding the North Blanchardstown area on three sides, with the form and operation of the M50's junctions with the N2 and N3 having a critical future influence on highway capacity and accessibility. A brief description of these key national routes is given below.

- **M50**: The M50 bounds the southern side of the North Blanchardstown area, separating it from Finglas This part of the M50 is four lanes in each direction, with large grade-separated interchange junctions with the N2 and N3 Navan Road. Access across the M50 between the two interchanges is limited to Cappagh Road, which bridges over the motorway. Data shows that the section between the N2 and N3 interchanges is the most heavily trafficked part of the M50, with an Annual Average Daily Traffic (AADT) flow of 150,750 vehicles[3]. The 'peak' recorded on the same section in May 2019 was 176,890 vehicles/day. Despite this, the level of service in both directions remains above unstable or 'forced breakdown' flow conditions at the present time, even in the weekday peak periods.
- **M2 / N2**: The National Route (M2/N2) skirts the eastern margin of the North Blanchardstown area and is constructed to dual carriageway standard (D2AP). The motorway designation (M2) terminates just south of where route R121 bridges over at a large grade-separated roundabout junction. This interchange provides the 'key' point of highway access into the northern part of the North Blanchardstown area. There is an eastern connection to the R135, and a western connection through North Blanchardstown to the roundabout junction with Corduff Road. It is noticeable that this western spur is constructed as a dual carriageway, so is of considerably greater highway standard and capacity

[3] Transport Infrastructure Ireland (TII) Report ' National Road Network Indicators – 2019'

than the parallel section of the R121 to the north which is a single carriageway and relatively narrow. Interim roundabout junctions along this spur serving what are currently greenfield sites show the primary purpose of this link is enabling highway infrastructure to bring forward development in this part of the North Blanchardstown area.

To the south of this 'all movements' interchange, the only access to the N2 is via south-facing slip-roads with the R135 where this regional road passes under the N2. However, this is primarily a connection between the N2 and the R135 to the north, as opposed to a useful high-capacity access to/from North Blanchardstown. This is because the link between Cappagh Road (NW Business Park) over the N2 to the R135 (Kilshane Cross) is only a relatively narrow single carriageway road, with highway capacity likely further constrained by the traffic signals at Kilshane Cross. This route has little in the way of footway provision and is likely to be well used by HGV traffic due to the surrounding land uses. It is thus a hostile route for cyclists, although it is the only opportunity for crossing the N2 other than routing via the interchange to the north. The latter is probably more undesirable, and no off-road cyclist provision is made at this interchange. However, it is noted that a segregated footway/cycleway is provided on both sides of the new road link from the N2 to the Corduff Road junction and beyond, but provision simply terminates on approach to the N2 interchange.

Data provided in the Transport Infrastructure Ireland (TII) Report 'National Road Network Indicators - 2019' shows that the section of the N2 between the M50 and Coldwinters had an Annual Average Daily Traffic (AADT) flow of 40,750 vehicles in 2019. The level of service in both directions remains reasonably free flow or better in the weekday.

- **N3 Navan Road:** The N3 Navan Road forms the southwestern boundary of the North Blanchardstown area. As expected, with Blanchardstown Centre and the remainder of Blanchardstown to the south of the Navan Road, the connectivity across the N3 is better than is the case with the M50 and N2. The principal access junction with the N3 is an 'all movements' diamond interchange with the R121 Blanchardstown Road, which provides the main access to Blanchardstown Centre situated adjacent to its southern side. The other grade-separated connections with the N3 are as follows:
  - Partial SE facing slip-road junction with the R843 Snugborough Road, which links the Waterville area in North Blanchardstown with the south side of Blanchardstown Centre; and
  - Partial NW facing slip-road junction where a link crosses over the main-line N3 from Connelly Hospital in North Blanchardstown to the Littlepace area in South Blanchardstown.

  Data provided in the Transport Infrastructure Ireland (TII) Report 'National Road Network Indicators - 2019' shows that the section of the N3 between the M50 and Clonsilla carried an Annual Average Daily Traffic (AADT) flow of 78,750 vehicles in 2019, so nearly double that observed on the parallel N2 route. This reflects the greater concentration of development around it in Blanchardstown and its immediate proximity to the commercial centre.

  Not unexpectedly, the existing highway operating conditions on this part of the N3 are far more variable. During the weekday morning peak period (7:00-9:00 am) the identified level of service is one of forced or breakdown flow conditions in the inbound direction towards the M50. In the evening peak period between 4:00-7:00 pm the situation is a little better, although unstable flow conditions are common in the outbound direction from the M50 interchange. The number of slip-road connections and relative proximity are likely factors contributing to the existing peak period congestion, particularly in the AM peak period, with high levels of joining traffic likely to impede and create 'shock-wave' queuing impacts on the high mainline flow towards the M50.

Regional road network

The study area's regional road network comprises generally SW-NE aligned routes linking the N3 with development areas in North Blanchardstown, although the R121 extends to and crosses the N2. A brief description of each is provided below:

- **R121**: The R121 extends through South Blanchardstown and crosses the N3 just north of Blanchardstown Centre to Blanchardstown Road North. This part of the R121 extends some 2km through Corduff to a roundabout junction with Ballycoolin Road/Corduff Road. The highway standard

of Blanchardstown Road North varies, with the section through Corduff to the roundabout junction with Blackcourt Road a four-lane single carriageway. This incorporates bus lane provision in both directions, albeit dis-continuous, with segregated footway/cycleway provision on both sides. Between Blackcourt Road and Ballycoolin Road the route standard is a two-lane single carriageway, with a segregated footway/cycleway again on both sides. At the Ballycoolin Road/Corduff Road junction, the designated R121 route turns westwards towards Tyrrelstown. This part of the route as far as the Church Road/ Damastown Avenue roundabout is a wide single carriageway with 2-lanes, and again benefits from fully segregated footway/cycleways on both sides. At Tyrellstown the R121 turns northwards and is constructed to dual carriageway standard as far as the roundabout junction with Hollystown Road. As with the remainder of the route, this has segregated footway/cycleways on both sides throughout as well. To the north of Hollystown Road the route standard of the R121 reduces significantly to a narrow single carriageway in the main. However, as noted in the earlier discussion on the N2, this part of the route is terms of strategic significance has been replaced by the newer dual carriageway road link connecting the N2 interchange with Corduff Road, and thereafter Hollystown Road.

- **R843**: The R843 Snugborough Road extends from its junction with the R121 Blanchardstown Road South (in South Blanchardstown) to Ballycoolin Road in North Blanchardstown. As noted earlier, it has a grade-separated (partial) junction with the N3 and extends through the residential area of Waterville to serve the industrial/commercial areas to the northeast, notably the Rosemount Business Park and the Northwest Business Park. The section in North Blanchardstown between Waterville Road and Ballycoolin Road is a four-lane single carriageway with relatively continuous bus lane provision in both directions. There is a continuous segregated footway/cycleway on the southwest side and, whilst a continuous cycle lane does exist on the northeast side, this involves some lengths within the northbound bus lane where the footway width is too restricted to allow segregated shared use.

Local road network

There are some other local roads of significance, as follows:

- **Cappagh Road**: The route is locally important as it provides the only opportunity for vehicular access to/from North Blanchardstown across the M50 between the N2 and N3 interchanges. The existing single carriageway bridge over the M50 has only narrow footways, although the roundabout immediately north of the bridge has been constructed with cycleway/footways around it. South of the bridge there is a segregated footway/cycleway on the northern (inbound) side of Cappagh Road as far as New Cross College, but little or no off-road cyclist provision in the outbound direction towards North Blanchardstown. North of the M50, Cappagh Road skirts and provides access to the eastern side of the existing business park zone. The highway standard takes the form of a wide single carriageway with continuous segregated footway/cycleways on both sides.
- **Corduff Road**: This is a north-south dual carriageway link providing a more direct connection between the R121 Blanchardstown Road and the N2 interchange. In doing so, it removes traffic pressure from the R121 where it passes through Tyrrelstown. As with much of the internal road infrastructure in North Blanchardstown, there are continuous segregated footway/cycleways along the length of Corduff Road on both sides.
- **Ballycoolin Road**: This is a single carriageway link between the R843 and the R121 on the south side of the existing commercial/industrial zone. Unusually, given widespread provision elsewhere, there is no off-carriageway provision for cyclists, with only footways on each side with intervening verges.
- **R843-Cappagh Road Link**: This link completes (with Ballycollin Road) the main 'through' connection between Cappagh Road and the development land to the north of the existing business park area (Rosemount and Northwest Business Parks). Although variable in width it is essentially a wide single carriageway with provision made for separate right turning lanes at the various access junctions along it. At its eastern end there is length of existing eastbound bus lane (circa 300 metres) on approach to the roundabout junction with Cappagh Road.

Rail network

Heavy Rail

The heavy rail system in the GDA comprises several individual rail lines, including a combination of DART, Commuter and Intercity services. Of these, as shown on Figure 3.2 the Maynooth line is the closest to the North Blanchardstown study area.

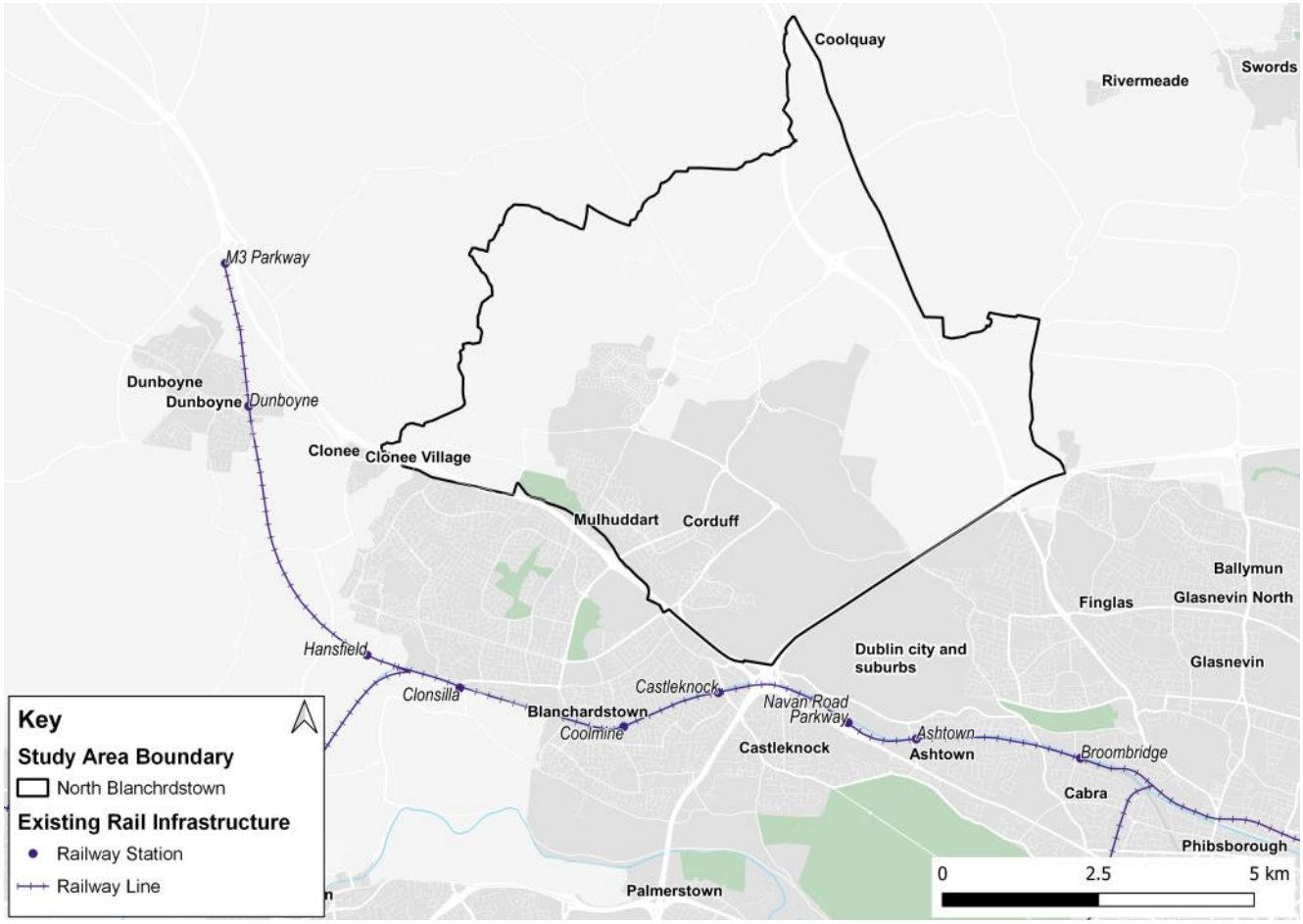


Figure 3.2: Existing heavy rail network in the area

This line currently provides diesel Commuter services between central Dublin and Maynooth, with a lower frequency service extending to Longford, as well as Intercity services further afield to Sligo. In addition, a spur line branches off the Maynooth line just to the east of Clonsilla station, on which Commuter services are provided to Pace/M3 Parkway, also serving intermediate stations at Hansfield and Dunboyne.

The Maynooth line currently has up to 7 trains per hour per direction, with a total capacity of around 4,500 passengers. At peak times, in particular the AM peak, there is significant pressure on service capacity.

There are three heavy rail stations on the Maynooth line within 2km of the North Blanchardstown area as shown on Figure 3.2 These are as follows (note that the same services generally call at all three stations):

- Castleknock is the nearest station to the study area but is still located some 500m from the southern edge of the area and is not well-connected to the study area. The station at Castleknock is small and suburban in nature, with no public vehicular access or car parking at the station. Informal interchange with passing bus services is possible on Castleknock Road. With the New Dublin Bus Network (as described later) Services 35 and 37 route close to the station on the R806, but only provide onward connectivity to Waterville, Corduff and Blanchardstown Centre;

- Coolmine is located almost 2km from the study area to the south of Blanchardstown Centre. Another small suburban station, there are currently no bus services immediately passing the station, the nearest bus stop being some 200m further south (on Carpenterstown Road) although the service (number 34) does link to Blanchardstown Town Centre every 20-25 minutes. Unlike Castleknock station though, Coolmine does have a car park; and
- Navan Road Parkway is located around 1.4km from the southern edge of the study area, and, as the name suggests, can currently only be accessed from the Navan Road, and has a car park (of a similar size to that at Coolmine station). The station area is also a public transport interchange, with a number of bus services (currently 12-15 per hour per direction) using the dedicated grade-separated junction on the Navan Road. Being adjacent to Navan Road, this station will be on the 'B-spine' (routes B1-B4) under BusConnects proposals. Note also that interchange between bus and rail is tempered slightly in that buses do not currently enter the station forecourt, but use stops on the exit slip-roads.

In addition, on the M3 Parkway spur line, the station at Dunboyne is located around 1.8km from the western edge of the study area. This station has no bus links into the study area though is linked to Blanchardstown Town Centre. The station at Dunboyne does have a car park, so could potentially act as a railhead for residents of the study area.

Light Rail

The Dublin Light Rail system (Luas) currently consists of two lines. The Red Line runs from Tallaght in south-west Dublin to the Point, with a spur from north of Tallaght to City West/Saggart at the western end, and from Busáras to Connolly in the city centre. The Green Line runs from Bride's Glen in South Dublin to Broombridge via the city centre and a one-way loop incorporating O'Connell Street northbound and Parnell/Marlborough southbound. These lines provide a high frequency, high-capacity service along these corridors, with trams operating at a frequency of up to every 3 minutes at peak hours.

However, neither line currently runs to the North Blanchardstown study area. The nearest approach is the northern terminus of the Green Line at Broombridge, which is over 4km from the study area, although Broombridge is an interchange station with heavy rail services on the Maynooth/M3 Parkway Line, as illustrated in Figure 3.3 below.

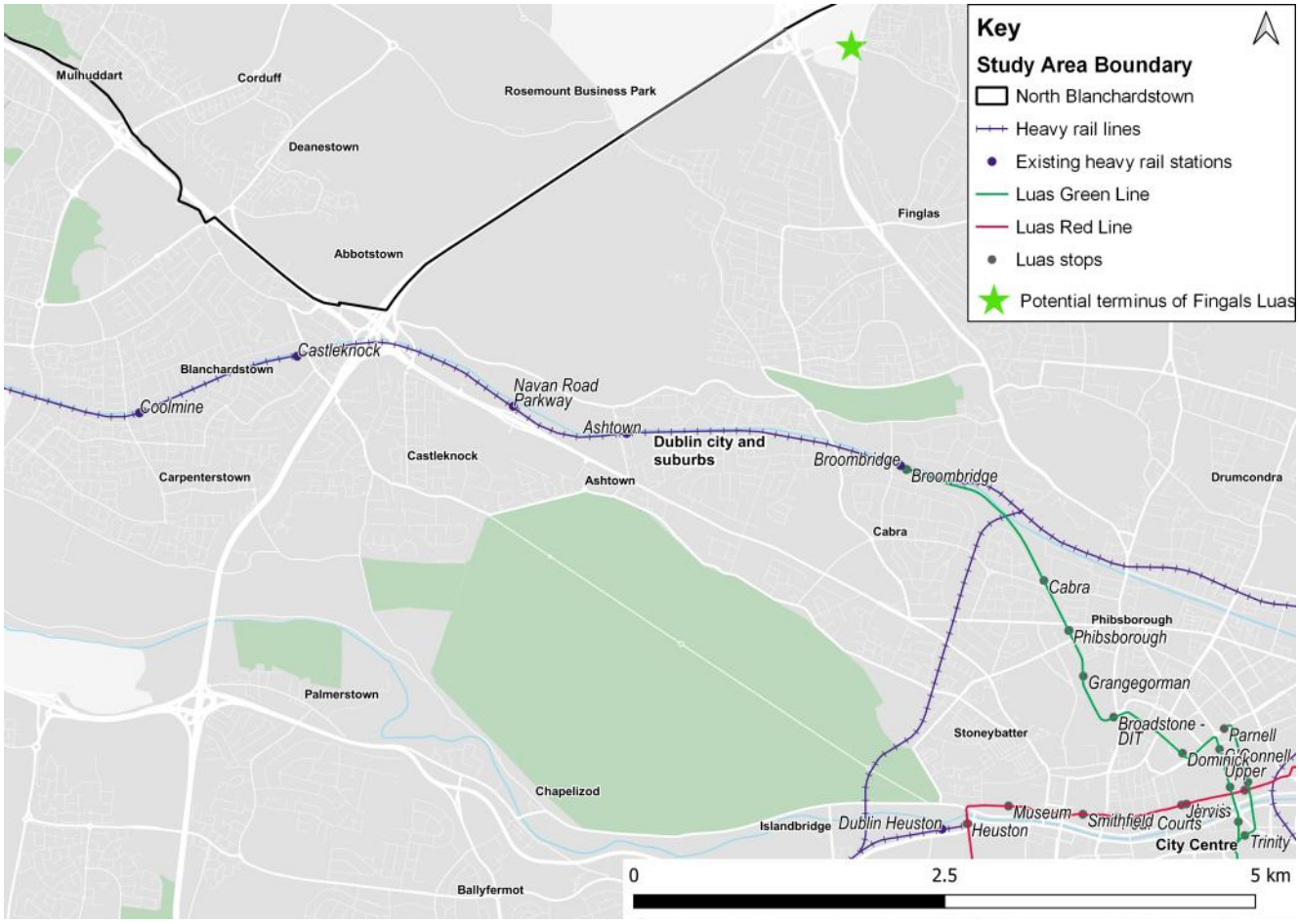


Figure 3.3: Existing Luas light rail near study area

Bus network

As part of the BusConnects programme, a redesign of the bus network serving Dublin is proposed (New Dublin Area Bus Network) to provide a more coherently planned network. This is due to be implemented over the coming years, and is therefore set out here as part of the baseline as opposed to a systematic overview of the existing scheduled route network which is subject to imminent changes.

The new network features:

- **Spine routes** - frequent routes made up of bus services timetabled to work together along a radial corridor;
- **Orbital routes** - providing connections between the suburbs, town centres and key transport interchanges without requiring travel into the city centre;
- **Other city-bound routes** - other routes which operate on their own timetables outside of the spine routes;
- **Local routes** - routes providing connections within local areas;
- **'Peak only' routes** - services operating during peak periods to provide additional capacity on key corridors; and
- **Express routes** – direct services from outer suburbs to city centre at peak times.

The North Blanchardstown area will be served by a combination of spine, orbital, local and peak routes as shown in Figure 3.4 below.

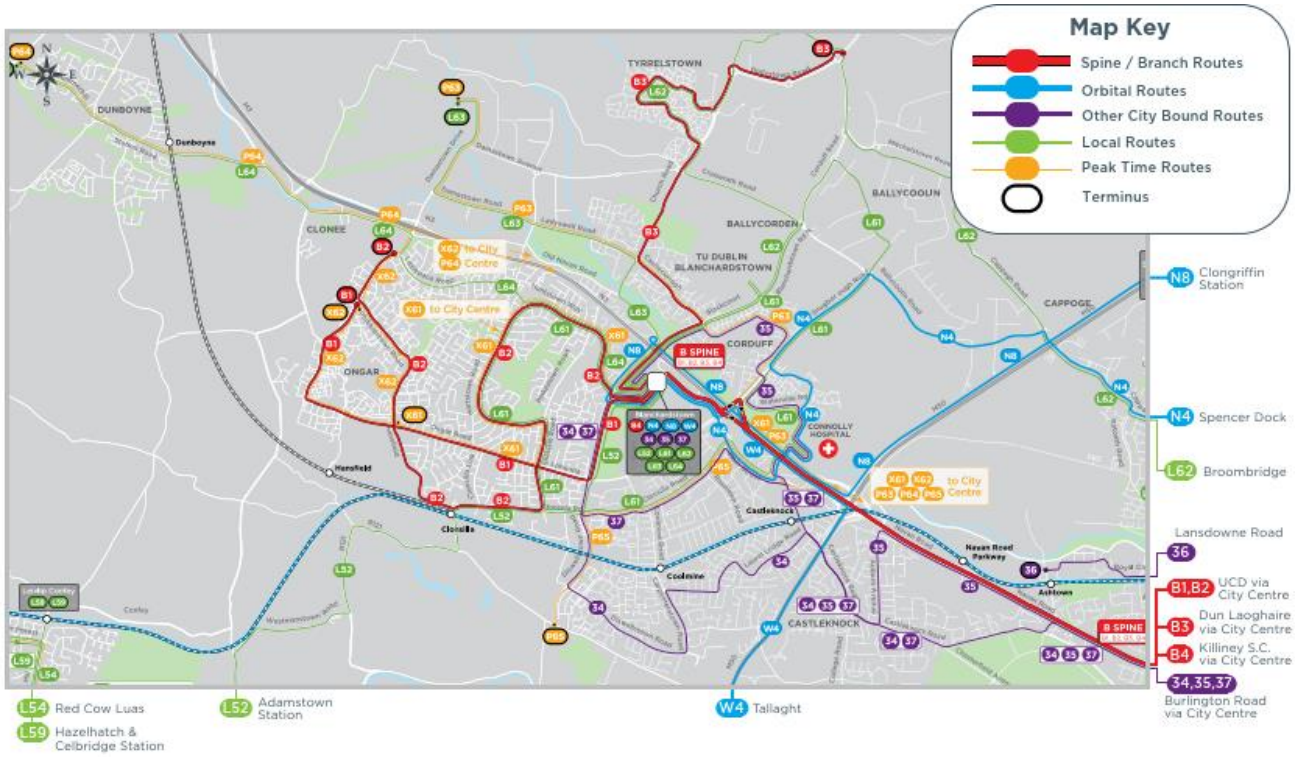


Figure 3.4: North Blanchardstown bus network map (BusConnects, 2021)

A summary of the routes and their frequencies is shown in Table 3.1, which ranks the services in terms of frequency. With respect to frequencies, these vary slightly, but generally provide buses every 4-15 minutes (spine/orbital) and 30-60 minutes (express/peak period). Peak period times are usually between 0700 to 0900 for the AM period, and 1600 and 1800 for the PM period.

Table 3.1: 2021 Bus Services and Frequencies

Route Type	Service	Route	Weekday Peak Headway (Mins)
Spine routes	B-Spine	Blanchardstown SC - City Centre - UCD	4
	B1	Ongar - City Centre - UCD	15
	B2	Ongar North - Clonsilla - City Centre - UCD	15
	B3	Tyrrelstown - City Centre - Dún Laoghaire	15
	B4	Blanchardstown SC - City Centre - Sallynoggin	15
	F2	Charlestown - Finglas NW - City Centre - Templeogue	15
Orbital routes	N4	Blanch. SC - Finglas - DCU - Collins Ave - Docklands	10
	N8	Blanch SC - Dublin Airport - Clongriffin	30
	W4	Blanch. SC - Liffey Valley - Grange Castle Rd - Tallaght	15
Other routes	24	Airport - Charlestown - Ballygall Rd - Merrion Square	20
	35	Blanch. SC - Corduff - Castleknock - Burlington Rd.	20
Local routes	L61	Blanch. SC - Blanch. Village - Ballycoolin (2-way loop)	15
	L63	Damastown - Blanchardstown	15
	L62	Blanchardstown - Tyrrelstown- Broombridge	30

Route Type	Service	Route	Weekday Peak Headway (Mins)
	L89	Airside - Swords - Knocksedan - Toberburr - Finglas	60
Peak only / express route	X61	Hartstown - Huntstown - City Centre	15
	X62	Ongar - Littlepace Distributor - City Centre	15
	P63	Damastown - Corduff - City Centre (two-way)	20
	P64	Dunboyne - City Centre	30
	P65	Diswellstown Rd - Clonsilla Rd - City Centre	30

The main 'Spine' connection into the City Centre, defined as the 'B Spine', operates along the N3 Navan Road/R147 from Blanchardstown Centre, with three of the four spine services (B1-B4) providing local connectivity to Ongar (B1, B2) and Tyrrelstown (B3). The 'B Spine' route is the most frequent service within the study area with one running every 4 minutes on a weekday and every 4 and 5 minutes on a weekend.

Planned orbital connections are provided by Services N8, N4 and W4. Service N8 operates between Clongriffin Station and Blanchardstown Centre via the airport, but routes along the N3 Navan Road and the M50 between Blanchardstown and the M50/Ballymum Road interchange and so provides no direct local access to the North Blanchardstown area. Services N4 and W4 collectively provide an orbital bus route corridor connection between Spencer Dock (Dublin Port) to the east and Tallaght to the south, but with interchange required at Blanchardstown Centre. The N4 route, in routing via Finglas and so Cappagh Road into North Blanchardstown, does provide some direct connectivity to land-uses within the area. However, this is limited to the southern corner of the area with no connectivity to much of the existing commercial/industrial area or indeed the identified areas for large-scale development to the north. This relies on service interchange at Blanchardstown Centre.

Bus permeability into the area north of Ballycoolin based on two local services L61 and L62. The first provides a local 'loop' operating between Ongar and the Northwest Business Park via Blanchardstown Centre and Connolly Hospital. The L62 operates between Blanchardstown Centre and Broombridge but takes a circuitous and slow route via residential roads in Tyrrelstown and estate roads on the north side of the Northwest Business Park. As noted above, Service B3 which provides a 'B Spine' connection to Tyrrelstown does provide a relatively high frequency link into the North Blanchardstown area, but this will not service the existing industrial/commercial areas. Whilst the route terminus extends to the roundabout at the Corduff Road/Hollystown Road junction, this may also be short of where it needs to be to service the 'greenfield' land allocated for industrial development to the north and east.

Cycling network

The existing cycling facilities within North Blanchardstown generally provide strong links to the business and industrial parks in the western part of the study area. As noted in the discussion on the local highways, segregated footway/cycleways adjacent to the carriageway are in place on both sides of the road in many locations.

Figure 3.5: Existing cycle facilities in North Blanchardstown

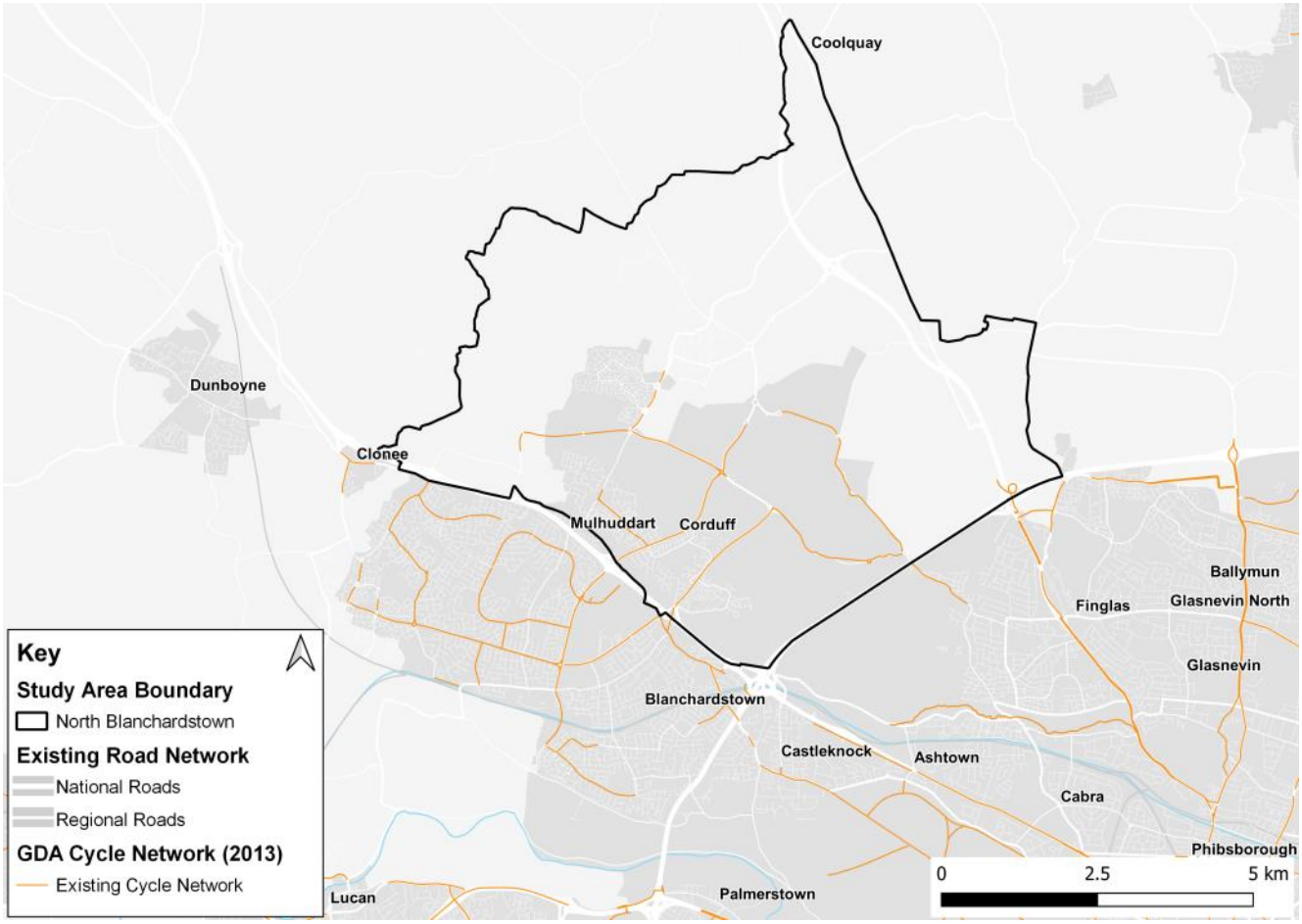


Figure 3.5: Existing cycle facilities in North Blanchardstown

Current barriers are predominately the limited crossing facilities at major roads (particularly the N2 and M50) which border the area. Cycle connectively is poor across the N2 on the eastern side of the North Blanchardstown area. Segregated footway/cycleways on the Cherryhound-Tyrrelstown Link Road west of the N2 interchange simply stop short at the junction. The narrow road over the N2 to Kilshane Cross is also a hostile environment for cyclists given the width of the road and high level of use by HGVs. At the southern end of the R135 there is a ramped cycle bridge linkage through the M50/N2 interchange to a shared footway on the east side of the N2 (to Charlestown Place), However, there is no access to the part of the R135 on the west of the N2 from the North Blanchardstown area. Access for cyclists is therefore only possible via Kilshane Cross (R135). This limited connectivity to the east and south may inhibit access to / from Dublin Airport Logistics Park and residential land uses in Finglas. It is also noted that cycle connectivity to the north-west is currently limited, particularly links between the study area and Damastown Industrial Park and Clonee.

At N3 Junction 2 (Snugborough Interchange) there are no formal facilities for cyclists on the R843 Snugborough Road between the Waterville Road roundabout and the signal-controlled junction with the R806 Main Street on the west side of the N3. There is an existing underpass to the R843, as well as the N3 Navan Road, which provides an off-road cycle linkage between Old Corduff Road and the R806 Main Street. However, this is unlit and has poor surveillance. However, facilities here will be improved by planned changes to the N3 Snugborough interchange, with the two-year contract being awarded in February 2021. This is discussed later in Chapter 4 when discussing planned transport interventions in the current GDA Strategy (2016-2035) which are not currently in place.

At the N3 Junction 3 (R121) interchange, segregated footway/cycleways on both R121 approaches transition to on-carriageway cycle lanes where the route passes over the twin bridge structure. These bridges respectively accommodate three traffic lanes in each direction, a cycle lane and a footway. Despite continuous cyclist provision, the lack of physical segregation from vehicles over the bridge in what is a heavily trafficked location makes this an intimidating section for cyclists, particularly in the eastbound direction where the marked cycle lane is located between the nearside (LT) and central running lanes.

Walking network

Throughout the study area, footways/footpaths and street lighting are generally provided adjacent to all public roads providing good connectivity within and between residential areas and places of work or education, thereby allowing people to use the most sustainable modes of transport, namely walking. However, because the study area is predominantly industrial to the north, and more dispersed, most of the footpath/footway network is concentrated within the residential areas adjacent to the N3 (Waterville/Corduff) and Tyrellstown.

Parking provision

Off-street parking provision within the study area (both public and private) is focused around the key trip attractors**.** Not unexpectedly, the largest concentration of off-street parking is around Blanchardstown Centre.

Road safety

The number of collisions/accidents by any mode of transport in the North Blanchardstown area are quite low. The most recent data (2016) shown in Figure 3.6 below shows that there has been one fatal personal injury accident on the N2, and another two fatal accidents in Blanchardstown South to the south of the study area.

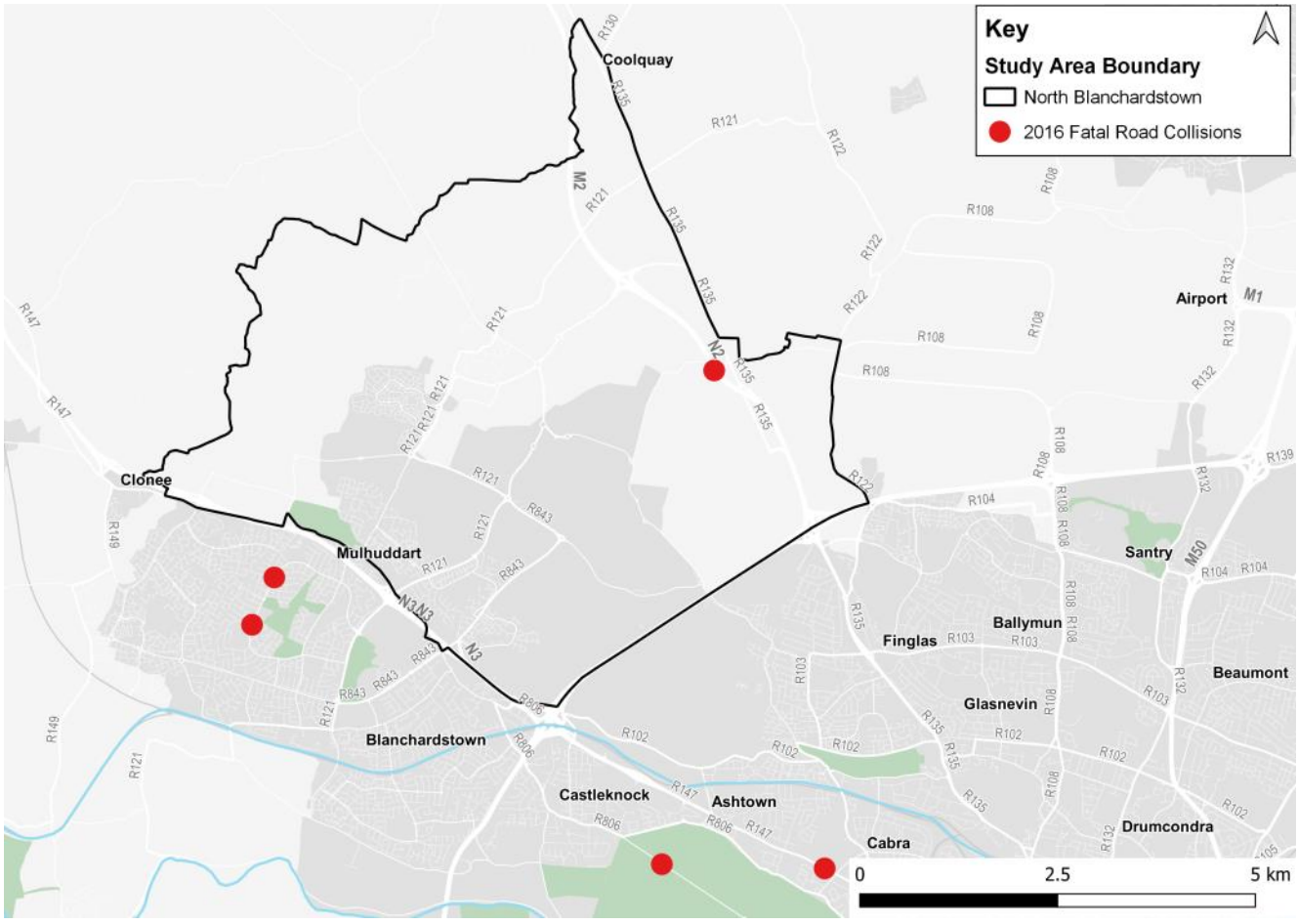


Figure 3.6: Personal Injury Accidents (2016) – Blanchardstown Area[4]

3.2 Existing travel patterns

3.2.1 Key trip attractors

The key attractors in the North Blanchardstown area include:

- **Universities**: Institute of Technology Blanchardstown (ITB), part of TU Dublin, located to the south-west;
- **Healthcare**: Connolly Hospital Blanchardstown and Corduff Primary Care Centre located to the south-east;
- **Recreational centres/sports**: National Sports Campus located to the south-east; and
- **Employment centres/industry**: Dublin Airport logistics park, Ballycoolin, Millennium, Hollywood, Rosemount and Northwest Business Parks, College Business and Technology, Blanchardstown Corporate and Damastown Industrial Parks are located throughout the study area; and
- **Quarry:** Huntstown quarry located to the east.

3.2.2 Car ownership

Table 3.2 displays car ownership data. The proportion of houses with at least one car within the study area (79%) is broadly in line with the GDA (78%), whilst the proportion of houses with at least two cars is lower in the study area (29%) than the GDA (37%). Within the study area the proportion of houses with at least one car is highest in The Ward (84%) and Blanchardstown (Abbotstown) (82%).

Table 3.2: North Blanchardstown Car Ownership Data (2016 Census)

Area	Total Households	Cars per household					
		0	1	2	3	4+	Not stated
Greater Dublin Area	666,724	18%	41%	31%	5%	2%	4%
Study Area	7,573	13%	47%	28%	3%	1%	7%
Blanchardstown-Abbotstown	1,349	11%	52%	28%	1%	0%	7%
Blanchardstown-Corduff	1,271	20%	49%	21%	5%	1%	4%
Blanchardstown-Mulhuddart	1,247	17%	51%	23%	3%	1%	5%
Blanchardstown-Tyrrelstown	965	21%	50%	18%	1%	0%	10%
Dubber	85	12%	44%	21%	6%	2%	5%
The Ward	2,656	7%	41%	38%	5%	1%	8%

3.2.3 Travel data

Travel to Work / School / College by Mode

As shown in Table 3.3, the proportion of people who travel to work by active modes (on foot or by bicycle) within the study area (12%) is marginally lower than the GDA as a whole (15%), predominately due to fewer on foot commutes in the study area. Overall, the proportion of people who travel to work by bus, minibus or coach within

[4] https://www.rsa.ie/en/RSA/Road-Safety/RSA-Statistics/Collision-Statistics/Ireland-Road-Collisions/

the study area (14%) is greater than within the wider GDA (10%) whilst those using the train is significantly lower, likely due to the lack of train connectivity in the study area. Car / van usage within the study area (55%) is in line with the wider GDA (55%).

Table 3.3: North Blanchardstown Travel to Work Data (2016 Census)

Settlement	Total Work	On foot	Bicycle	Bus, minibus or coach	Train, DART or LUAS	Motorcycle or scooter	Car / van driver	Car passenger	Other / Not Stated
Greater Dublin Area	835,694	10%	5%	10%	7%	1%	55%	3%	9%
Study Area	10,685	6%	3%	13%	2%	1%	58%	5%	12%
Blanchardstown -Abbotstown	2,170	8%	4%	14%	5%	1%	54%	5%	10%
Blanchardstown -Corduff	1,469	13%	3%	15%	1%	1%	54%	4%	8%
Blanchardstown -Mulhuddart	1,598	7%	5%	15%	2%	1%	60%	5%	5%
Blanchardstown -Tyrrelstown	1,021	9%	3%	13%	1%	0%	52%	5%	16%
Dubber	176	2%	0%	2%	0%	0%	33%	3%	60%
The Ward	4,251	2%	2%	12%	1%	1%	64%	5%	13%

Table 3.4 displays travel to school / college data by mode. The proportion of people who travel to school / college on foot within the study area (29%) is marginally lower than the for the GDA (31%). High proportions of walking trips predominately take place from / within Blanchardstown (Corduff) (42%) and Blanchardstown (Mulhuddart) (32%).

The proportion of people who travel to school / college by bicycle within the study area (3%) is broadly in line with the GDA (4%). Car passengers within the study area (38%) is higher than the GDA (35%). Lower proportions of car passenger trips take place from / within Blanchardstown (Corduff) (27%) whilst the proportions from all other areas exceed the GDA (35%).

Table 3.4: North Blanchardstown Travel to School / College Data (2016 Census)

Settlement	Total School / College	On foot	Bicycle	Bus, minibus or coach	Train, DART or LUAS	Motorcycle or scooter	Car / van driver	Car passenger	Other / Not Stated
Greater Dublin Area	427,946	31%	4%	18%	4%	0%	4%	35%	5%
Study Area	6,811	25%	3%	20%	1%	0%	2%	38%	10%
Blanchardstown -Abbotstown	783	19%	3%	16%	1%	0%	3%	49%	10%
Blanchardstown -Corduff	900	42%	3%	18%	2%	0%	2%	27%	6%
Blanchardstown -Mulhuddart	1,267	32%	3%	18%	1%	0%	3%	37%	7%
Blanchardstown -Tyrrelstown	1,147	21%	4%	24%	1%	0%	2%	34%	14%

Dubber	55	0%	0%	9%	0%	0%	2%	45%	44%
The Ward	2,659	21%	2%	22%	1%	0%	2%	41%	10%

Journey time to Work / School / College

Table 3.5 displays travel times to work / school / college. In line with the GDA, the majority of trips to work / school / college in the study area have a journey time under 45 minutes.

Table 3.5: North Blanchardstown Journey Time to Work / School / College Data (2016 Census)

Settlement	Travel to Work / School / College	Under 15 minutes	15 minutes to under 30 minutes	30 minutes to under 45 minutes	45 minutes to under one hour	1 hour to under 1.5 hours	1.5 hours and over	Not stated
Greater Dublin Area	1,237,858	24%	29%	21%	8%	8%	2%	8%
Study Area	17,365	24%	28%	18%	7%	7%	2%	14%

Table 3.6 displays time leaving home to travel to work / school / college data. The majority of trips place between 8:00 and 9:00 in the GDA (41%) and the study area (36%). In the study area more trips commence before 7:00 (17%) than in the GDA (14%).

Table 3.6: North Blanchardstown Time Leaving Home to Travel to Work / School / College Data (2016 Census)

Settlement	Travel to Work / School / College	Before 06:30	06:30 - 07:00	07:01 - 07:30	07:31 - 08:00	08:01 - 08:30	08:31 - 09:00	09:01 - 09:30	After 09:30	Not stated
Greater Dublin Area	1,237,858	6%	8%	11%	16%	22%	19%	5%	8%	6%
Study Area	17,365	8%	9%	11%	14%	19%	16%	4%	8%	11%

3.3 Environmental conditions

The following environmental conditions are of note for the North Blanchardstown study area:

- The ecological corridors in Fingal are along the major rivers, including their floodplains and the adjacent farmland or parkland. The Tolka and Ward rivers and their tributaries, are salmonid systems (designated pursuant to Directive 78/659/EEC) and are therefore of particular significance.
- Small areas close to the N3/M3, but also in the north of the area have been characterized as Nature Development Areas, as shown in Adopted Sheet no.15 of the Fingal County Development Plan. These areas are locations where nature conservation can be combined with existing activities such as farming, forestry, quarrying and recreation (e.g. golf courses). The areas and land-uses have been selected because of their existing or potential value for wildlife.
- There is one Geological Heritage Site (GHS) located to the south of the study area and this is the Mulhuddart (Lady's) Well. It may be designated, in due course, as a National Heritage Areas (NHAs) because of its geological interest from a national perspective.
- Air quality monitoring sites within the study area demonstrate that air quality is generally good to moderate at peak times. Data shows that there is only one exceedance of the target level for NO_2 (40) which, not unexpectedly, is on the N3 Navan Road close to the M50 interchange.

3.4 Summary of baseline assessment

Several key conclusions can be formulated from the examination of the existing transport networks surrounding or integral to the North Blanchardstown area. These are as follows:

- The North Blanchardstown area is directly served by existing high-capacity National Roads, namely the N2 and N3;
- 2019 network performance data obtained from Transport Infrastructure Ireland suggests that while there is capacity on the N2, the N3 Navan Road already experiences significant congestion problems in the inbound direction to the M50 interchange in the weekday AM peak period. The present BusConnects (Route 5) proposals include this section of road, but do not appear to impact significantly on the existing general traffic capacity along the N3.
- Much of the internal road infrastructure within North Blanchardstown is of a high standard and, in some cases, appears to have been constructed as 'enabling' highway infrastructure to bring forward development on existing greenfield sites. The dual carriageway Cherryhound-Tyrrelstown Link Road between Tyrellstown and the N2 interchange is a case in point, with this now of greater strategic significance and standard than the section of the designated R121 between Hollystown Road and the R135.
- A high percentage of the main 'internal' road network already has segregated footway/cyclist facilities in place, in most cases on both sides of the carriageway. However, current barriers are predominately the limited crossing facilities at major roads (particularly the N2 and M50) which border the area. Cycle connectively is poor across the N2 on the eastern side of the North Blanchardstown area. At the southern end of the R135 there is a ramped cycle bridge linkage through the M50/N2 interchange to a shared footway on the east side of the N2 (to Charlestown Place), However, there is no access to the part of the R135 on the west of the N2 from the North Blanchardstown area;
- Notwithstanding the forthcoming roll-out of the New Dublin Bus Network, there is a need to improve bus penetration and permeability into the North Blanchardstown area in order to serve growth up to 2042. At present, this is heavily centred around Blanchardstown Centre and the 'B Spine' via the N3/R147. Changes would ideally reduce the need for required interchange at Blanchardstown Centre for onward bus service connections into the North Blanchardstown area. In addition, whilst the 'F Spine' or BusConnects Route 4 provides a good level of bus service provision between the City Centre and Finglas (Charlestown Shopping Centre), the linkages northward into the North Blanchardstown lands may not be adequate in 2042. The orbital service N4 again requires interchange at Blanchardstown Centre; and
- In terms of heavy rail, the Maynooth line is the closest to the North Blanchardstown study area. Castleknock is the nearest station to the study area but is still located some 500m from the southern edge of the area and it is not well-connected to the study area. There is opportunity for Informal interchange with passing bus services (Services 35 and 37) on the R806, but these only provide onward connectivity to Waterville, Corduff and Blanchardstown Centre.

4. Context

This section sets out the context of the transport demand and transport supply in the forecast year of 2040. It builds on the baseline (2016) assessment to consider proposed growth and predicted future travel patterns and anticipated travel demand across the study area. This data forms the basis of the assessment of the future year issues and opportunities, and the basis for identifying potential options for intervention.

4.1 Future land use

4.1.1 Overview

The future land use scenario presented here is based on a Planning Sheet for 2040 provided by the NTA in discussion with relevant local authorities. It reflects the 2016 and 2040 population, employment, and education places across the study area in line with regional and local planning aspirations. It is aligned with the overall objectives of the NPF and the RSES.

As shown in Table 4.1, the Planning Sheet data assumes that within the study area over the period 2016-2040 there will be:

- An increase in the resident population in North Blanchardstown of 14%;
- An increase in the number of jobs in North Blanchardstown of 44%; and
- An increase in the number of education places in North Blanchardstown of 21%

Figures for the Greater Dublin Area (GDA) are also shown for comparison. As can be seen, the expected population growth in North Blanchardstown is less than the overall expected change in the GDA. However, the employment growth locally is expected to be greater than the change in the GDA.

Table 4.1: North Blanchardstown 2016 – 2040 Growth Projections

Area	2016	2040	Growth	
			Absolute	Percentage
Population				
North Blanchardstown	12,915	14,749	1,834	14%
GDA	4,761,865	5,790,237	1,028,372	22%
Employment				
North Blanchardstown	14,196	20,467	6,271	44%
GDA	1,468,093	1,996,002	527,909	36%
Education				
North Blanchardstown	3,170	3,832	662	21%
GDA	982,185	1,186,472	204,287	21%

The following sections and figures present the forecast growth in population, jobs and education places from 2016 to 2040 in the study. The Planning Sheet allocates growth to model zones, providing a spatial picture of growth to 2040.

4.1.2 Population

Figure 4.1 to Figure 4.3 present the projected population growth for the North Blanchardstown study area between 2016 and 2040.

The main area of significant population growth in the North Blanchardstown area is expected to occur in the northwest of the study area. This zone, whilst covering areas of commercial/industrial development, also encompasses the Tyrellstown area, where there is a large area of residential development land shown allocated within the Fingal County Development Plan. Two areas are subject to Local Area Plans (Cherryhound LAP 12.A & Kilmartin 12.B). The Kilmartin LAP is the area identified in the Plan for future residential growth to cater for the expected population change. Some development within this LAP has already commenced at its eastern end adjacent to the Cherryhound-Tyrellstown Link Road.

A high level of population growth is also expected in Dunsink, which is an existing area of largely open space just south of North Blanchardstown on the other side of the M50. This area has been identified as a longer-term strategic area suitable for mixed use development, primarily beyond 2040. This comprises 125 hectares and forms part of the townlands of Ashtown, Castleknock, Dunsink and Scribblestown. It is envisaged that commercial and residential units could be developed in the area and potentially served by high quality public transport, given the close proximity of the existing heavy rail network at Ashtown and the proposed extension to the Luas line to Finglas. However, any future development of these lands is still subject to planning.

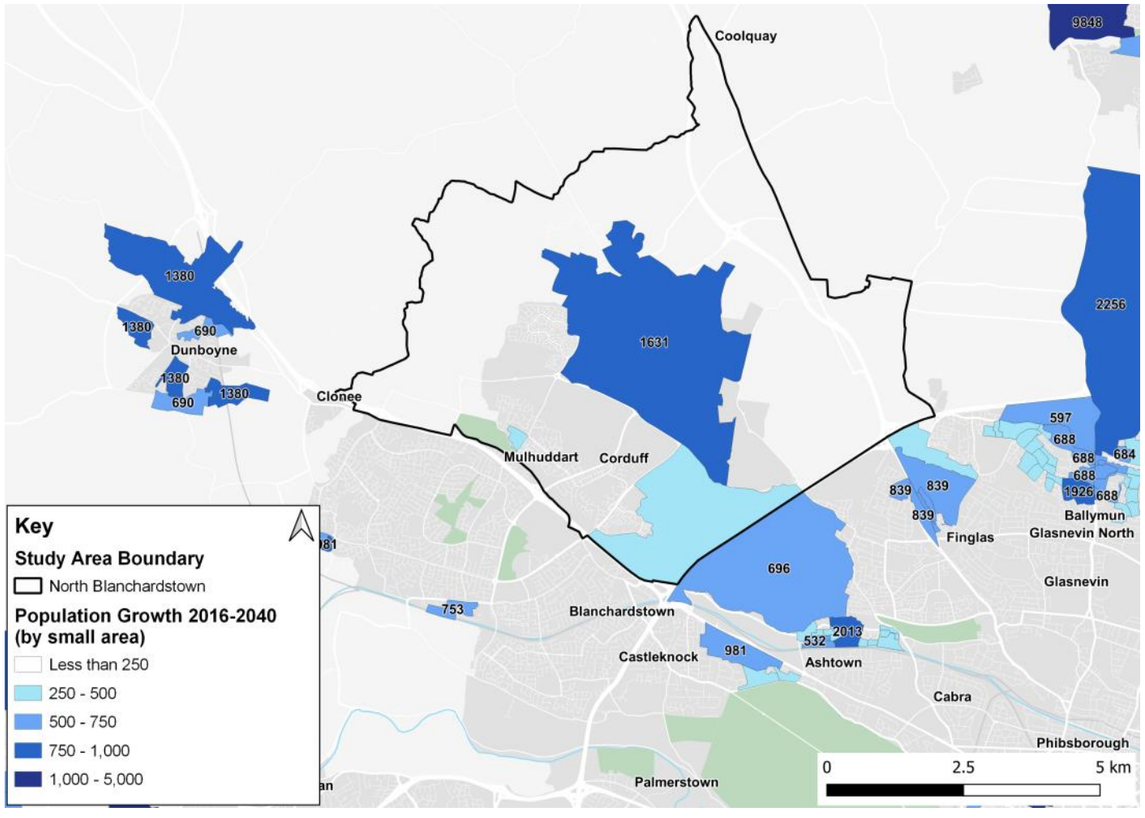


Figure 4.1: 2016 to 2040 Population Growth by Census Small Area

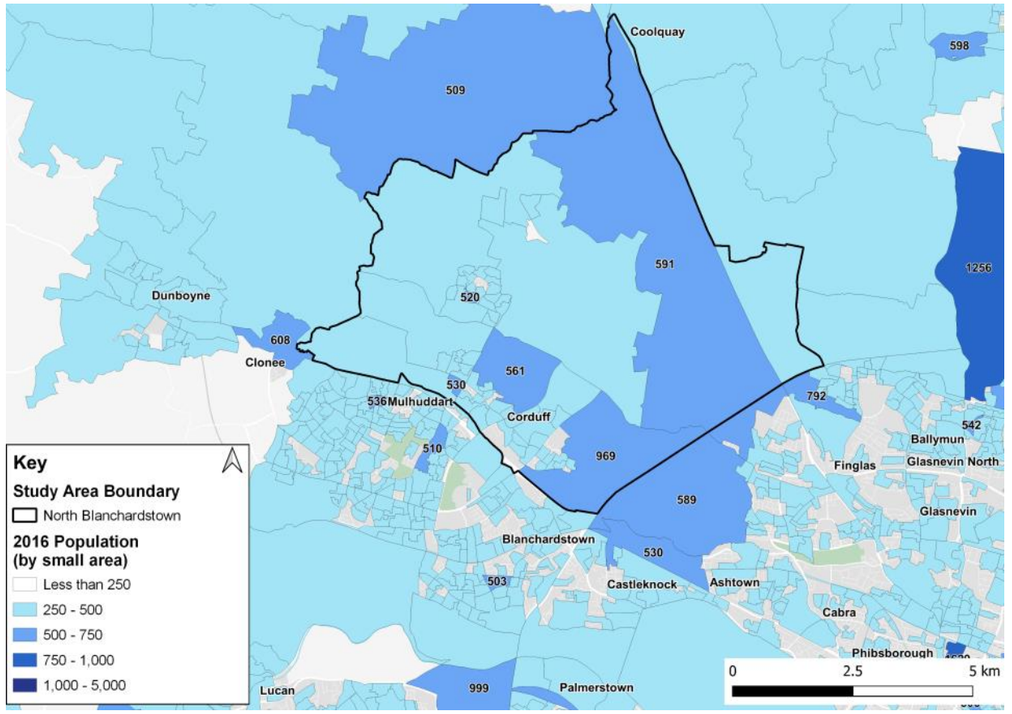


Figure 4.2: 2016 Population by Census Small Area

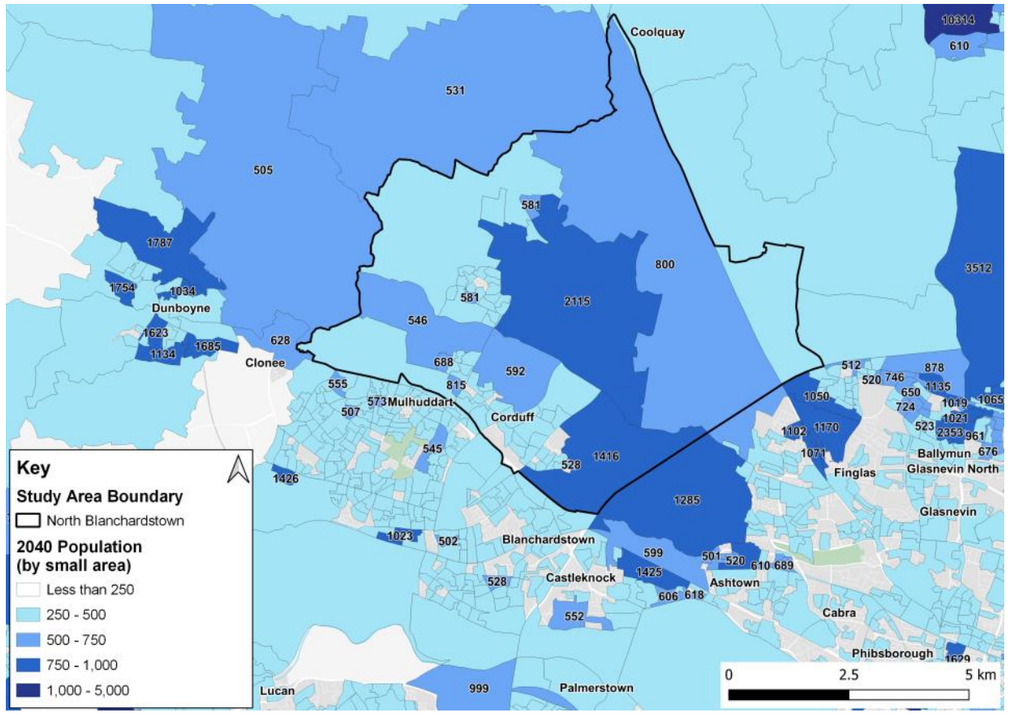


Figure 4.3: 2040 Forecast Population by Census Small Area

4.1.3 Employment

Figure 4.4 to Figure 4.6 present the change in employment (jobs) for North Blanchardstown between 2016 and 2040.

However, the 2016 Census data shows, not unexpectedly, that the highest concentrations of jobs are situated in the central and eastern parts of the North Blanchardstown area i.e. Rosemount and Northwest Business Parks, and at Damastown. This is generally reciprocated in the 2040 employment projection, with the highest concentrations in the same areas albeit at a much higher quantum.

In terms of growth, the larger changes are expected to occur in the central and eastern parts of the North Blanchardstown area. In earlier discussion, reference was made to major development allocations in the Fingal County Development Plan. The LAP 12.A shows the considerable area of 'greenfield' land allocated for general industry in the north-eastern part of the area, with the Tyrellstown to Cherryhound Link Road already constructed to provide primary highway access.

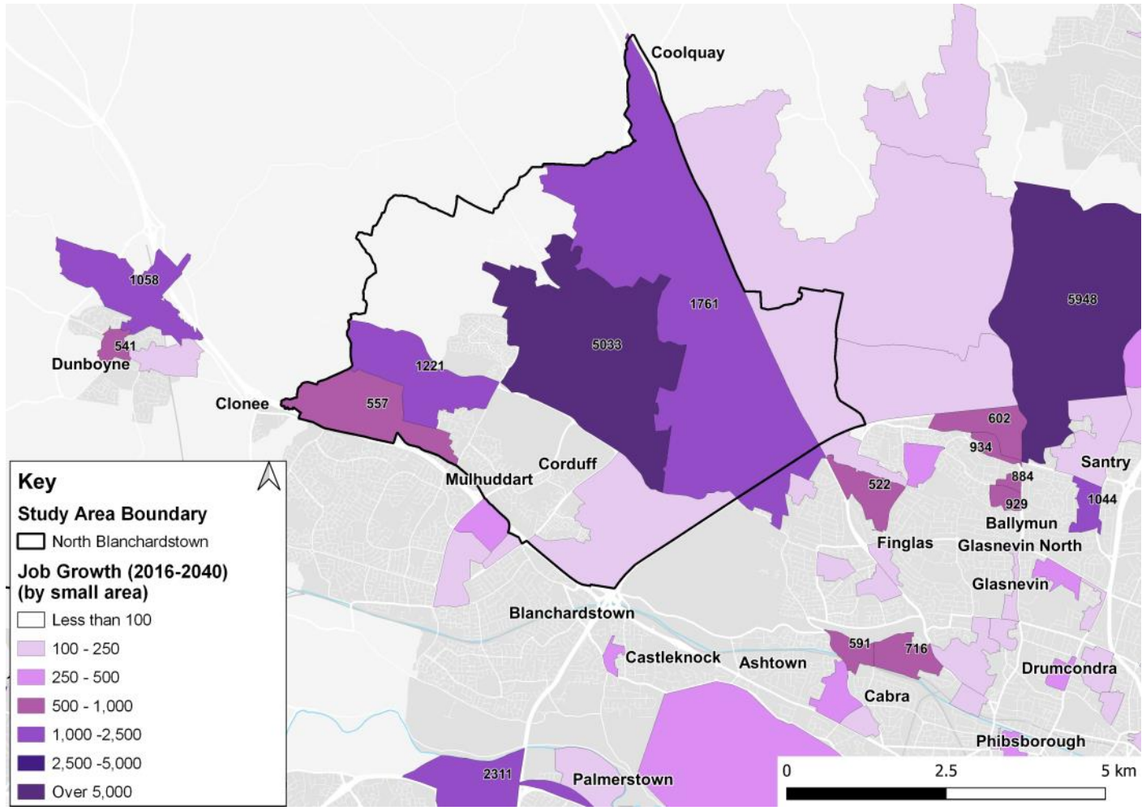


Figure 4.4: 2016 to 2040 Jobs Growth by Census Small Area

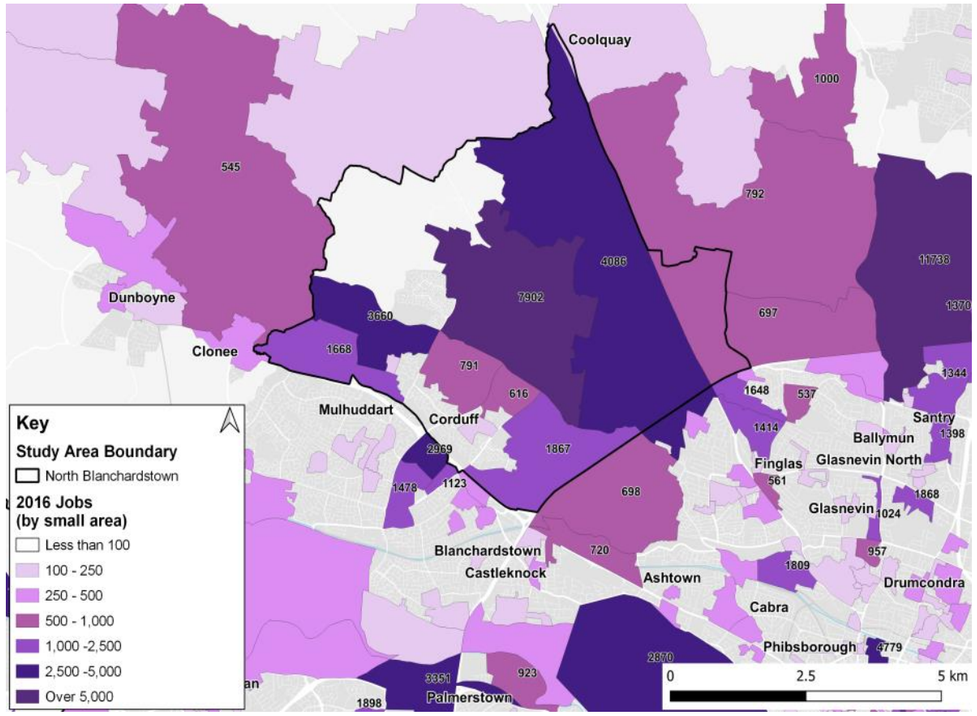


Figure 4.5: 2016 Jobs by Census Small Area

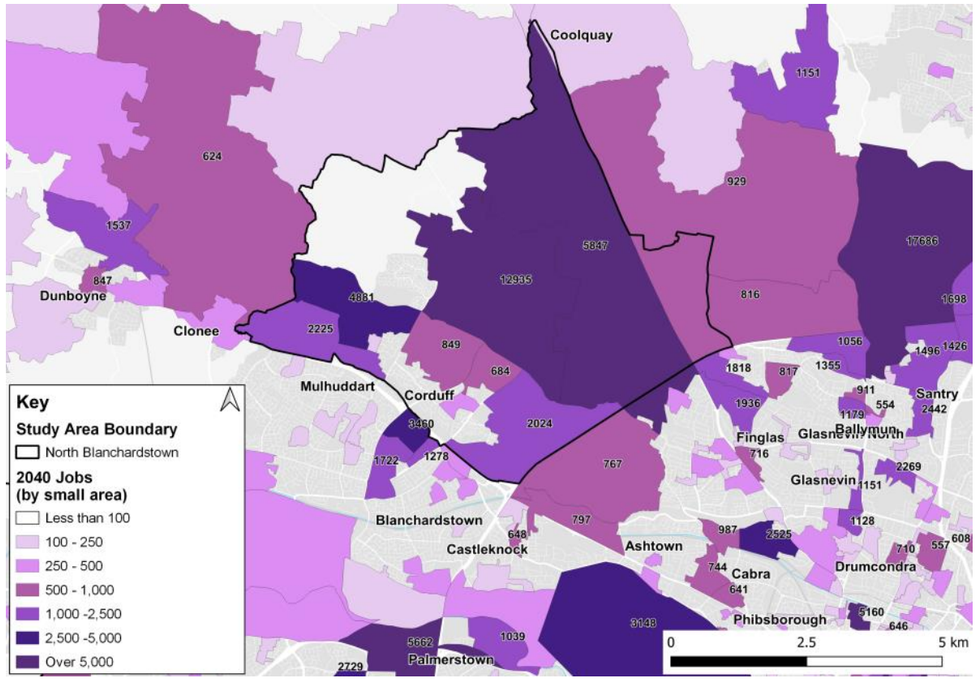


Figure 4.6: 2040 Forecast Jobs by Census Small Area

4.1.4 Education

Figure 4.7 to Figure 4.9 show education places within the study area and immediate surrounding areas in 2016 and 2040 respectively.

Education places in the study area are mainly located in Mulhuddart, and these are the Institute of Technology Blanchardstown, the College Business and Technology Park, Lady's Well National School and the Riversdale Community College. As a result, education place concentrations are located here, with this situation generally mirrored in 2016 and 2040. Figure 4.7 provides an overview of the growth in the number of education places between these periods. This shows that there is little forecast education growth in the study area, with the Institute of Technology in Blanchardstown being the only site expected to experience notable growth. This is supported by the Fingal County Development Plan, which states that the continued development of the Blanchardstown Institute of Technology and future campus expansion will be facilitated in the upcoming years.

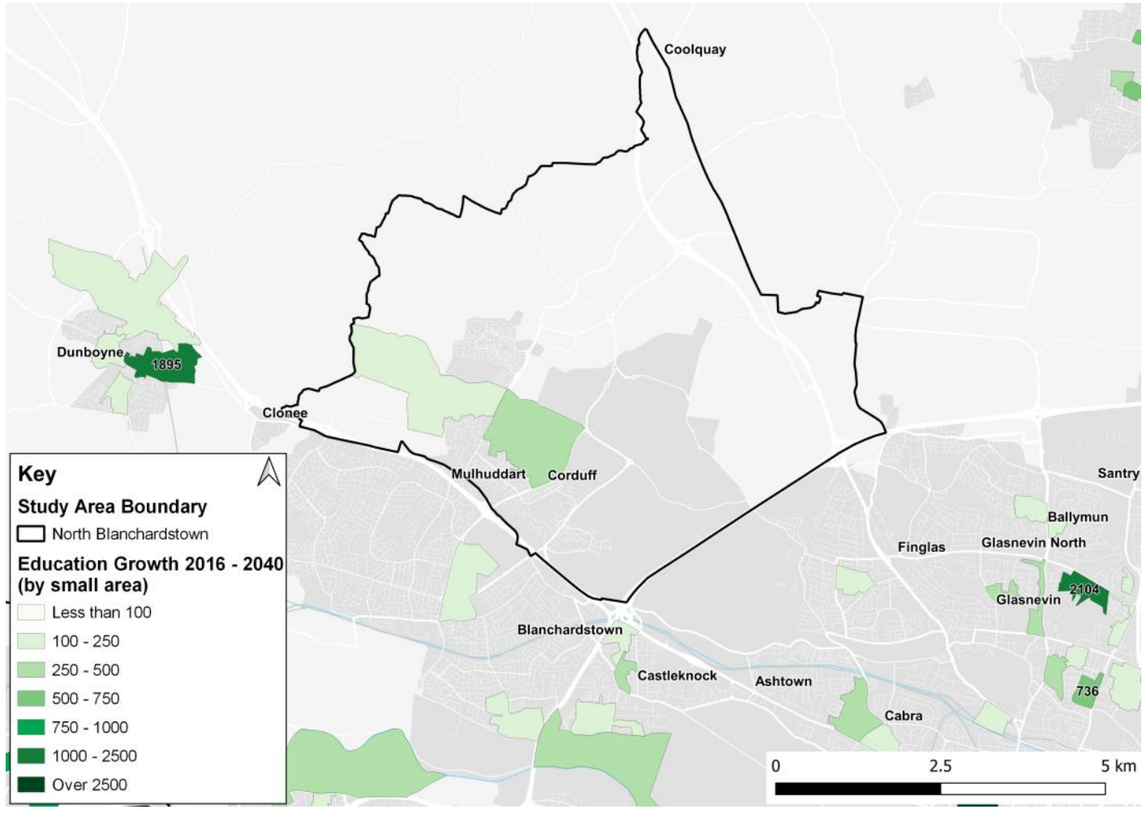


Figure 4.7: 2016 to 2040 Education Places Growth by Census Small Area

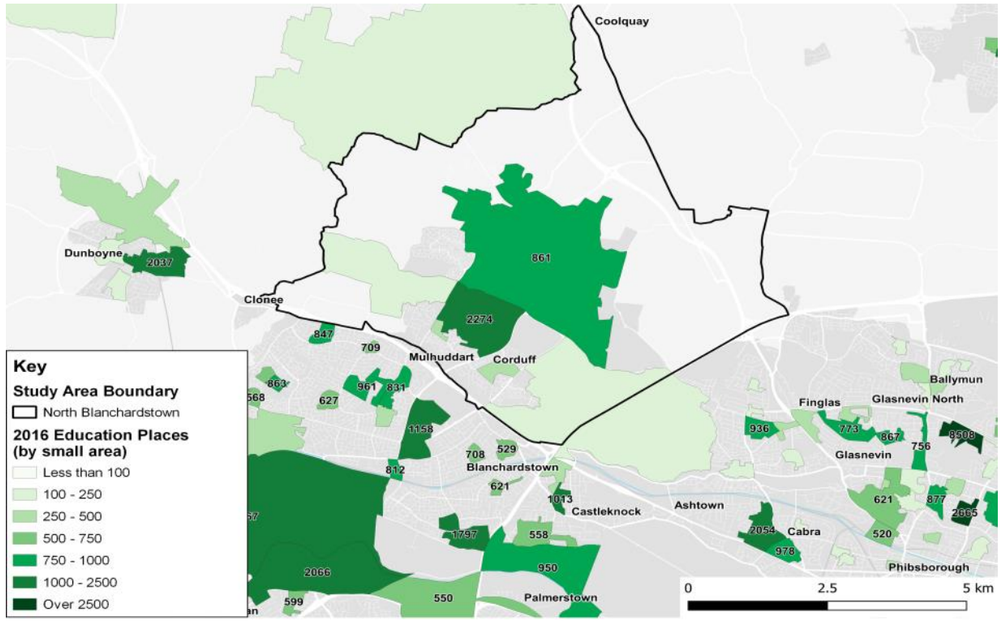


Figure 4.8: 2016 Education Places by Census Small Area

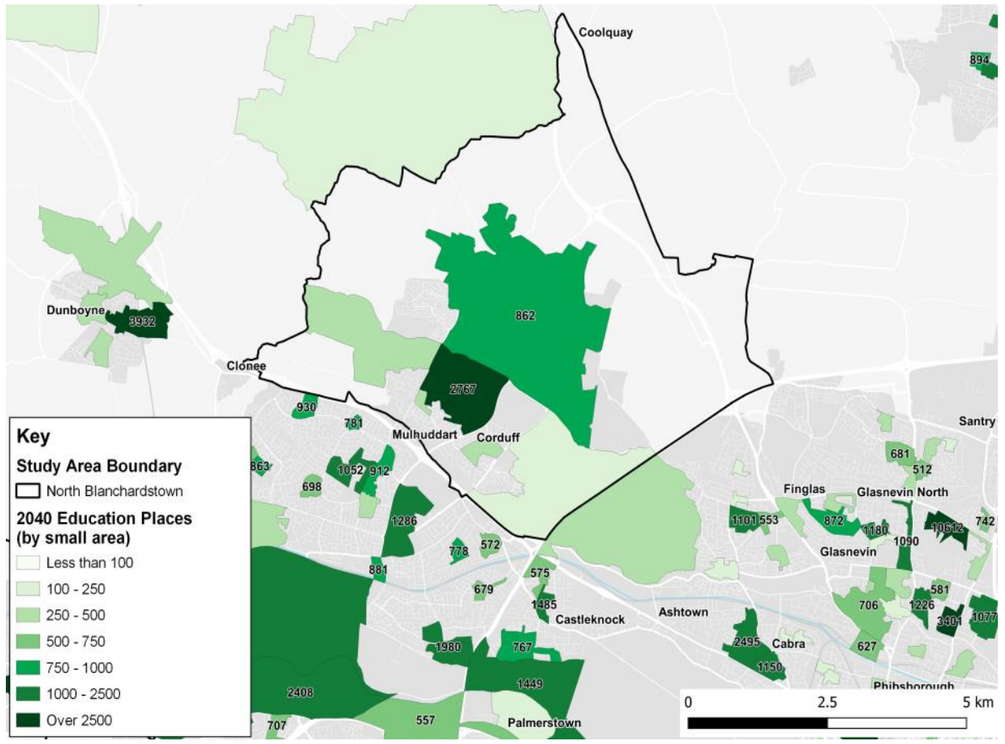


Figure 4.9: 2040 Forecast Education Places by Census Small Area

4.2 Future proposals for transport interventions

4.2.1 Overview

A range of proposals for future transport interventions have been highlighted in previous policies, strategies and plans. This section provides a brief summary of those schemes which will be considered when identifying options to serve demand in 2042.

4.2.2 Roads

With respect to the National Roads encompassing the North Blanchardstown area, the existing Transport Strategy for the GDA (2016-2035) includes *"Widening of the N3 between Junction 1 (M50) and Junction 4 (Clonee), plus related junction and necessary changes to the existing national road network*". There are no specific details of the form of the widening improvements envisaged in the Strategy, or indeed necessary modifications to the various slip-road diverges and entries. However, proposals for improvements to the N3 Snugborough Road interchange (Junction 2) have been subsequently developed in detail and the contract was awarded in February 2021, with an expected construction programme of 2-years. The form of the improvement scheme is shown in Figure 4.10.

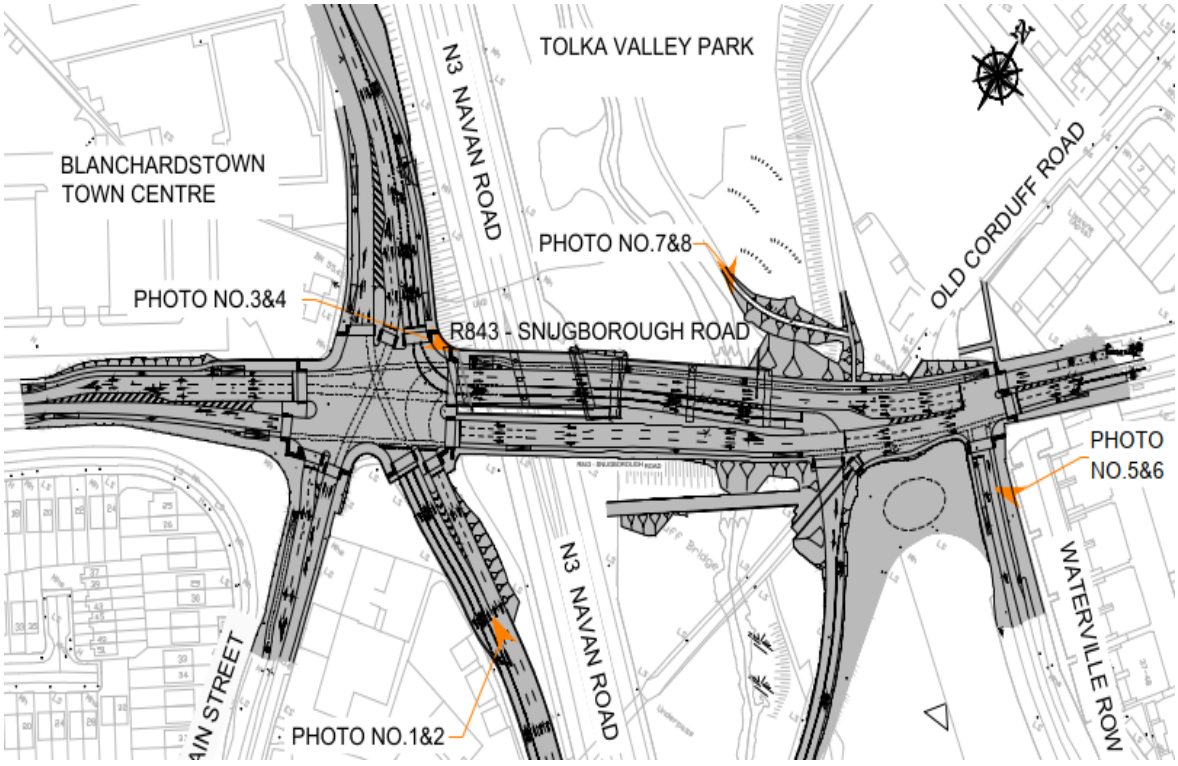


Figure 4.10: N3 Junction 2 – Snugborough Road Interchange – Proposed Improvements

This significant upgrade to this N3 interchange includes the following highway works:

- Upgrading of the existing five-arm signalised junction at Snugborough Rd./N3 off-ramp/L3020/Main Street, including the widening of all road approaches, provision of new high-quality pedestrian/cyclist facilities and new public transport priority measures. Removal of the right turning movement from Waterville onto the Snugborough Road.
- Removal of the existing roundabout at the junction of Snugborough Rd/N3 on-ramp/Waterville and construction of two new signalised junctions in its place; and
- Construction of new bridge structures over the N3 Navan Road and over the Tolka Valley and river.

The developing BusConnects proposals for 'Route 5 - Blanchardstown to City Centre' will also affect the part of the N3 between Blanchardstown Road (R121) and the M50. Figure 4.11 shows the extent of the Route 5 proposals to the north of the M50 and juxtaposition with/impact on the N3 Navan Road.

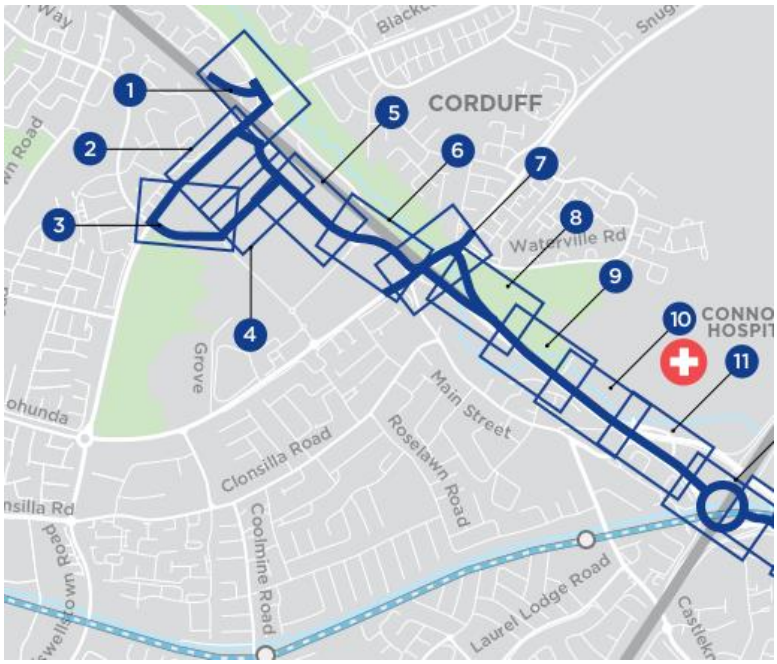


Figure 4.11: BusConnects - Route 5 Extents: NW of M50[5]

Examination of the current highway proposals for this part of the corridor shows that the addition of bus lanes does not impact on the number of existing mainline running lanes on the N3 in either direction. To the east of the M50 interchange where Navan Road becomes the R147, general traffic is to be reduced to use of a single lane in each direction.

4.2.3 Dart+

The main heavy rail enhancement proposed for the Maynooth Line is through the DART+ Programme, which will increase the length of the existing DART network in the GDA from 50km to 150km, through a combination of upgrades and extensions of existing lines. The programme includes a number of rail improvement projects that will provide more frequent services to:

- Maynooth and M3 Parkway on the Maynooth/Sligo Line;
- Drogheda on the Northern Line;
- Hazelhatch-Celbridge on the Kildare Line; and will
- Improve southern DART services as far as Greystones.

The DART+ Programme also includes the electrification of currently diesel-only lines and the consequent purchase of new electrified fleet to cover those lines currently served by diesel trains. Figure 4.12 illustrates the programme of capacity improvements.

[5] Index Map included within the 'Preferred Route' report for Route 5 (November 2020)

Figure 4.12: DART+ Programme Capacity Improvements[6]

On the Maynooth and M3 Parkway Lines, DART+ will introduce more frequent services for all stations between Maynooth/M3 Parkway and Dublin city centre, increasing from 7 to 15 trains per hour per direction, with consequent capacity increase from 4,500 to 13,750 passengers per hour per direction. Figure 4 shows a schematic representation of the DART+ Maynooth Line extent and enhancements.

Figure 4.13: Schematic of DART+ Maynooth Maynooth Line Extents

[6] *Source: DART+Maynooth Line, Preliminary Options Selection Report, August 2020*

There are no obvious opportunities for linking North Blanchardstown to the heavy rail network directly. Current plans in the GDA do not include any new lines outside the city centre, though the DART+ programme will substantially enhance service levels on many existing lines, including the Maynooth/M3 Parkway lines that serve Blanchardstown.

Overall, therefore, it is anticipated that there will be substantially improved heavy rail services in the vicinity of the North Blanchardstown study area, but not to, from or within the study area. As a result, heavy rail enhancements for the North Blanchardstown study area would be indirect and need to focus on access to heavy rail services at nearby stations. This might have links with light rail proposals, should these include routes into or closer to the study area, but otherwise would involve bus links to existing rail stations. Given its existing role as an interchange point between bus and rail, Navan Road Parkway station could be an appropriate focus.

4.2.4 Luas

The Luas system has been developed since first opening in 2004, with a number of extensions and capacity enhancements to the original lines, notably the cross-city Green Line link with the Red Line and extension to Broombridge via Grangegorman (Dublin Institute of Technology, DIT, campus). Further enhancements are planned within the Transport Strategy for the GDA (2016-2035) to develop this system and provide the capacity required in the future.

In the first instance, and pertinent to the North Blanchardstown study area, is the proposed 'Finglas Luas', which is an intended extension of the cross city Green Line from its terminus at Broombridge to the north of Finglas. This will provide a high-capacity radial service from this large suburb into the city centre, as well as provide a large strategic Park & Ride at the terminus of the line on the N2 national road close to the M50. The route is yet to be confirmed in detail, but the emerging preferred route was consulted on in 2020 and is shown in Figure 4.14.

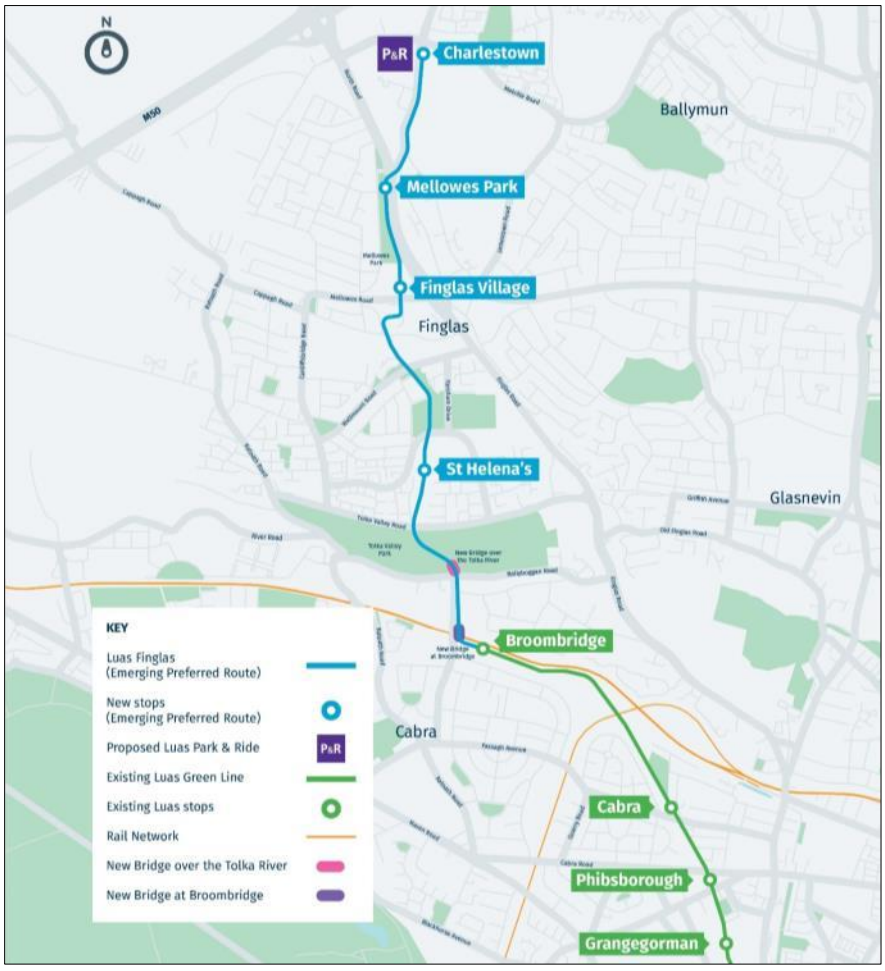


Figure 4.14: Emerging Preferred Route for Finglas Luas Extension [1]

The potential terminus location, south of the M50 adjacent to the Charlestown Shopping Centre, is also shown on the plan, indicating that this is close to the edge of the North Blanchardstown study area. The Finglas Luas terminus at Charlestown Shopping Centre is also a key interchange point in the BusConnects network for the 'F-spine' services, as well as several orbital services and the 'E-spine' services. However, there are currently no bus links into the North Blanchardstown study area, but scope clearly exists for these to be developed.

4.2.5 BusConnects

As noted in Chapter 3, the new Dublin Area Bus Network is being rolled out from January 2021 and has been taken as the 'base' situation within this study. What remains to be implemented as part of this new network insofar as infrastructure impacting on the Blanchardstown area is most of the bus priority infrastructure. According to the BusConnects programme, construction will commence on a phased basis for the 16 core corridors from 2022, each corridor taking approximately 2 years to construct, with all corridors constructed by 2027.

For the Blanchardstown Core Bus Corridor (Route 5) this infrastructure will include:

- Upgrading the existing bus laydown area in Blanchardstown Centre to a formal bus terminus/interchange; and
- Bus priority infrastructure such as bus lanes and respective junction alterations allowing a continuous 'priority' route for buses operating along the 'B Spine' (N3/R147) from the study area into the city centre.

4.2.6 Cycle Network

The *GDA Cycle Network Plan* outlines a number of proposed cycle routes within the North Blanchardstown study area. These include routes within existing urban areas, largely to connect missing links between existing routes and key destinations, and importantly routes within the employment areas (i.e. industrial parks) which could facilitate the movement of people to and from their workplaces. The routes proposed in the Cycle Network Plan are set out in Figure 4.15.

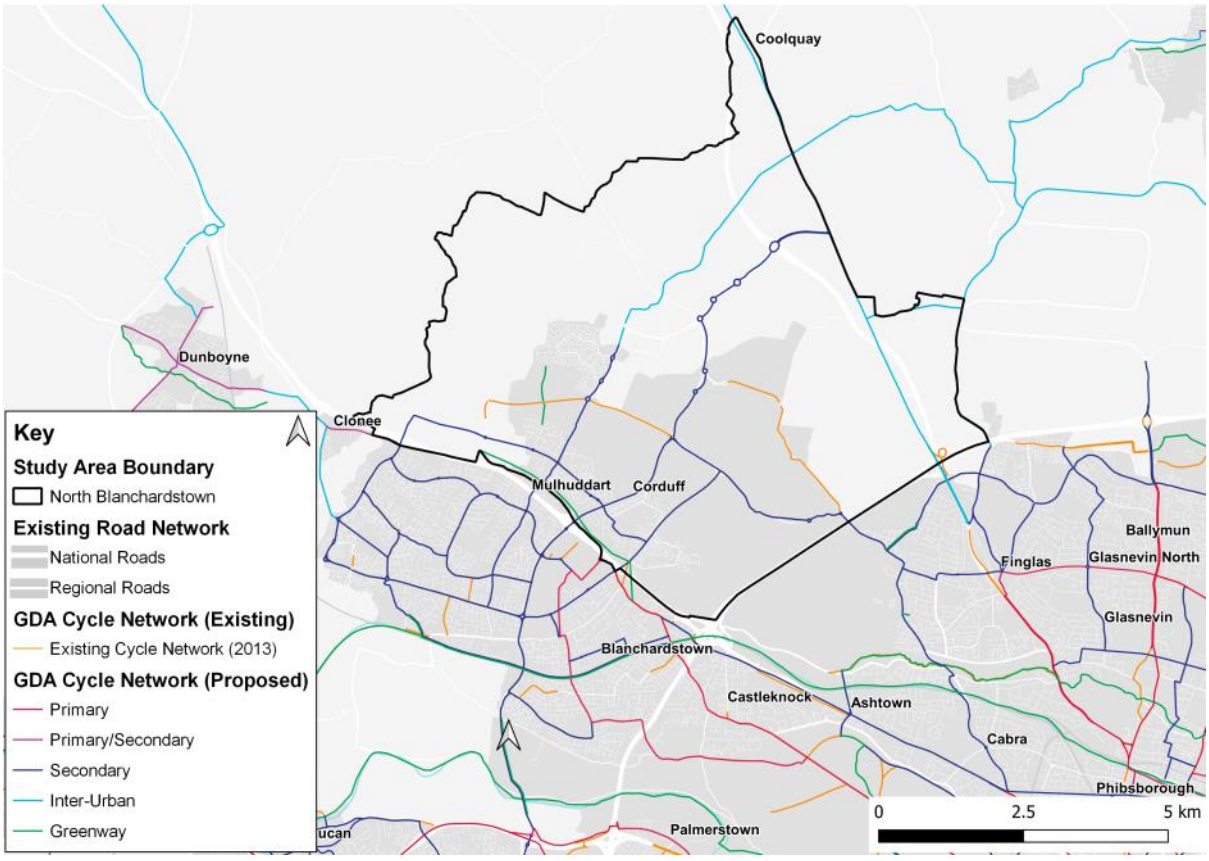


Figure 4.15: Proposed cycle network in North Blanchardstown

4.3 Future travel patterns

4.3.1 Model Definition

The assessment of future travel demand is based on the outputs from the NTA Eastern Regional Model (ERM).

The ERM represents a 2042 scenario including:

Five time periods:

- AM 07:00 to 10:00
- Lunch time 10:00 to 13:00
- School run 13:00 to 16:00
- PM 16:00 to 19:00; and
- Off peak 19:00 to 07:00.

Three mode classes:

- Public transport (bus, Luas, rail and light rail);
- Road (cars, LGV, HGV and taxi); and
- Active modes (walk and cycle).

Five trip purposes:

- Employers Business;
- Education;
- Commute;
- Other; and
- Retired.

Do Minimum

The model run represents a 'Do Minimum' scenario which includes proposed development, all existing transport provision, plus a number of changes to the transport network. Details of the transport schemes included are provided in Appendix A.

The model trips are assigned to a constrained network, meaning route choice of each trip is affected by capacities and journey times (e.g. impacts from queuing) in the model in relation to all the other trips. This means there is a likelihood that due to the volume of trips in the model, some journeys use routes through local roads, instead of using the key strategic movements which are the focus of this study.

The ERM has been used to understand some of the key transport patterns in 2042 such as mode share, trip lengths, origins and destinations, route capacity and volume to capacity. These are described in the subsequent paragraphs in this section, and this information will be used to support the option development process.

Study sector definition

As noted above, spatial analysis has been undertaken on the demand data for trips having an origin, a destination or within the study area to inform the option identification and development process. Outside of the immediate study area the model zone system was aggregated into sectors (groups of zones) in line with previous ERM sector definitions to allow movement patterns from the model data to be analysed more easily.

However, within the North Blanchardstown study area, zones formed their own sectors at the most detailed level, but some grouping to form distinct areas i.e. Tyrellstown was undertaken during analysis. Some of the ERM sectors immediately adjacent to the study area were also disaggregated to provide a finer level of 'local' zone analysis, notably South Blanchardstown, Finglas and the large external ERM sector to the west of North Blanchardstown. The latter was subdivided to a greater number of sub-sectors to differentiate between trips expected to use the N2/M2 and N3/M3 corridors. Figure 4.16 shows the wider area sector system employed for demand analysis in the North Blanchardstown area.

In work described later in this Chapter, transport demand by mode along specific 'corridors into/out of North Blanchardstown was also assessed by grouping the external sectors accordingly. For example, to consider orbital demand from the east (M50), sectors encompassing Swords, Malahide and parts of North Dublin were assessed collectively.

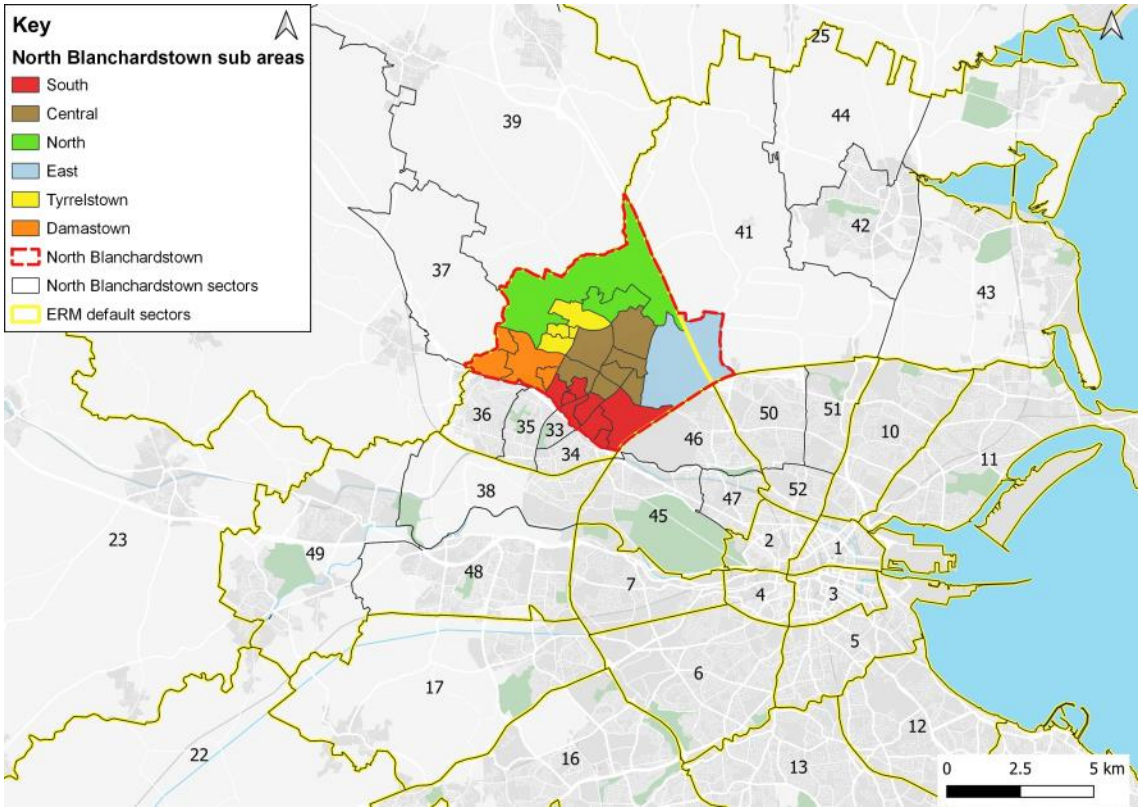


Figure 4.16: Study Specific ERM Sector System – Wider Area

Figure 4.17 shows the original ERM zoning retained within the study area itself. However, these zones were 'grouped' as shown to create the principal land-use designations and areas within North Blanchardstown for ease of analysis.

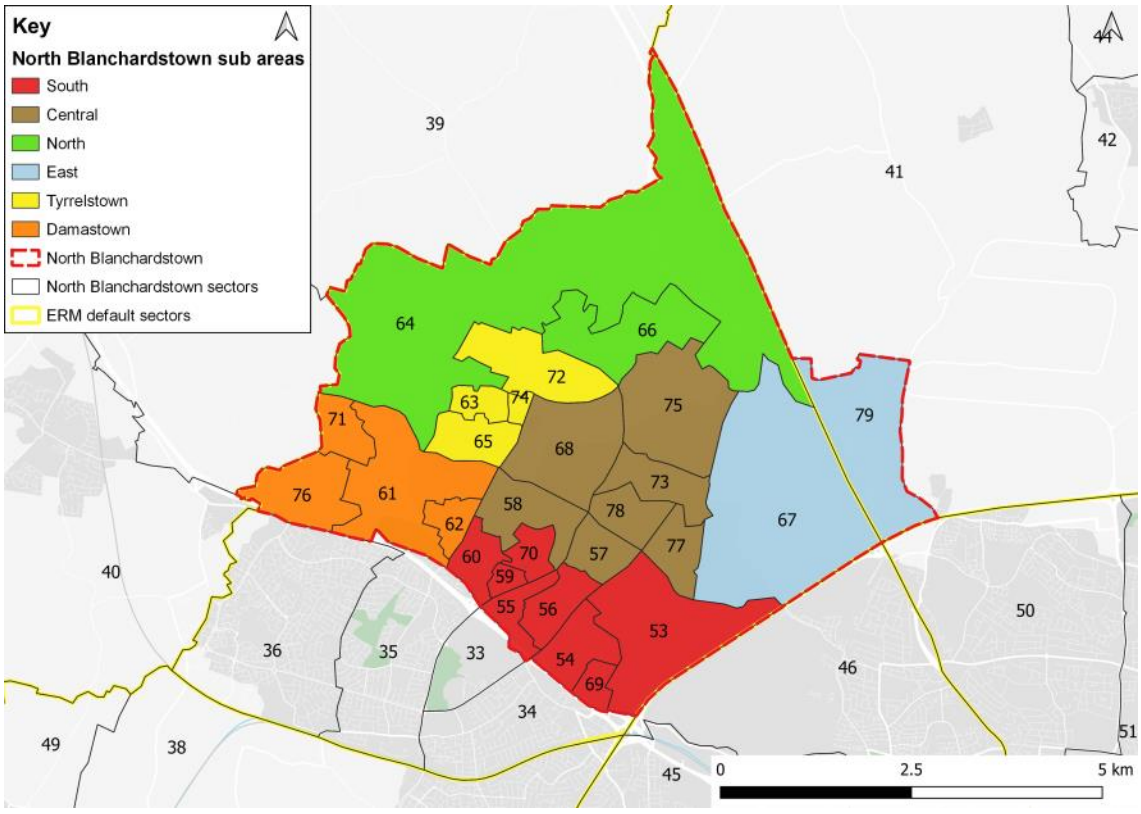


Figure 4.17: Study Specific ERM Sector System – Study Area

4.3.2 Origins and Destinations

Spatial analysis, using GIS, has been undertaken on trips that have an origin and/or destination within the study area, using the demand outputs from the model.

Trips from the North Blanchardstown study area

Figure 4.18 presents the origins and destinations of all trips which originate within the study area in the AM peak period.

For trips which originate in the study area in the AM peak, the main destinations are:

- South Blanchardstown;
- Castleknock and Navan Road;
- Swords-Dublin Airport; and
- Dublin City Centre

The overall demand analysis of outward trips in the AM peak period shows that the predominant movements are to areas immediately adjacent to the study area, such as South Blanchardstown and the Dublin Airport area and surrounding commercial land uses. However, there are also strong outward movements to other destinations along N3 Navan Road/R147 corridor, notably the City Centre but also locations such as Castleknock. Trips originating in the study area are, not unexpectedly, concentrated in the residential areas close to the N3 Navan Road and Tyrellstown.

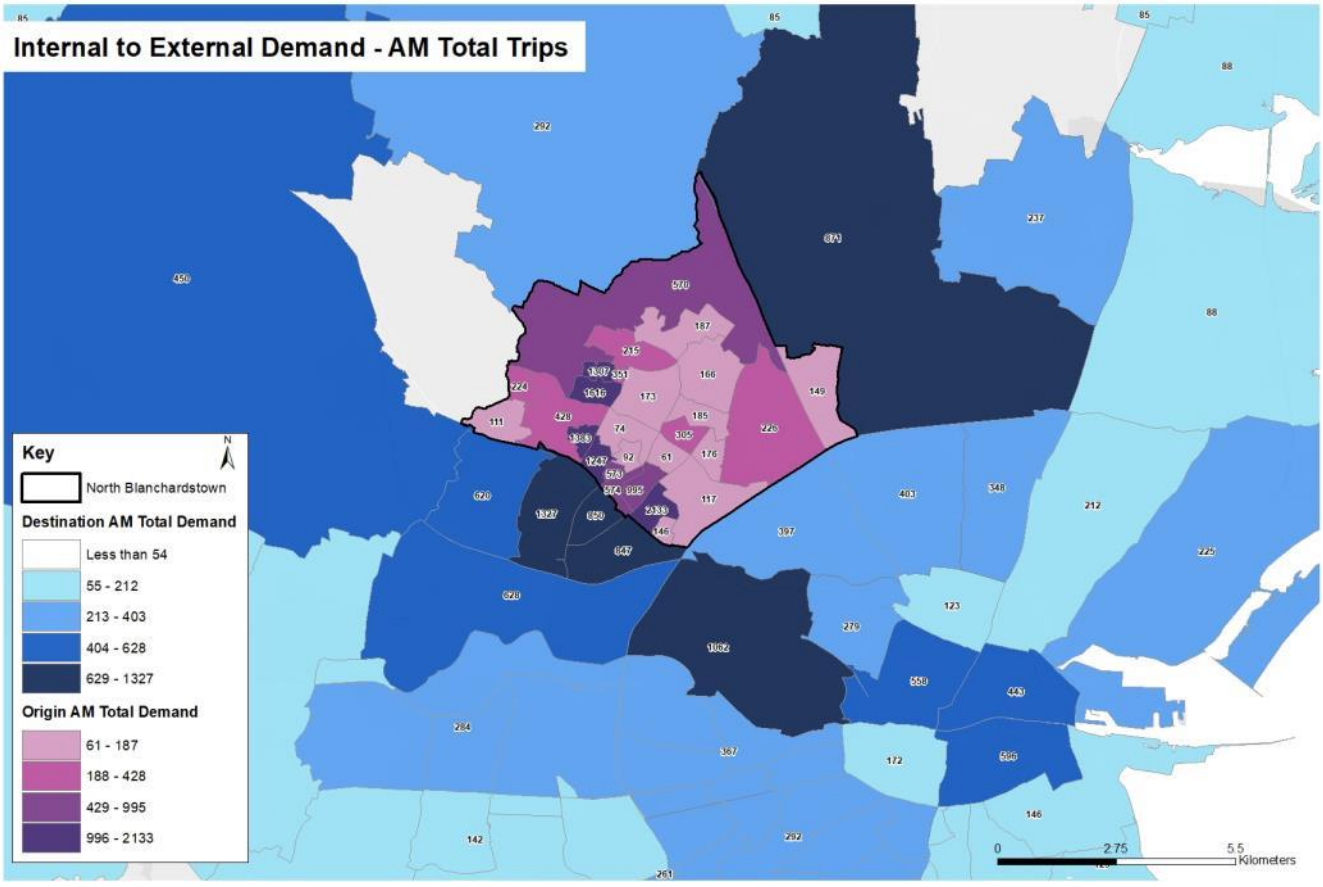


Figure 4.18: Total trips by all modes from the study area (AM peak)

Trips to the North Blanchardstown study area

Figure 4.19 presents the origins and destination of all trips which have destinations within the study area in the AM peak period. Not unexpectedly, this shows that the main movements into the study area in the AM peak have destinations in the commercial/industrial areas such as:

- Damastown;
- Mulhuddart;
- Northwest Business Park; and
- Rosemount Business Park

The analysis demonstrates that there are high proportions of trips originating in South Blanchardstown and County Meath to the northwest of the study area, and mainly traveling for work purposes to the industrial area/business parks in the centre of the study area. However, there are also high movements of trips travelling into North Blanchardstown from areas close to the M50 motorway such as Castleknock, Finglas, and Swords. As can be seen, these form a broadly 'orbital' pattern of higher origin locations bounding the M50 corridor.

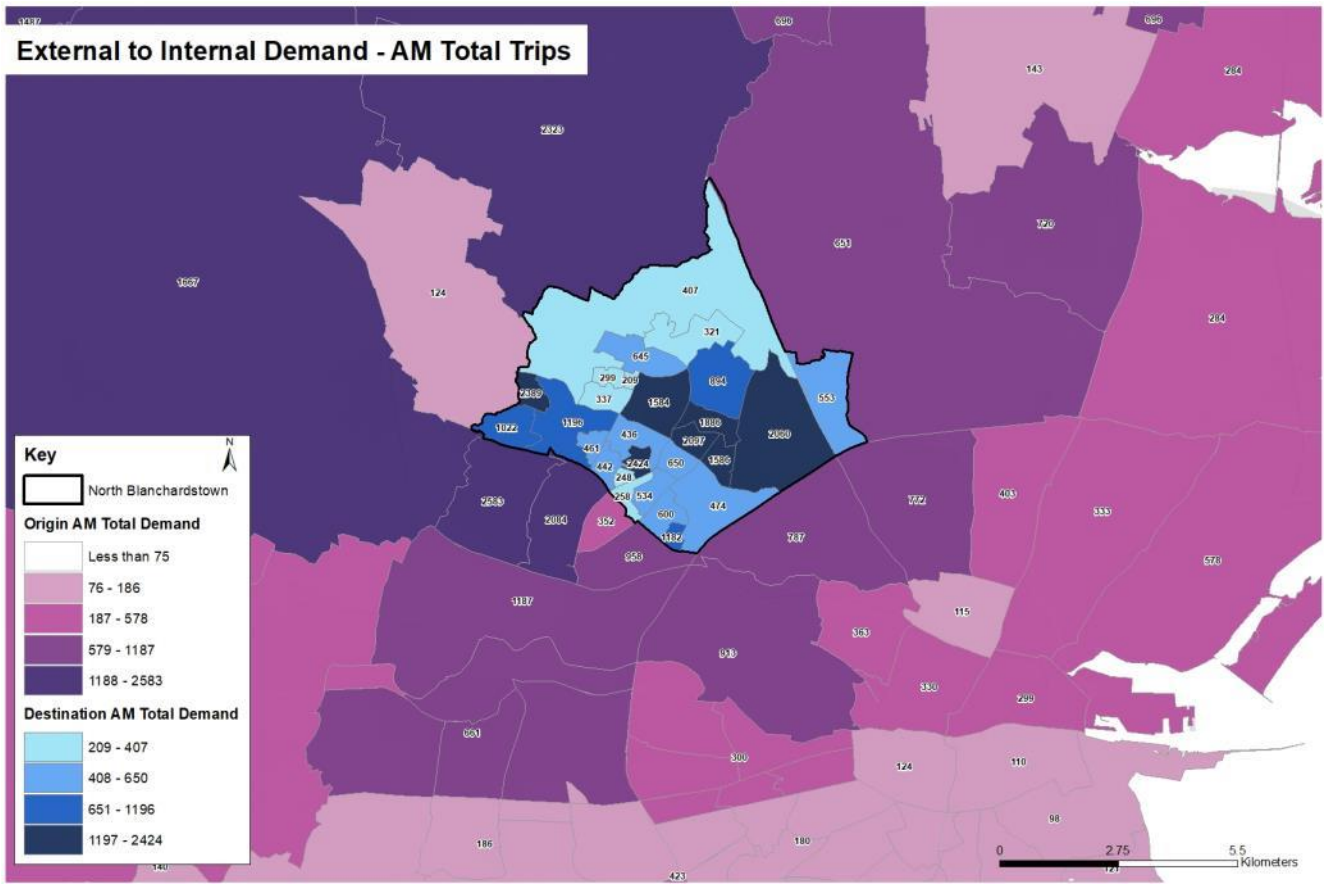


Figure 4.19: Total trips by all modes to the study area (AM peak)

Trips within the North Blanchardstown study area

Figure 4.20 shows the internal movements within the North Blanchardstown area for all modes in the AM peak period. These are predominately between the residential zones to the south of the study area, but there are also various trip movements to the various industrial and business park locations to the north. Internal movements with the highest levels of demand are between:

- Damastown;
- Mulhuddart, and
- Corduff

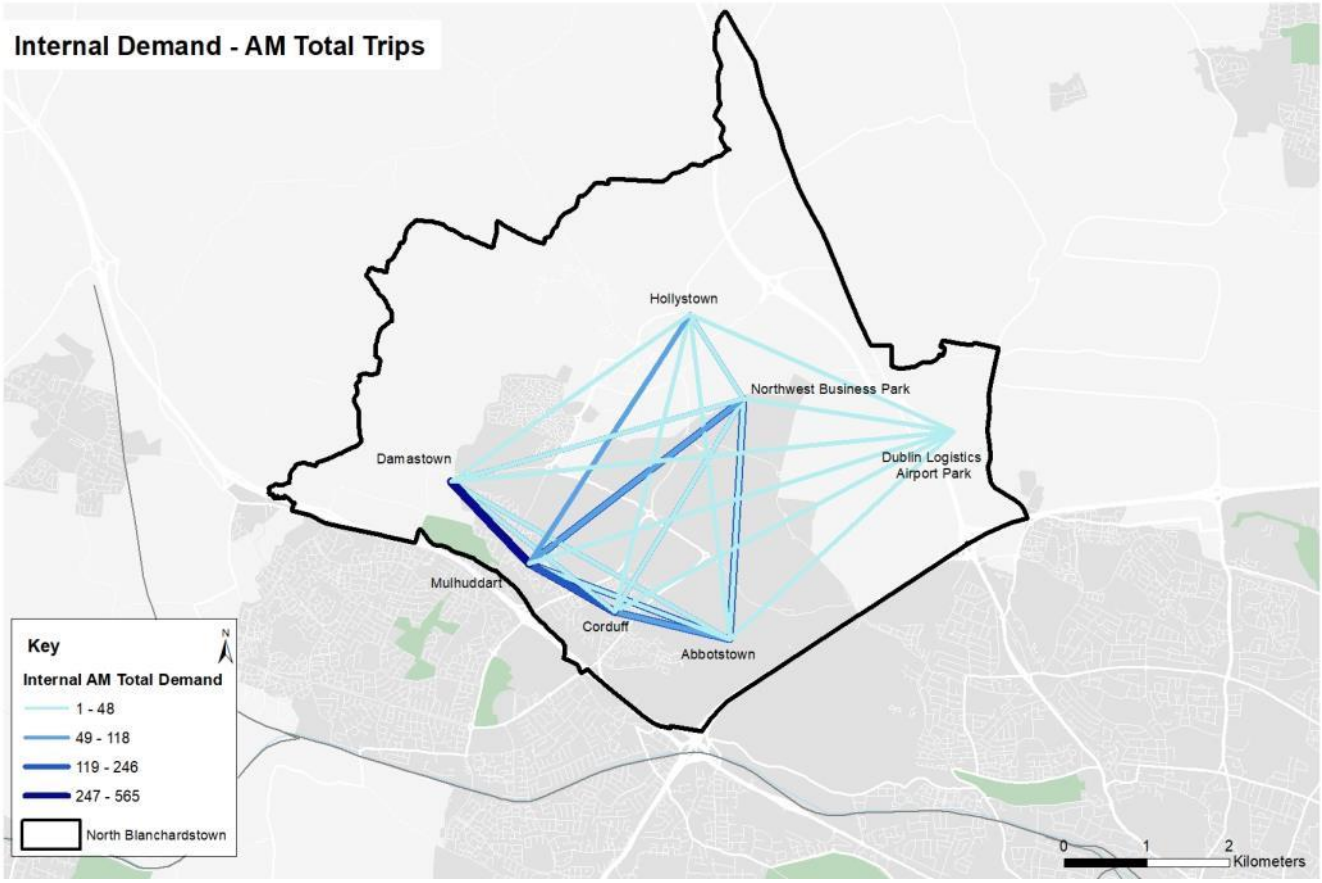


Figure 4.20 Total internal trips within the study area (AM peak)

Origins and destinations by mode

Trip patterns have been disaggregated by mode where either the origin or destination is within the North Blanchardstown study area and the other origin or destination is outside the study area. Trips have been categorised as car, public transport and 'active mode' (combined walk and cycle) trips. Map showing these various trip patterns by mode are provided in Appendix B for the AM peak period.

A further element of analysis work on the distribution of trips has been undertaken by assigning sectors to broad 'corridor' or wider area definitions to look at relative demands on various routes into/out of North Blanchardstown. This information is contained within Appendix C.

With respect to 'External' trips to North Blanchardstown the data in Appendix C shows that the ERM predicts a total of 24,723 trips in the AM period (7-10 am). The data further shows that:

- The external inbound mode share is expected to be dominated by car with 20,583 trips (83.2%). This compares with PT (2,536 - 10.2%), cycle (645 - 2.6%) and walking (959 - 4.0%), and

- Of these car trips some 28.6% are associated with relatively short journeys from South Blanchardstown, Finglas and Castlenock. As such there is an opportunity to encourage significant car mode shift with better 'local' bus links/penetration and improved cycle connectivity

With respect to trips from North Blanchardstown to external destinations the ERM data in Appendix C shows a lower number of total trips compared to the inbound movement (13,678). In this instance:

- The outbound mode share is much less dominated by car with 8,008 trips (58.5%). This compares with PT (3,140 - 22.9%), cycle (927 - 6.7%) and walking (1,602 - 11.9%);
- Of the car trips some 34.4% are associated with relatively short journeys to South Blanchardstown, Finglas and Castleknock. A further 22% are associated with 'orbital' destinations to the east, so North Dublin, the airport zone or the Swords area. As with inward trips, there is again opportunity for encouraging significant car mode shift with better 'local' bus links/penetration and improved cycle connectivity. However, better orbital capacity and services to the east ie Swords connection could achieve greater 'shift'; and
- The overall proportion of car trips routing into the City Centre is very low (6.6%). As can be seen from the figures in Appendix B, the majority of the public transport trips from the study area travel to Dublin City Centre and South Blanchardstown. Indeed, the figures in Appendix C show that PT and cycle trips collectively account for 75% of all trips travelling into the City Centre.

However, it is particularly noteworthy that the low number of car trips into the City Centre due to high PT uptake is not reflected in the outbound direction to North Blanchardstown. Whilst the overall number of trips from the City Centre to North Blanchardstown is lower than the tidal movement inbound in this period, it is dominated by car trips (83%). This is because the principal destinations in the commercial/business parks are not well served by bus connections. As such, public transport trips into the study area originate mainly in South Blanchardstown, although car trips from this area still dominate.

Active mode trips are mostly between zones within, adjacent, or close to the study area as expected. A high proportion of active mode trips occur between the study area and South Blanchardstown, where the shopping centre and other commercial uses are located, and to Phoenix Park which is the closet green space to the study area.

4.3.3 Mode share

Mode share data has been extracted from the model for trips originating in the North Blanchardstown study area for car, public transport, cycle and walk trips. This has been spatially analysed for the AM peak period and is presented in Figure 4.21 to 4.24. This data shows the following:

Car mode share

Figure 4.21 shows that the areas with the highest proportion of car mode share are in the northern and western part of the study area, such as in the Dubber, Damastown and in some parts of the Ward. However, it should be noted that these zones are all mainly industrial/commercial areas, and so trips will primarily be destinations in the AM peak period. Any outward trips at this time of day are likely to be business related trips, so mostly car or commercial vehicles but relatively low in number. A high number of PT or 'active mode' trips would not be expected 'from' places of work between 7-10 am, unless certain large businesses operate specific shift patterns.

Public transport mode share

Figure 4.232 shows that public transport mode share is highest in the residential areas close to the N3 Navan Road, where there is convenient walk access to the 'B Spine' services operating from Blanchardstown Centre. Tyrellstown which is more remote has a lower PT mode share, even though Service B3 provides a direct and high capacity 'spine' connection with Blanchardstown Centre and the City Centre. Not unexpectedly, PT origins in the areas of commercial/industrial development are low in the AM peak period for reasons noted above.

Cycle mode share

Figure 4.23 shows the cycle mode share for the AM peak period. The highest numbers cycle trip 'origins' are predicted in Abbottstown, close to the M50 motorway and in parts of Tyrellstown. This reflects the proximity of these locations to neighbourhood centres and key trip attractors.

Walk mode share

Figure 4.24 shows that the highest proportion of walk-only trips are predicted in the southern part of the study area, and more specifically in Corduff and Mulhuddart. This reflects the residential nature of these areas and the relative proximity of these areas to key trip attractors and neighbourhood centres. Low numbers of walk trips from most of the commercial/industrial areas are noticeable but expected in the AM peak period when any walk trips are likely to be arrivals for work (not trip departures).

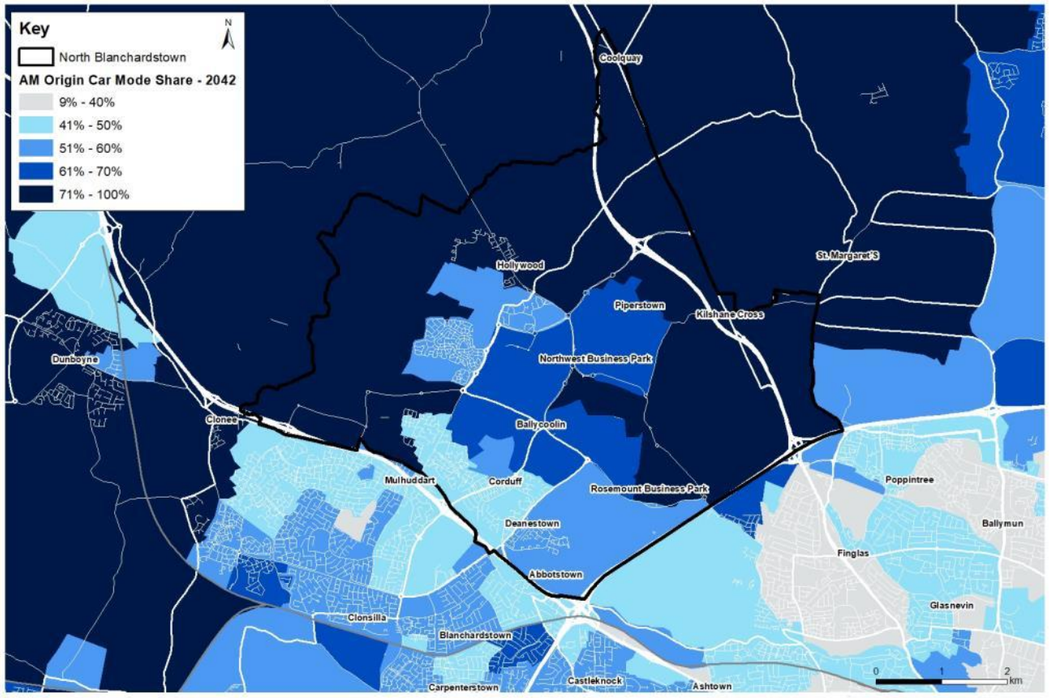


Figure 4.21: AM Origin Car mode share

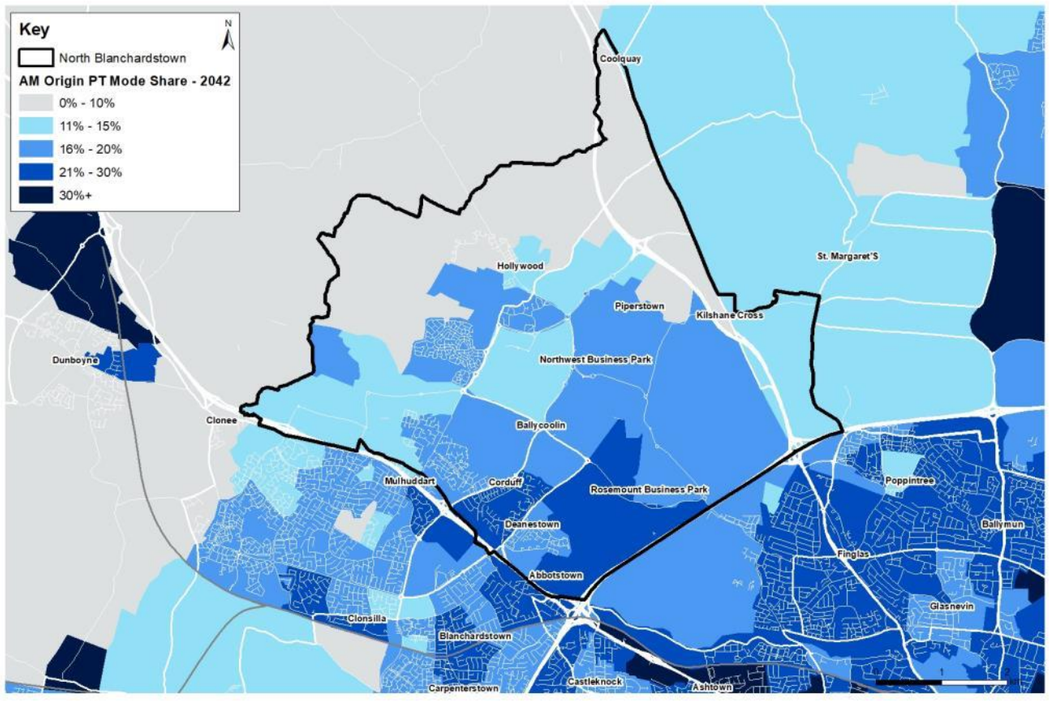


Figure 4.22: AM Origin PT mode share

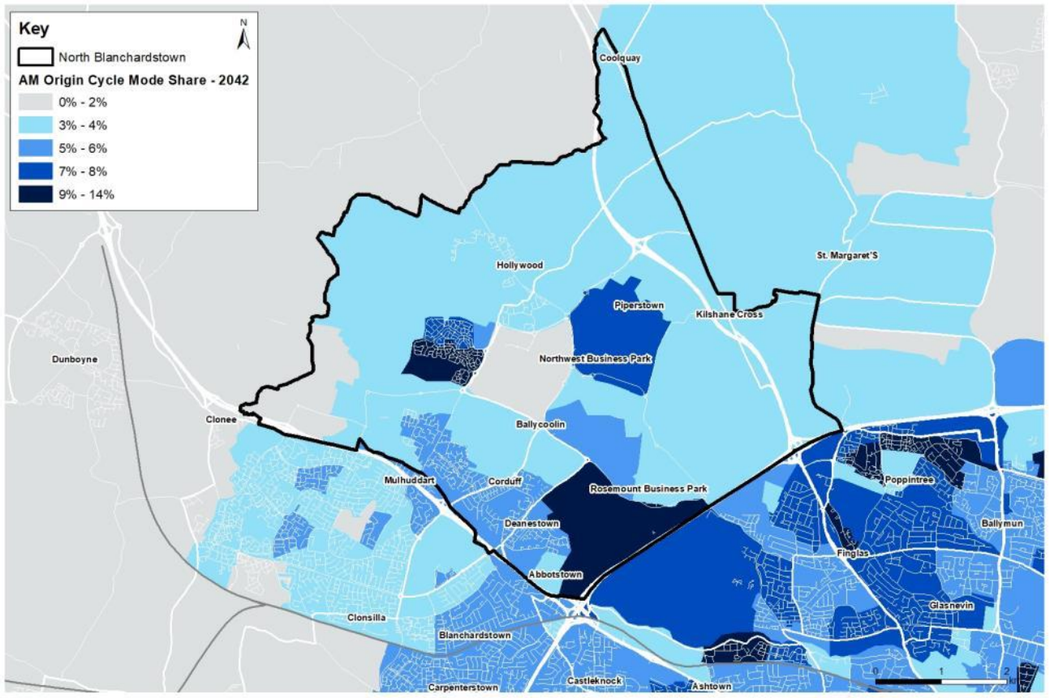


Figure 4.23: AM Origin Cycle mode share

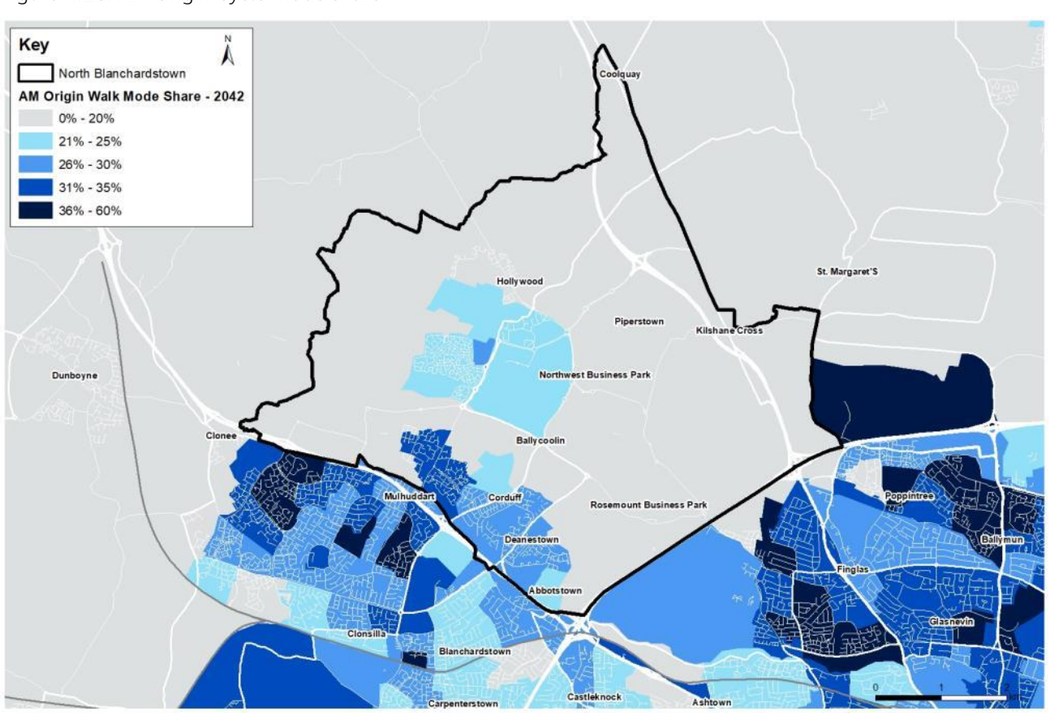


Figure 4.24: AM Origin Walk mode share

4.3.4 Capacity by mode

Roads

Figure 4.25 shows junctions within and adjacent to the North Blanchardstown study area that experience an 'overall' volume to capacity ratio higher of >60% in the 2042 scenario (AM peak period). As expected, most of the operational problems (RFC >85%) are at locations along the N3 Navan Road and the M50. However, the data also shows that Figure 4.25several junctions on radial routes into the City are capacity constrained in the AM peak period, which may have the undesirable effect of pushing traffic onto unsuitable local roads. There are no operational issues predicted on the N2, which reflects the 2019 TII report where substantive future capacity was demonstrated. The interchange with the Cherryhound-Tyrellstown Link Road is also substantive in scale and presently under-utilised.

Within the study area, the road network is moderately congested, with junctions demonstrating existing operational headroom and spare capacity. This allows for growth and a degree of flexibility to introduce meaningful measures to build greater resilience into the network through enhanced public transport and cycling infrastructure.

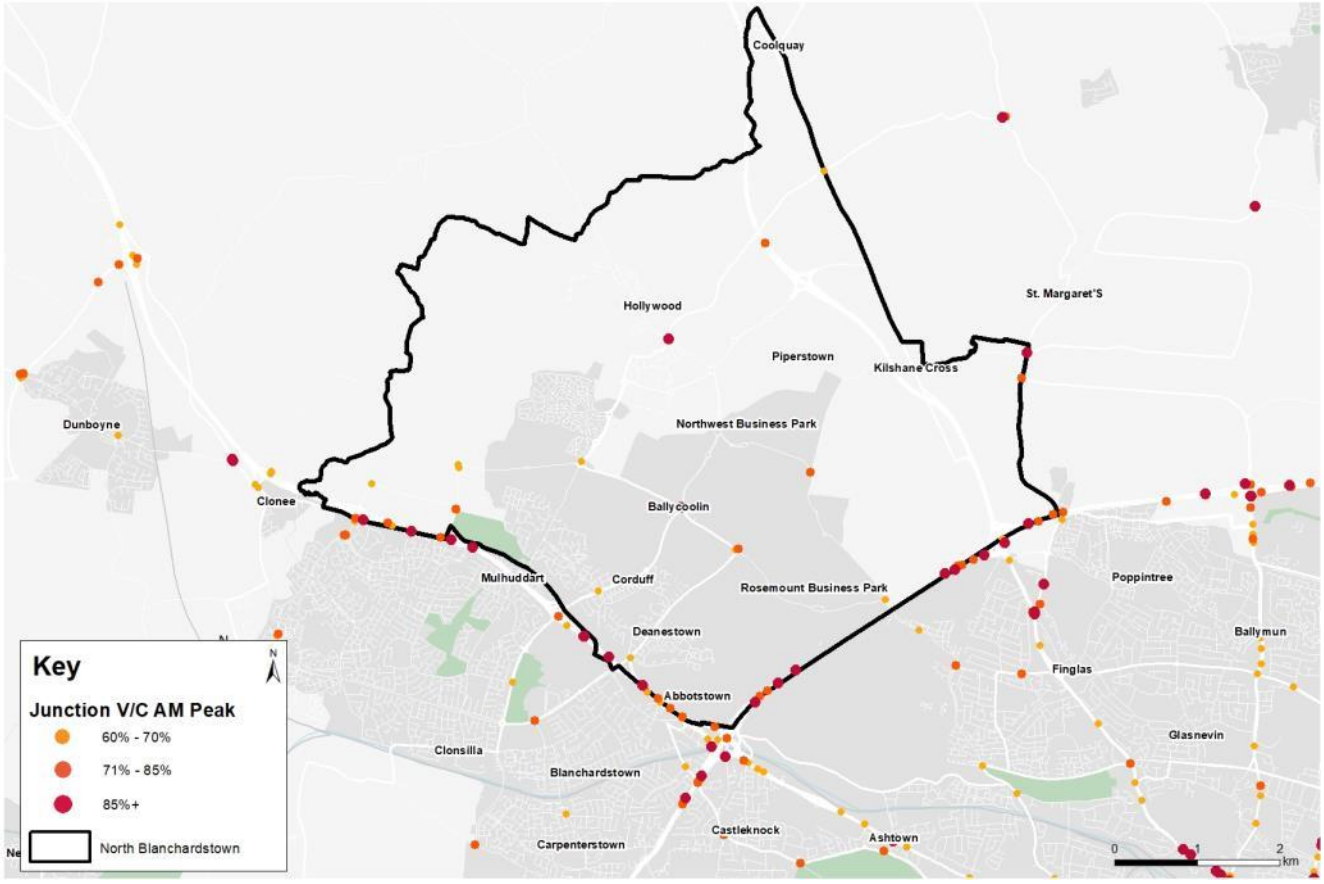


Figure 4.25: Volume to capacity ratio: junctions - AM peak

Public Transport

Public transport demand outputs from the model have also been analysed to determine which routes are predicted to be over-capacity in the forecast year. For the purposes of this analysis the capacity, termed the design capacity, has been calculated as 85% of the crush capacity.

Figure 4.26 and Figure 4.27 show the predicted operating performance of the Spine (B-Spine and F-Spine) and orbital bus routes in the AM peak in 2042. Service routes forecast to be 'at' or over-capacity include:

- The B2 radial spine route which connects Ongar North - Clonsilla - City Centre - UCD. This route is over design capacity between Blanchardstown Centre and Mulhuddart;
- The B3 radial spine route between Tyrellstown - Blanchardstown SC - City Centre. This route is close to /at design capacity between Corduff and Blanchardstown Centre;
- The B4 radial spine route which connects Blanchardstown SC - City Centre - Sallynoggin. This route is over design capacity from Ashtown to the City Centre;
- The F2 radial route which connects Charlestown - Finglas NW - City Centre - Templeogue. This route is close to/at its design capacity in the inbound direction between Finglas and City Centre;
- The N8 orbital route which connects Blanchardstown SC - Dublin Airport - Clongriffin. This route is close to/at design capacity in both directions between Blanchardstown Centre and Dublin Airport; and
- The W8 orbital route which connects Blanchardstown SC with Tallaght. This route is close to/at design capacity in the northbound direction between the Liffey Valley shopping centre and Blanchardstown Centre; and
- The N4 Orbital route which connects Blanchardstown SC with Dubiin Port via Finglas. This route is over design capacity in both directions to the east of Finglas.

Figure 4.26: Capacity utilisation of spine bus routes (AM peak)

Figure 4.27: Capacity utilisation of orbital bus routes (AM peak)

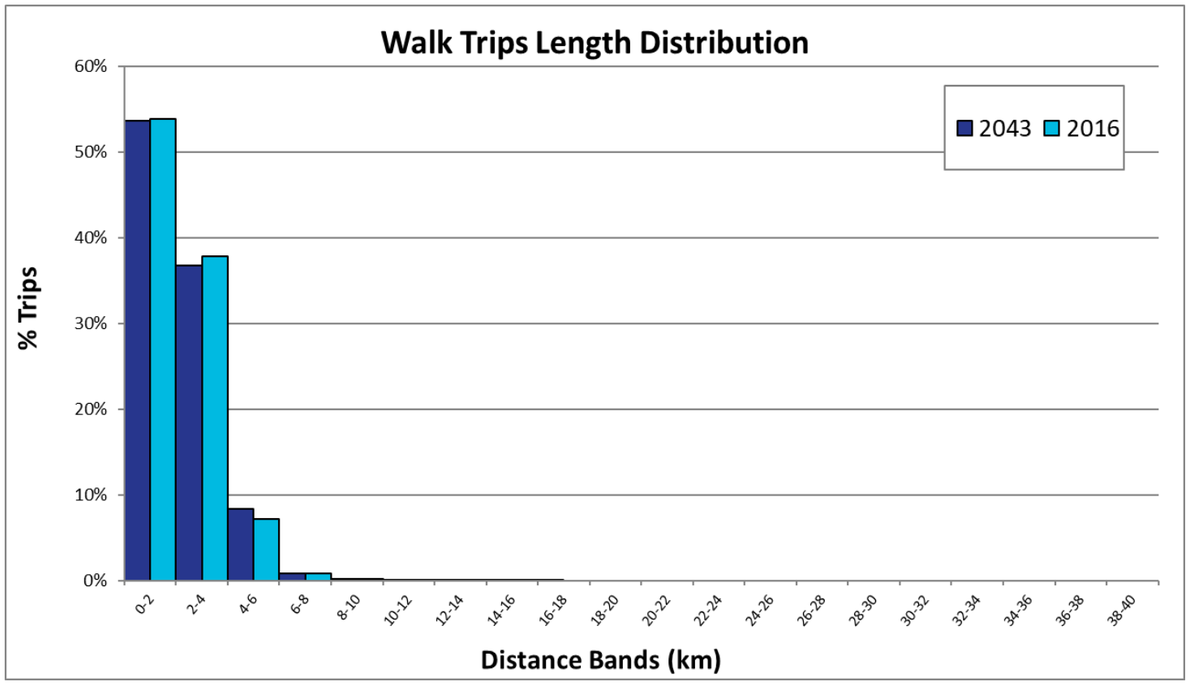
4.3.5 Trip lengths

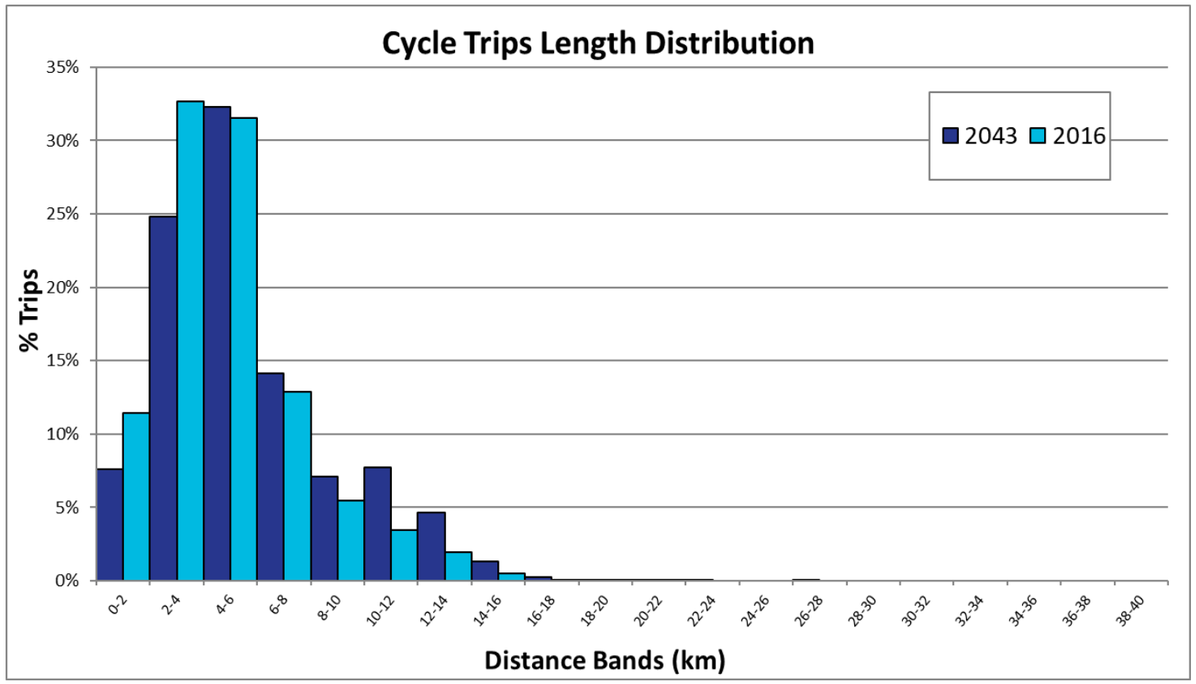
Data on the distribution of trip lengths for the North Blanchardstown study area have also been extracted from the model for the 2016 'base' and 2042 forecast years. They are split by mode and presented in Figure 4.28.

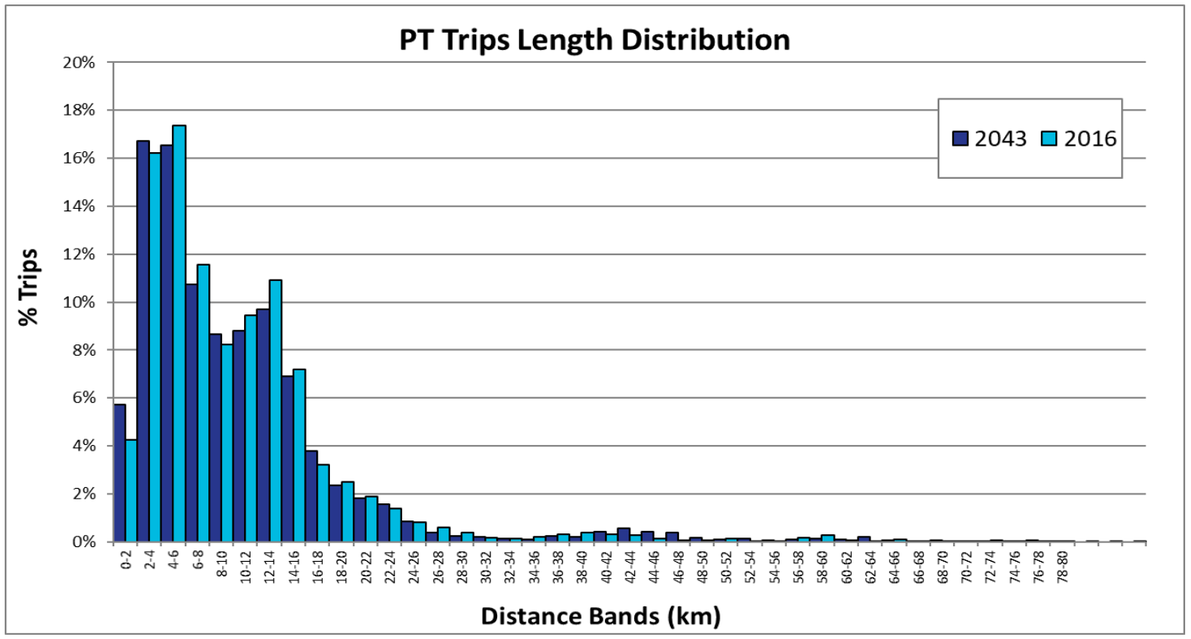
Overall, the data shows:

- Car - A predicted increase in short distance car trips between 2016 and 2042. Around 45% are expected to be less than 8 km by 2042;
- Walking - most walking trips are short with over 50% less than 2km. There is no forecast change in this trend in the forecast year; and
- Public Transport and cycling - a small increase in longer trips made, particularly in cycling, relative to the 2016 'base'.

As noted, a large proportion of car trips from the study area are under 8 km in length. This provides an opportunity for a large shift to public transport or 'active modes' if improved facilities are made available.







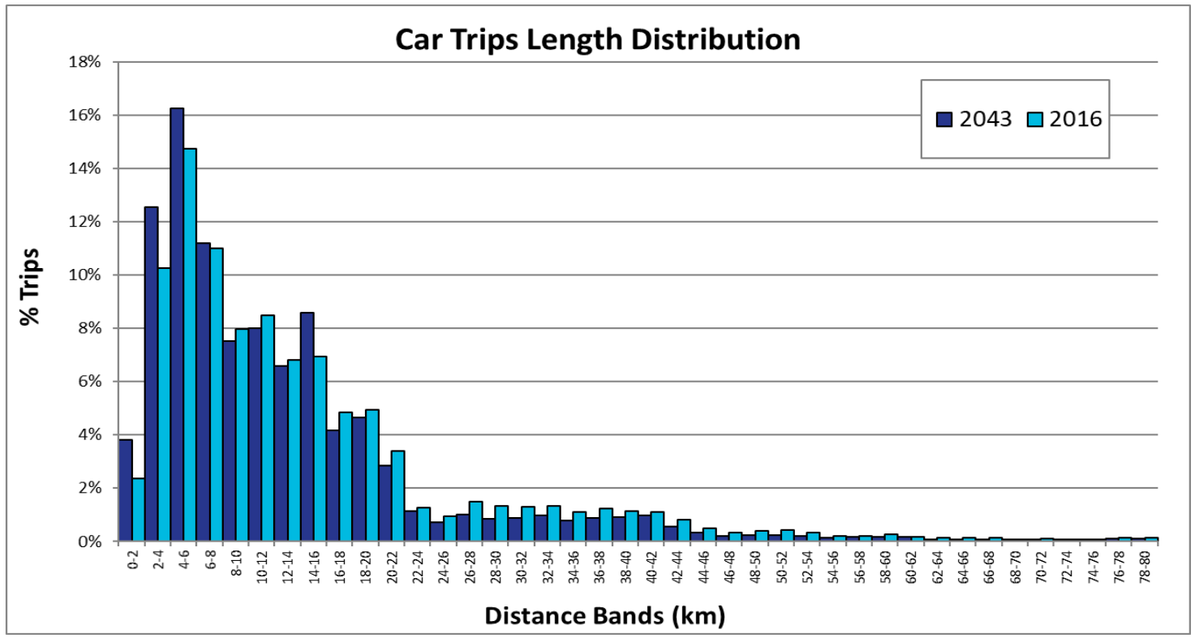


Figure 4.28: North Blanchardstown - Trip length distributions for all modes (AM peak)

4.3.6 Journey time by mode

Journey time data, disaggregated by zones, has also been extracted from the model for car, public transport, cycling and walking for the AM peak period. For the North Blanchardstown study area, the data indicates that public transport trips generally experience significantly higher journey times in comparison to car trips. Only in a few cases do road journeys take more time than public transport, such as North Blanchardstown to Dublin City Centre. This, in general, shows that there is a gap in the provision of public transport services.

4.3.7 Bus speeds

Figure 4.29 presents the ERM model output 2042 bus speeds for the AM peak period. The figure shows that, in general, the bus speeds are quite high throughout the study area but a number of key areas in the network experience low to medium speeds which thus increases bus journey times and inhibits modal shift to bus from car. The key areas experiencing low speeds are:

- Mill Road;
- Some parts of the Waterville Road; and
- A section of the Old Navan Road close to the Mulhuddart area.

The fact that bus speeds are generally reasonable reflects the general lack of significant delay affecting most of the local highway network. However, this also means that car journey times for local trips are generally much quicker then bus, where stop 'dwell' times and interchange serve to make this mode choice slower.

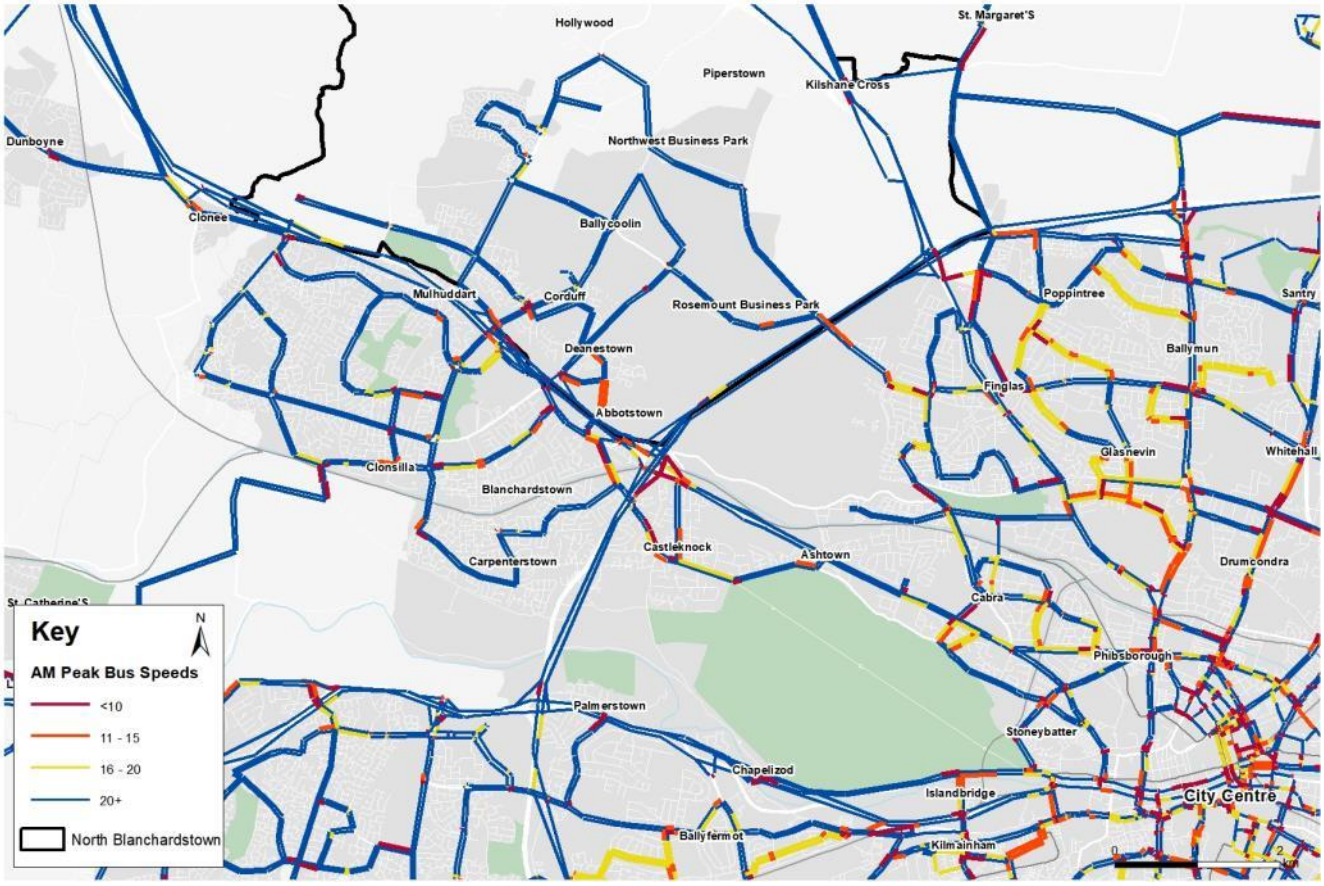


Figure 4.29: North Blanchardstown - Bus speeds (AM peak)

4.4 Mode shift analysis

The previous section has considered the estimated travel demand and network performance in 2042 based on the output ERM data. However, as well as the public transport network needing to accommodate this public transport demand in 2042, there is also a need to cater for and encourage a mode shift from private car to sustainable modes such as walking, cycling and public transport. This section considers the demand impact of different levels of mode shift for key movement corridors through the study area.

4.4.1 Methodology

A process has been developed to simulate how a change in mode shift could increase the demand for public transport trips. The potential number of public transport trips from the shift can then be used to indicate the level of public transport improvements which would be needed to accommodate a mode shift. A summary of the methodology is included in Appendix D.

This process has been undertaken for two key movement corridors which affect trips entering and leaving the North Blanchardstown study area. The corridors were identified by identifying key origins and destinations using the data discussed in Section 4.3.2, alongside analysis of the network capacity utilisation presented in Section 4.3.4. The two key movement corridors are shown in Figure 4.30 and Figure 4.31 and listed below.

- Radial corridor from Blanchardstown to Dublin City Centre ('B Spine'); and
- Orbital M50 corridor from Tallaght to Swords.

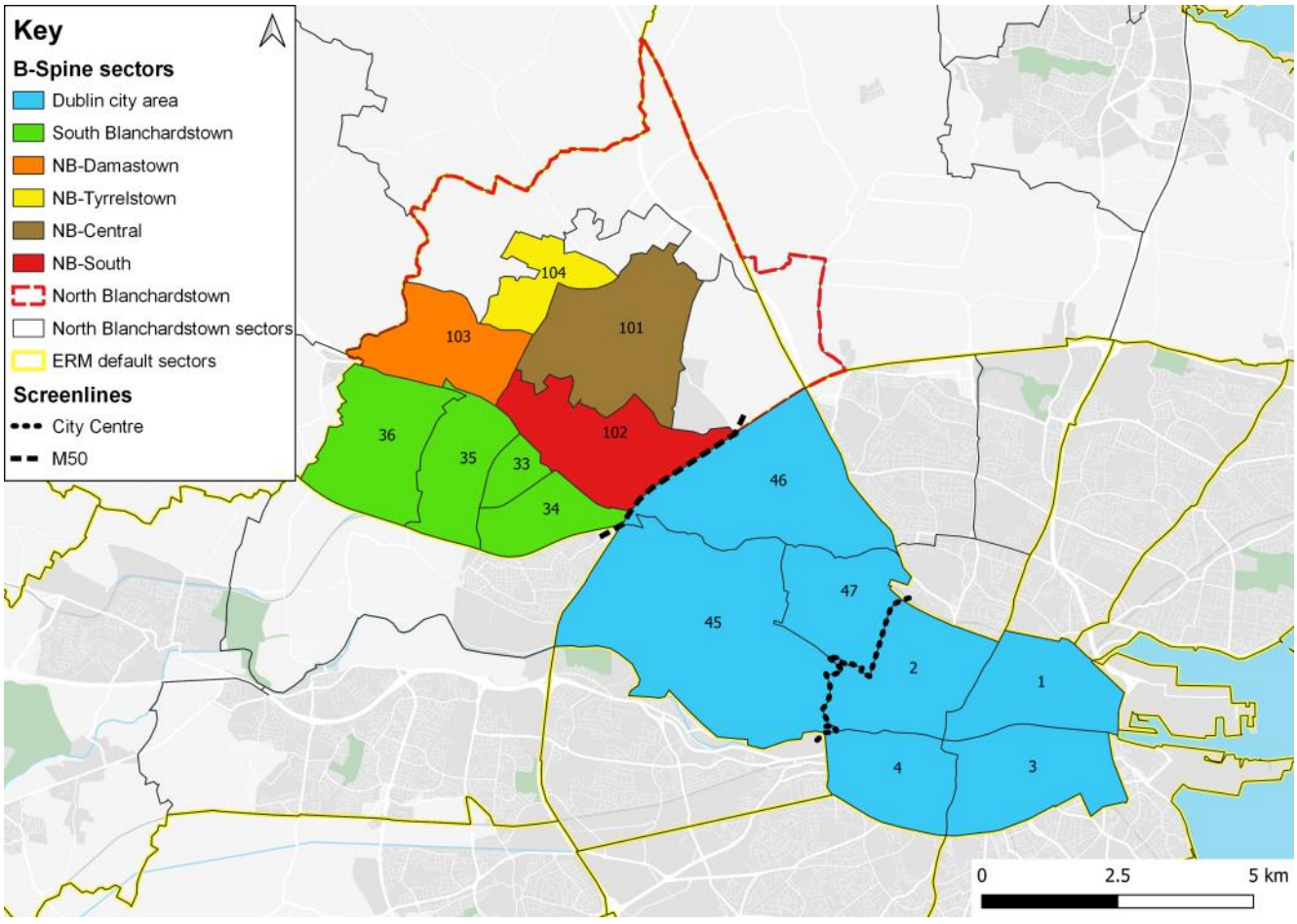


Figure 4.30: Radial 'B Spine' Corridor Definition and Screenlines

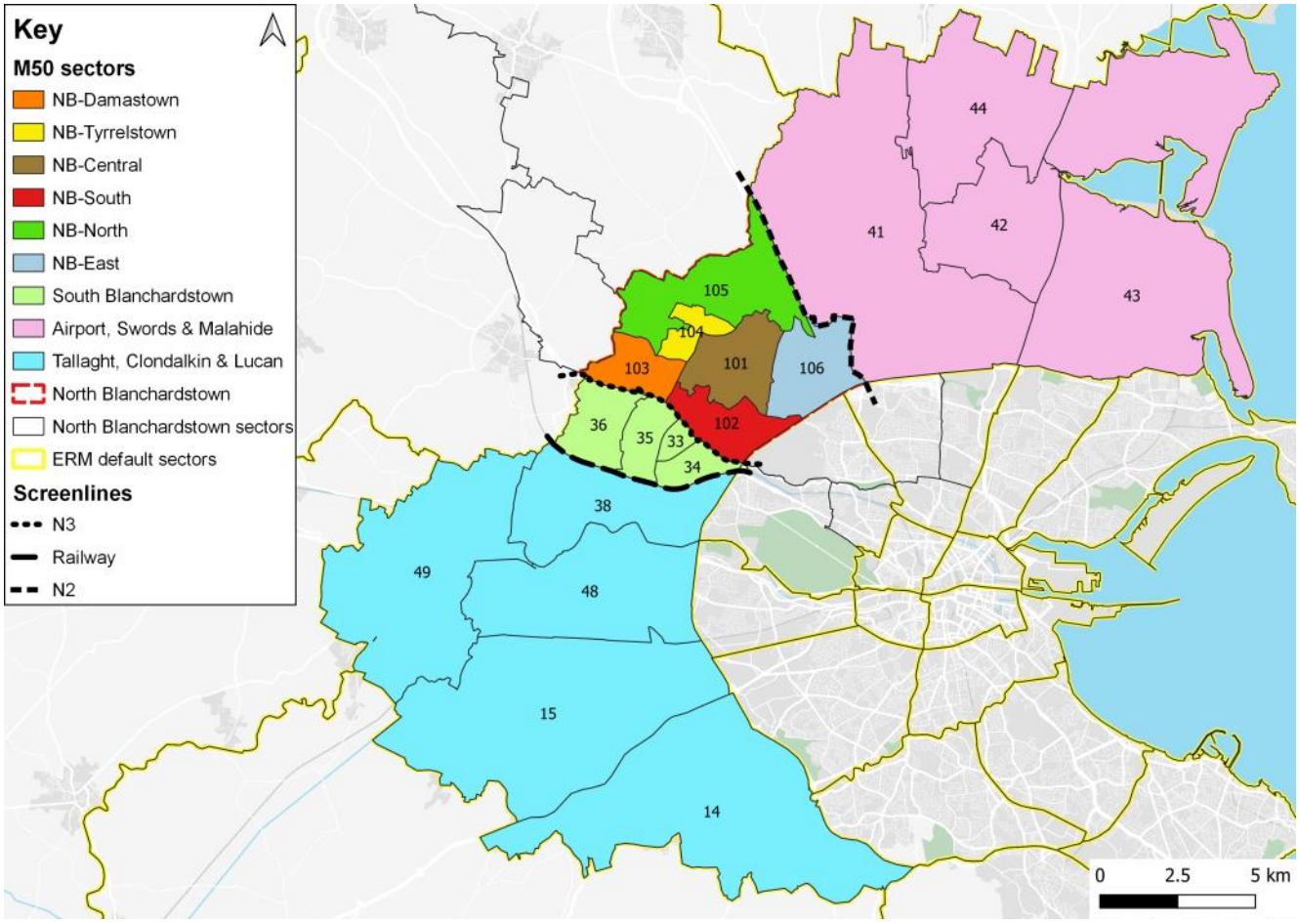


Figure 4.31: M50 'Orbital' Corridor Definition and Screenlines

The analyses use the same sectoring system described earlier in Section 4.3.1. However, in these cases a selected subset of sectors has been used in determining the 'most likely' O-D movements to pass through each of the selected screenlines. This is quite tricky in respect of the 'orbital' (M50) corridor as it is possible that some areas in South Dublin to the east of the M50 could choose to use the M50 rather than route via the City Centre. Similarly, some trips between the selected areas of South Dublin and North Dublin/Swords assumed to pass through the selected screenlines could choose to use routes through the City Centre. However, short of full ERM testing with proposed public transport measures it has been necessary to make broad assumptions on the catchments.

The 2042 model demand outputs provide a baseline number of trips between each pair of sectors for car, public transport, cycle and walk. For a specified percentage of car mode shift, the process developed has estimated how many of the car trips are likely to become walk, cycle or public transport trips. The distance between each pair of sectors has been estimated by calculating the crow-fly distance between the centroids of each sector. This allowed the mode shift to be based on distance, as shorter trips are more likely to become walking trips and longer trips are more likely to become public transport trips. The distances have been divided into three bands based on the trip length distribution information in Section 4.3.5. Each sector to sector movement is then allocated one distance band.

Distance bands used for the North Blanchardstown study area were: <2.7km; 2.7-5.9km; and >5.9km. The values are averages derived from the 2016 trip-length distributions for walk (2.7km) and cycle (5.9km) respectively, noting that these changed little in the 2042 ERM scenario.

Table 4.2 shows the mode shares for 'sustainable modes only' from the model by distance band. These percentage values were used to split the chosen total number of car trips shifted to walk/cycle/public transport

respectively; For example, only 15% of car trips are shifted to public transport in the 0-2.7km distance band, increasing to 42% in the 2.7-5.9km band and then 80% for the >5.9km band.

Table 4.2: Mode splits by distance band

Distance band	Walk	Cycle	Public Transport
0-2.7	79.7%	5.2%	15.1%
2.7-5.9	45.4%	12.7%	41.9%
5.9+	10.9%	9.4%	79.7%

4.4.2 Results

The information in this section outlines high-level, indicative results to inform option development, by providing order of magnitude changes in demand resulting from an assumed mode shift. Due to the assumptions underpinning the transport model run used for this study, it is not possible to provide an exact figure for the demand relating to further mode shift without re-running the model. For the same reason, wider corridor catchments than shown could have been considered.

Radial 'B Spine' corridor

According to the outputs from the ERM model run, the car mode shares in 2042 for the 'B Spine' radial corridor are:

- 35% and 77% in the southbound and northbound directions respectively at the 'M50' screenline.; and
- 24% and 67% in the southbound and northbound directions respectively at the 'City Centre'' screenline.

This underlines the earlier discussion in Section 4.3.2 on the high predicted car mode share for trips into North Blanchardstown in the AM peak period. Figure 4.26 shows that there is predicted spare capacity on the northbound 'B Spine' bus services into Blanchardstown Centre. However, it is the absence of onward connectively into most of the North Blanchardstown area that is the limiting factor. Table 4.3 below shows the public transport demand impact of 25% and 50% car mode changes in line with the methodology described.

Table 4.3: Car mode shift by screenline - 'B Spine' Corridor (AM peak)

Screenline	Car demand - ERM (Two-Way)	Car mode shift	Public transport demand - ERM		Shifted public transport demand		Total public transport demand after mode shift	
			SB	NB	SB	NB	SB	NB
M50	7,115	0%	4,600	800	0	0	4,600	800
		25%	4,600	800	700	700	5,300	1,500
		50%	4,600	800	1,300	1,400	5,900	2,200
City Centre	7,756	0%	9,300	1,200	0	0	9,300	1,200
		25%	9,300	1,200	700	600	10,000	1,800
		50%	9,300	1,200	1,400	1,200	10,700	2,400

Note: Figures in this table have been rounded to the nearest 100

To achieve a car mode shift of 50%, provision for approximately 10,700 trips would be required to cater for southbound or 'inbound' demand across the City Centre screenline, which is the highest level of directional demand across both screenlines. The directional 'shift' to be accommodated at both screenlines is in fact similar, so a service capacity uplift of around 1,400.

Orbital M50 corridor

This section considered the demand analysis results for the orbital corridor illustrated in Figure 4.31. According to the outputs from the ERM model run, the car mode shares in 2042 for this orbital corridor are:

- 77% and 81% in the southbound and northbound directions respectively at the 'N2' screenline;
- 61% and 75% in the southbound and northbound directions respectively at the 'N3'' screenline; and
- 66% and 77% in the southbound and northbound directions respectively at the 'Railway'' screenline;

Not unexpectedly, the restricted public transport service provision along the M50 corridor means that car mode share is well above the target of 45%. Table 4.4 below shows the public transport demand impact of 25% and 50% car mode shift changes.

Table 4.4: Car mode shift by screenline – Orbital M50 Corridor (AM peak)

Screenline	Car demand - ERM (Two-Way)	Car mode shift	Public transport demand - ERM		Shifted public transport demand		Total public transport demand after mode shift	
			SB	NB	SB	NB	SB	NB
N2	7,358	0%	900	1000	0	0	900	1000
		25%	900	1000	700	800	1,600	1,800
		50%	900	1000	1,300	1,700	2,200	2,700
N3	14,151	0%	1,600	1,900	0	0	1,600	1,900
		25%	1,600	1,900	600	1,600	2,200	3,500
		50%	1,600	1,900	1,300	3,200	2,900	5,100
Railway	12,424	0%	1,600	1,500	0	0	1,600	1,500
		25%	1,600	1,500	900	1400	2,500	2,900
		50%	1,600	1,500	1,700	2,700	3,300	4,200

To achieve a car mode shift of 50%, provision for approximately 5,100 public transport trips would be required to cater for northbound demand across the N3 screenline, which is the highest level of directional demand across the three screenlines. The demand uplift is 3,200, which will likely include a lot of transferred car trips with origins in South Blanchardstown. The change in northbound public transport demand at the N2 screenline shows a notable reduction, suggesting a lot more terminating public transport trips in North Blanchardstown could be captured should capacity enhancements be made to improve local connections from South Blanchardstown and orbital public transport capacity along the M50 to the south of Blanchardstown.

4.5 Summary

4.5.1 Issues

A transformational change is expected in the North Blanchardstown study area up to 2040 and beyond, this includes significant growth mainly in employment throughout the area and after that in population.

The ERM modelling shows there is likely to remain a high car mode share for trips into the North Blanchardstown area in the AM peak period, likely due to the uncompetitive public transport journey times and lack of public transport provision in the north part of the study area. The car mode share for external trips made from the area is much lower, which is mainly due to a high public transport mode share for journeys into the City Centre. However, outward trips orbitally are dominated by car. There is also a low cycling and walking mode share throughout the area, which is likely due to lack of dedicated, connected cycle lanes and of footpaths.

Analysis also shows that several public transport services are expected to be approaching or over capacity in the AM Peak by 2042, including both routes into Dublin City Centre and orbitally as well. This could be a drawback leading people to make more journeys by car instead of public transport.

4.5.2 Constraints

With regard to public transport, there is no provision for either light or heavy rail within the North Blanchardstown study area, which is a major constraint to uptake of public transport in the area. For bus travel there are some constraints on the capacity of the existing services as well as an identified lack of orbital services connecting only the southern corner of the area with no connectivity to much of the existing commercial/ industrial area or indeed the identified areas for large-scale development to the north. Also, the permeability into North Blanchardstown from Blanchardstown Centre where the main terminus is located is quite poor.

In terms of car travel the M50 runs to the south east of the study area, this experiences heavy congestion and also has limited crossing points. Several junctions along the major routes into Dublin City Centre are also at or near capacity. However, car continues to be the most attractive travel option for trips departing or originating from the study area, and particularly inward trips to the various employment areas.

Cyclists and pedestrians have limited opportunities to safely cross key infrastructure routes within the area because of limited infrastructure. There are also barriers such as the motorway M50, which makes the connection with Dublin City Centre more difficult for these modes.

4.5.3 Opportunities

Opportunities for improvements in the North Blanchardstown study area lie around accessibility and capacity of Public Transport, and then of active modes such as cycling and walking. Therefore, people will be encouraged to stay away from using the car. There are currently no rail services into the area, so expanding the light rail services, for example the Luas Green Line, to the north, may also be an opportunity to move people away from using cars.

Improving cycle infrastructure and facilities and maybe using incentives for a safer shift to these, wherever possible, will help to increase cycle mode share and therefore help to decrease the number of short trips made via car as well as air pollution.

The M50 is currently the primary way of making orbital trips in the area particularly towards the east of the study area, but it is heavily congested. There may be an opportunity to improve orbital routes inside the M50 by providing more frequent services with less capacity and better journey times.

5. Options Development

5.1 Strategy objectives

To guide the identification of options for the North Blanchardstown study area, the NTA have outlined a set of overarching themes, outcomes and objectives for the GDA Transport Strategy; these are outlined in Table 5.1.

Table 5.1: GDA Transport Strategy theme. outcomes and objectives

Strategy theme	Strategy outcome	Strategy objective
Environment	An enhanced natural and built environment	To meet our environmental obligations by transitioning to a clean, low emission transport system through reducing car dependency and increasing walking, cycling and public transport use.
Community	Connected communities and better quality of life	To improve health and quality of life of our society by improving connectivity between people and places, delivering safe and integrated transport options, and increasing opportunities for walking and cycling.
Economy	A strong sustainable economy	Supporting economic activity and growth by improving the opportunity for people to travel for work or business where and when they need to and facilitating the efficient movement of goods.
Accessibility	An inclusive transport system	To deliver a high quality, equitable and accessible transport system, which caters for the needs of all members of society.

5.2 Options development

To identify options to serve travel demand in the study area in 2042, the following steps have been completed:

- A review of relevant planning and transport policies and strategies has provided the overall context for options, and identified current thinking in relation to the future transport network;
- A baseline analysis of the existing transport network identified existing network issues and opportunities;
- An analysis of planning and travel data from the 2040 Planning Sheet and a Do-Minimum run of the Eastern Regional Model for 2042 provided insights into future travel demand and network capacity constraints; and
- A review of the GDA strategy objectives against which all options should be measured.

The above steps resulted in the preparation of an options long list for each of the key transport patterns as detailed in Table 5.2. The options long list is set out in detail below.

Table 5.2: Options long list

Ref.	Type of option (REF)	Description
H1	Highway	Create a new internal access road between the Cherryhound-Tyrrelstown Link Road and the part of the R135 west of the N2.
B1	Bus	Create **NEW** local orbital bus connection (**B5**) between Ongar and Charlestown Shopping Centre ('F Spine') via Blanchardstown Centre. Rail Interchange with Maynooth Line at Clonsilla
B2	Bus	Create a **NEW L65** '2-way loop' Service operating between South Blanchardstown (Ongar) and through North Blanchardstown to the Cherryhound development lands. Rail Interchange with Maynooth Line at Clonsilla. NOTE: Bus contraflow SB required at N3/R156 bridge.

Ref.	Type of option (REF)	Description
B3	Bus	**EXTEND** the 'F Spine' corridor northwards into North Blanchardstown, preferably using the Option H1 road connection with the N2/R135 partial interchange to improve 'directness' and accessibility. Add a **NEW** service (**F4**) to Tyrellstown. given predicted at-capacity conditions on this 'Spine' between Finglas and the City Centre.
B4	Bus	Create a **NEW** 'peak period' orbital **Service N8A** between the M50/N2 interchange and Blanchardstown Centre via North Blanchardstown, preferably using the Option H1 road connection with the N2/R135 partial interchange. **RE-ROUTE** existing Service N8 the same way.
B5	Bus	Create a **NEW** 'direct' Service between Swords and Blanchardstown Centre via the Airport, Horizon Logistics Park, DALP and North Blanchardstown (R132, R108 and R135-Option H1 Link)
B6	Bus	**INCREASE 'PEAK' FREQUENCY** of the single Service **W4** currently proposed from SW Dublin (M50). Additionally, consider **EXTENDING** Service W2 to Blanchardstown Centre or add **NEW** Service W2A Variant
B7	Bus	**EXTEND** orbital Service **N6** from Finglas to Blanchardstown Centre via North Blanchardstown.
C1	Cycling	**NEW** cyclist/pedestrian linkage between the Tyrellstown-Cherryhound Link Road and the R135 across the eastern part of the North Blanchardstown area (with Option H1)
C2	Cycling	**NEW** cycle path and allied crossing facilities to the N2 interchange and extension eastwards to the R135 junction
C3	Cycling	**IMPROVE** cycle facilities between Ongar and Tyrellstown via the N3/156 interchange, Damastown Road, Damastown Close and Damastown Avenue (to R121)
L1	LRT (Luas)	EXTEND the proposed Luas line extension to Finglas further north into the North Blanchardstown area.
M1	Metro	Construct the originally considered Metro-West line from the Metro-North line extension (Swords) to Blanchardstown Centre

Figures 5.1 - 5.4 show the various options considered and potential routing of the new or extended public transport services where applicable:

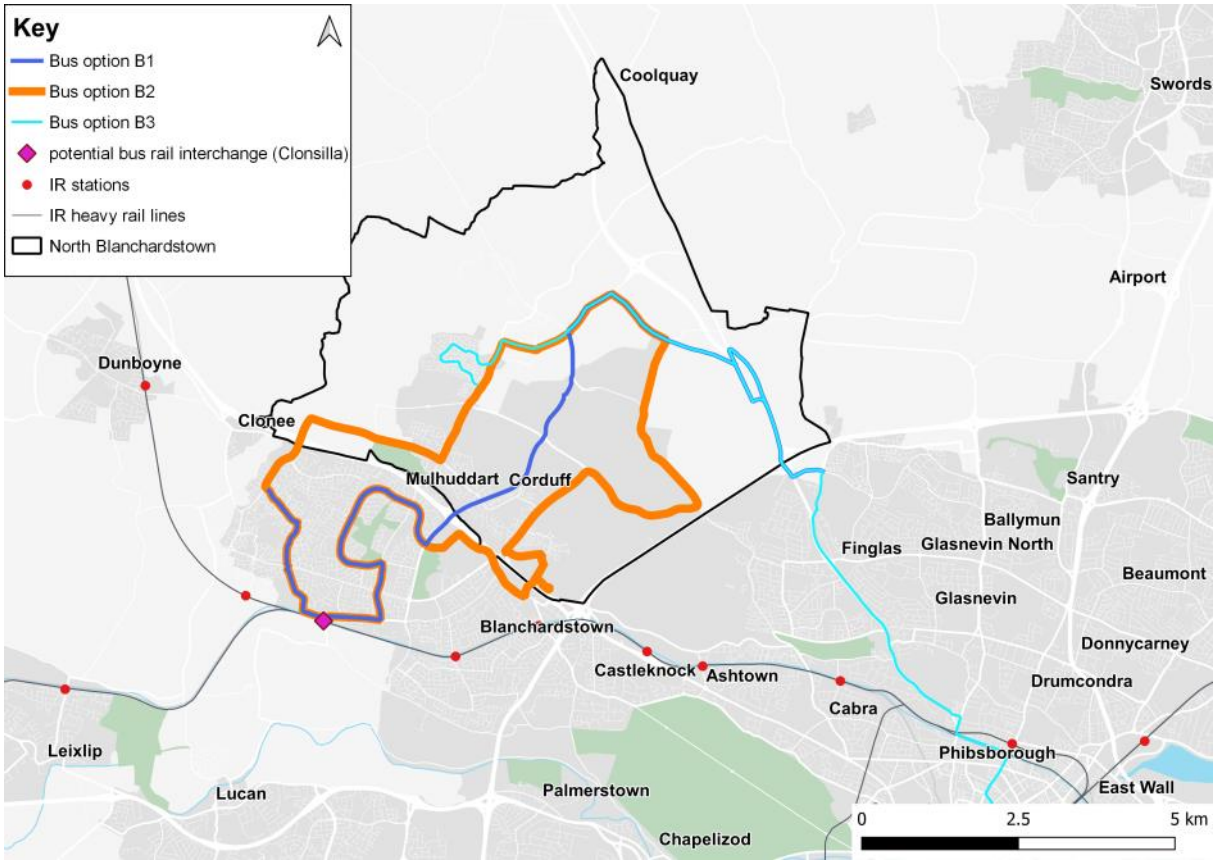


Figure 5.1: Local Bus Connections - Options B1-B3

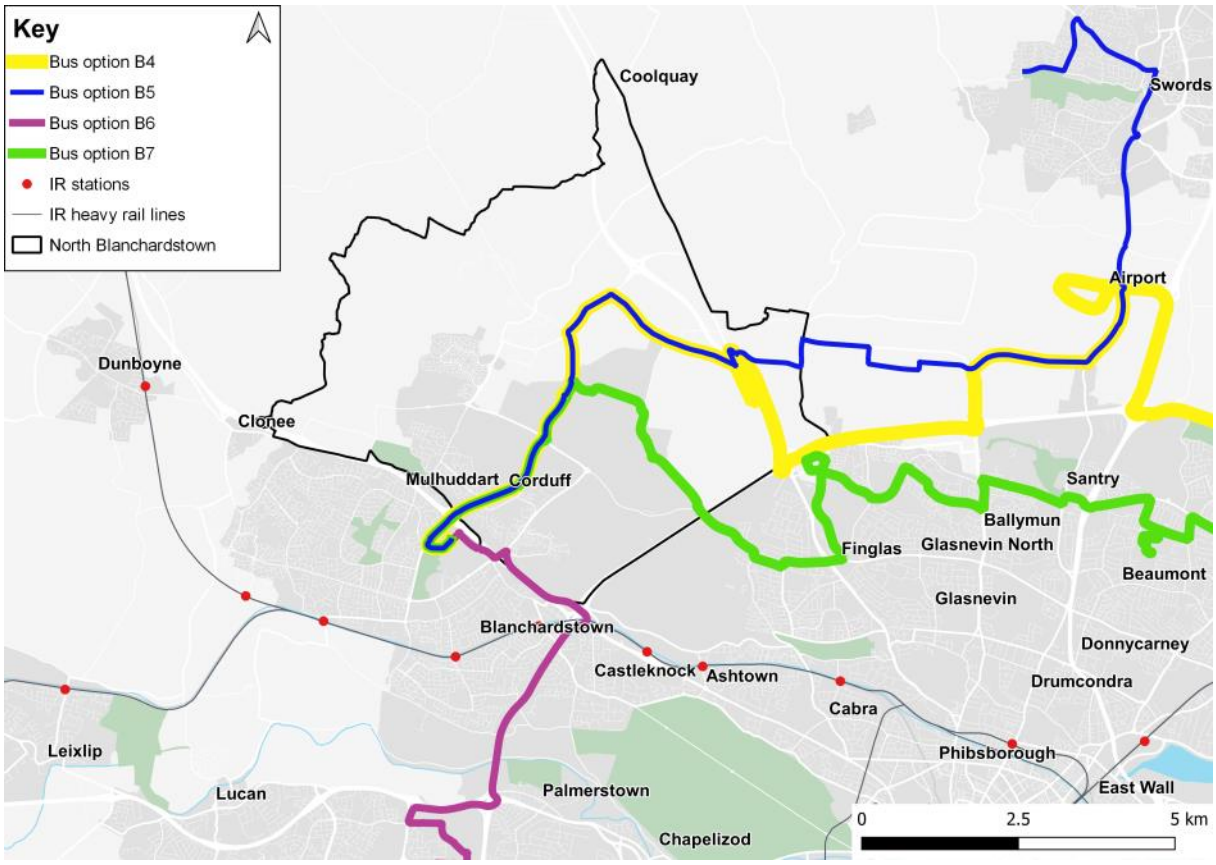


Figure 5.2: Orbital Bus Connections - Options B4-B7

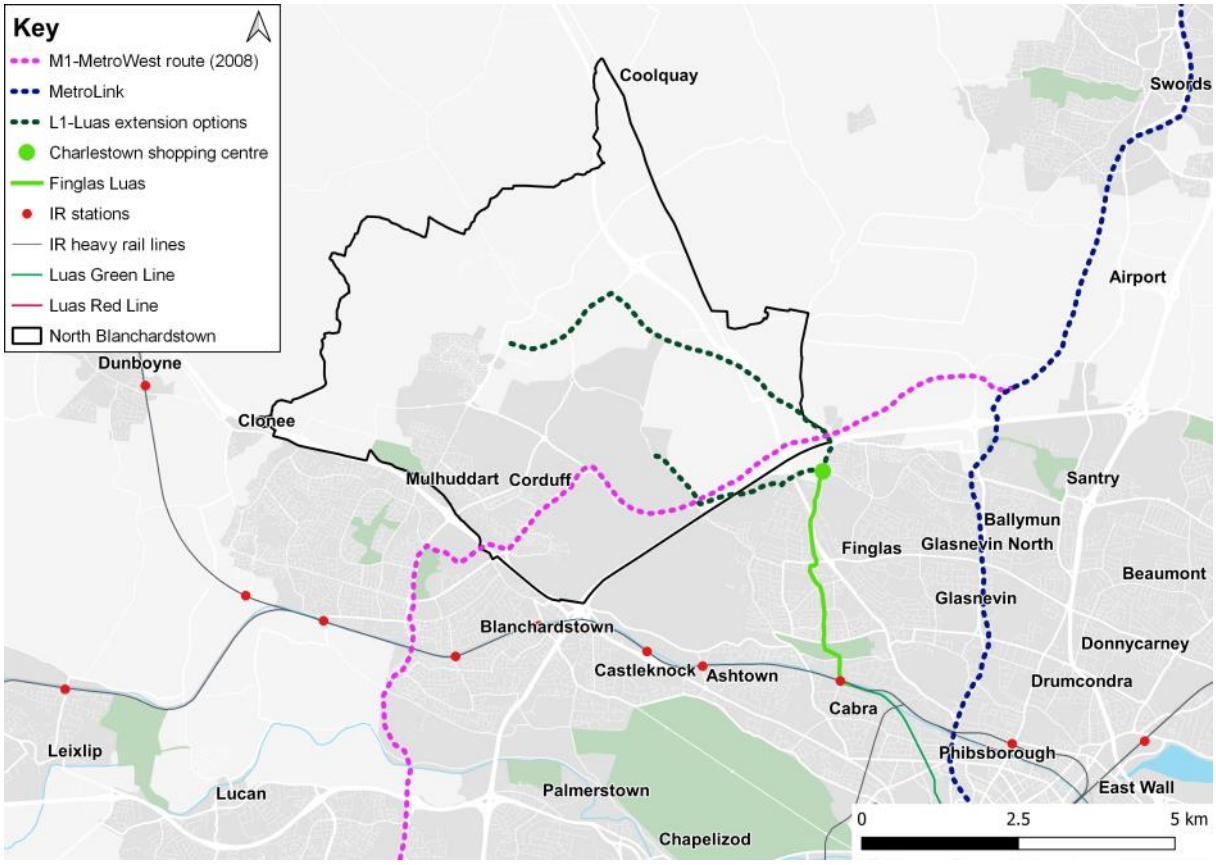


Figure 5.3: Luas Line Extensions and Metro Connections - Options L1 and M1

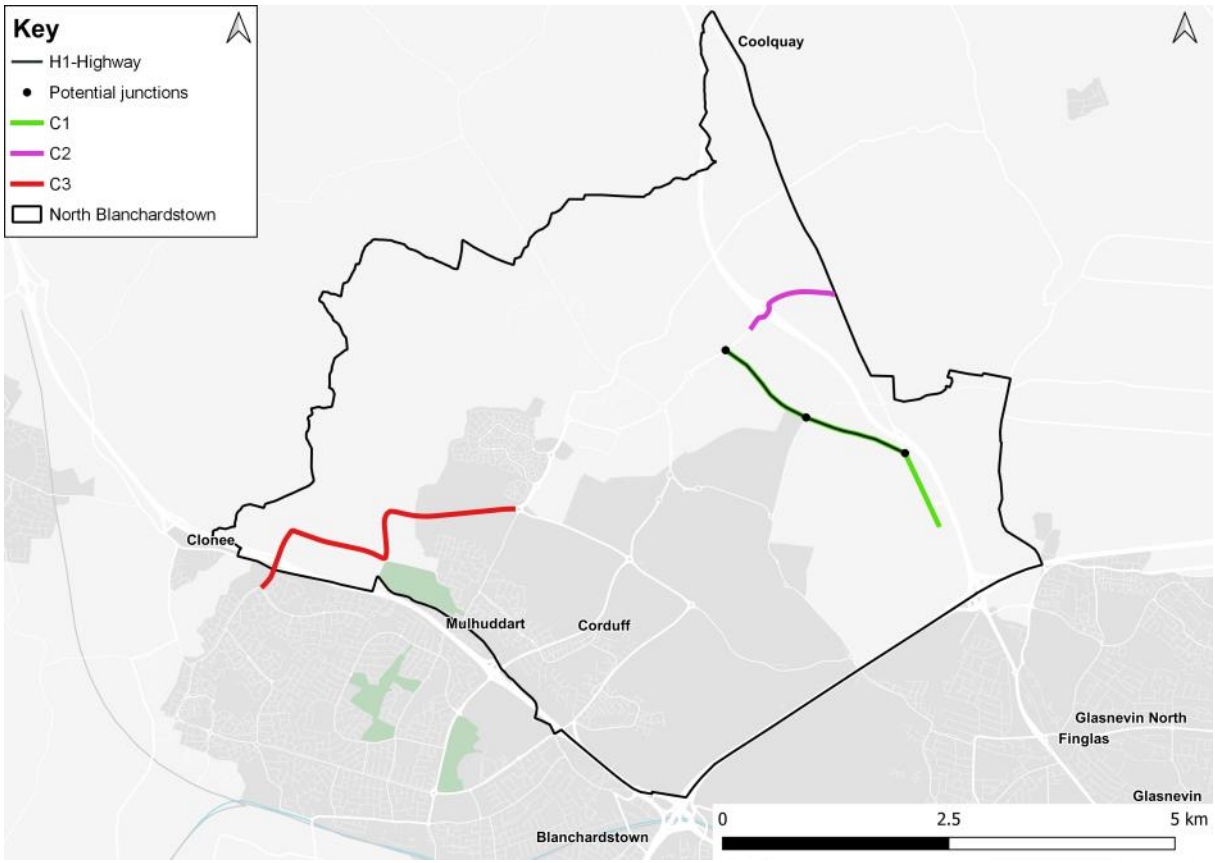


Figure 5.4: New Service Road Link (H1) and Cycling Infrastructure Option (C1-C3)

5.3 Options taken forward for further consideration

5.3.1 Public transport options

Radial corridor

The radial corridor demand for the 'B Spine' calculated in Section 4.4 has been used to inform the identification of appropriate options to serve this corridor. Different public transport modes have theoretical capacity ranges, and so demand level viabilities, which have been used as the basis by which to short-list options to progress through to the assessment stage. The capacity range for each mode is presented in Table 5.3 and based on UITP's 'Making the right mobility choices.'

It should be noted that the capacity range for these modes have significant overlaps and are approximate. In the case of North Blanchardstown, heavy rail is not considered a viable 'primary' option for this corridor as the Maynooth line is located well to the south. As such it would be wholly reliant on adequate bus interchange. Metro is neither a viable option here. However, figures for both Metro and Heavy Rail are included for completeness, and the former is considered as an option for the orbital corridor in the long list.

Table 5.3: Public transport modes: capacity range - passengers / direction / hour

Mode		Min	Max
1	Conventional Bus	0	2,500
2	Bus with priority infrastructure	2,400	4,000
3	Light rail	3,600	7,000
4	Heavy Rail	5,000	50,000
5	Metro	7,500	25,000

In order to undertake the initial sift of options to progress through to the assessment, the corridor demand has been compared against the mode capacity ranges above for bus and LRT. The corridor demand 'uplift' figures used for public transport have been obtained from Table 4.. For each direction, this has been obtained from the screenline that has the highest level of demand when a 50% car mode shift has been applied. For the southbound or inbound movement this uplift was 1,400 at the City Centre screenline and 1,200 in the outbound or northbound direction at the same location.

Table 5.4 presents the public transport options long list for each of the corridors alongside the initial assessment results for each option. It should be noted that the uplift public transport demand over and above that already shown to be catered for in the corridor by public transport services already in the 2042 ERM scenario is that for a three hour AM peak period from 7-10 am. In contrast the ranges of public transport mode capacities are hourly directional capacities.

Table 5.4: Radial corridor shortlist

AM Demand – PT Uplift: 7-10am		Option		Min Capacity (per hr)	Max Capacity (per hr)	Initial Assessment	Reason
SB	NB						
1,400	1,300	B1	Conventional Bus	0	2,500	Progress	Sufficient capacity
		B2	Bus - 'B' Spine to 'F Spine Link	0	2,500	Progress	Sufficient capacity
		B3	Bus - 'F' Spine Extension	0	2,500	Progress	Sufficient capacity
		L1	Light Rail - Luas Extension	3,600	7,000	Discount	Insufficient Demand

As a result of the initial assessment presented in Table 5.4, the options being taken forward to the Multi Criteria Analysis (MCA) stage for the radial corridor are as follows:

- Option B1;
- Option B2; and
- Option B3

Within the MCA, consideration will extend to cover the 'F Spine' corridor to Finglas, insofar as both Options B1 and B3 provide connection from the existing Charlestown Shopping Centre terminus for the 'F Spine' services into North Blanchardstown, so providing further capacity for movements to/from North Blanchardstown and the City Centre.

Orbital corridor

The orbital demand along the M50 corridor calculated in Section 4.4.2 has similarly been used to inform the identification of appropriate options to serve this corridor. In this instance, measures to enhance public transport capacity to the north and south of the general Blanchardstown area need to be considered independently so are set out to this effect in Table 5.5 below. As with the consideration of the radial corridor, the suitability of the public transport mode intervention is assessed against the calculated uplift in public transport demand with an assumed 50% car mode shift.

Table 5.5: Public transport options long list

AM Demand - PT Uplift: 7-10am		Option		Min Capacity (per hr)	Max Capacity (per hr)	Initial Assessment	Reason
SB	NB						
M50 North: 'N2 Screenline'							
1,300	1,700	B4	Conventional Bus - New Service N8A	0	2,500	Progress	Sufficient capacity
		B5	Conventional Bus - New Swords direct Service	0	2,500	Progress	Sufficient capacity
		B7	Conventional Bus - Service N6 Extension	0	2,500	Progress	Sufficient capacity
		M1	Metro West spur from Metro Link	7,500	25,000	Discount	Insufficient demand
M50 South: 'Railway Screenline'							
1,700	2,700	B6	Conventional Bus - Changes to Services W4 or W2 or addition of new Service W2A	0	2,500	Progress	Sufficient capacity based on sub-option choice (B6a, B6b or B6c)

As with the radial corridor, there is no justification for public transport improvement solutions beyond conventional bus service enhancements to better connect North Blanchardstown with South Blanchardstown, Finglas and orbitally to Swords and South Dublin.

5.3.2 Highway infrastructure

Highway Option H1 is considered worthy of taking forward but is not considered beyond this Chapter in the MCA. This is because providing adequate vehicular access to the 'greenfield' lands to the south of the Cherryhound-Tyrellstown Link Road will be a necessary requirement for bringing forward industrial/commercial development. As such, a road link will be required to this end, and whilst this may not follow the alignment shown in Figure 5.4 exactly, there would be clear benefit in achieving a junction connection with the southernmost part of the R135 within North Blanchardstown. This opens-up better bus penetration opportunities for services routing via the M50/N2 interchange.

5.3.3 Cycling interventions

Based on the assessment of 'gaps' in the cycle network connectivity in Chapter 3 three options are considered in the long list as follows:

Option C1: In association with Option H1, introduce a new cyclist/pedestrian linkage between the Cherryhound-Tyrellstown Link Road and the R135 across the eastern part of the North Blanchardstown area. As noted, this would sensibly be done as part of new highway link proposals to achieve suitable access through the NE area reserved for new general employment. This would also enable direct cycle connectively between Finglas and North Blanchardstown to be achieved using the ramped cycle-bridge already present at the M50/N2 interchange.

Option C2: Introduce cycle path and allied crossing facilities to the N2 interchange and extend provision eastward to the R135 junction

Option C3: Improve off-road cycle facilities between Ongar and Tyrellstown via the R156/N3 interchange, Damastown Road, Damastown Close and Damastown Avenue. Damastown Avenue between Damastown Close and the R121 has on-carriageway mandatory cycle lanes. There is, however, opportunity to introduce 'shared' off-road footway/cycleways on one or both sides to achieve compatibility with segregation already in place on the R121 at Tyrelletown. The N3/R156 overbridge is one-way northbound with three traffic lanes, with the footway on the east side allowing for 'contra-flow' 'shared' cyclist use. Removing one traffic lane would allow footway widths to be improved both sides, whilst allowing 'shared' use to be considered on the west (NB) side. The primary aim of improving this corridor for cyclists would reduce dependency on the use of the heavily trafficked N3/R121 interchange.

None of the above are considered as part of the MCA within this report. However, Option C1 and C2 are alternatives to improving connectivity across the N2. Whilst Option C2 is a shorter connection to the R135 from the Cherryhound-Tyrellstown Link Road , it would take cyclists routing from/to Finglas and the airport zone well off the 'desire line' and would fail to achieve any penetration to the development lands south of the link. Mindful that highway infrastructure will be required to service this land, Option C1 is preferred, and in any event an off-line 'shared use' footway/cycleway could be provided in isolation. As such, Options C1 and C3 should be taken forward and long-list option C2 dismissed.

6. Options Assessment

6.1 Methodology

The approach to the assessment of options is guided by the 'Guidelines on a Common Appraisal Framework (CAF) for Transport Project and Programmes' (Department for Transport, Tourism and Sport). This requires all schemes to be appraised under the general themes of:

- Economy;
- Environment;
- Safety;
- Integration; and
- Accessibility / Social Inclusion.

Given the early nature of this study, a largely qualitative Multi Criteria Analysis (MCA) was considered an appropriate tool to guide the assessment of options. Building on the key themes of the CAF, a set of criteria which sit within these overarching themes have been developed to enable a more detailed assessment of options to be undertaken. These criteria have been based on the GDA Transport Strategy objectives provided by the NTA (and presented in Section 5.1, as outlined in Table 6.1.

Table 6.1:Assessment criteria

Theme	Criteria
Economy	Represents good value for money
	Provides competitive journey times
	Provides capacity aligned with demand
	Provides resilience for the future (beyond 2040)
Environment	Provide integration of transport with the local built and natural environment
	Encourages mode shift away from the private car
Safety	Improves road safety
Integration	Provides integration with the existing and future proposed transport network
Accessibility and Inclusion	Enhances accessibility and inclusion

The options identified have been assessed relative to each other against the aforementioned criteria using the rating scale outlined in Table 6.2.

Table 6.2: Rating scale

Colour	Definition
	The option has significant advantages over other options
	The option has some advantages over other options
	The option is comparable to others
	The option has some disadvantages over other options
	The option has significant disadvantages over other options

6.2 Initial Review

To assist with the qualitative scoring the specific advantages and disadvantages of the single and 'grouped' options considered in the MCA are set in Tables 6.3 and 6.4 below. These separate the bus options seeking to improve local connectively/radial capacity from those focusing on orbital capacity enhancement. The 'corridor' data previously discussed in Appendix C has also been adjusted for the 50% mode shift considered in Section 4.4 to identify potential changes in public transport demand 'uplift' to/from North Blanchardstown in isolation.

These results, shown in Appendix E, indicate demand changes to/from these corridors assuming this level of car mode shift. The same analyses show the increased bus capacities that could be achieved using Options B1-B7 based on service frequencies stated, and which specific corridor movements this would benefit. This analysis has also been used to assess collective capacity enhancements possible for specific corridors with different combinations of options. In moving forward with a public transport strategy for North Blanchardstown, it will be equally important to ensure that an undue surplus of public transport capacity is not provided whilst still catering effectively for potential demand growth in patronage.

The comparative review in Table 6.3 shows that Options B1 to B3 in isolation all provide useful but different public transport network benefits in improving 'local' bus permeability between South Blanchardstown/Finglas and North Blanchardstown and contributing to radial public transport capacity enhancement to the City Centre. Of the three, Option B3 is the only one that directly enhances radial public transport capacity (F-Spine), whilst at the same time improving connectivity to North Blanchardstown by extension of this 'Spine' corridor to Tyrellstown.

However, improved connectivity with Option B3 largely benefits Finglas, with connectively with South Blanchardstown (and expressly Ongar) remaining less than ideal (despite lateral connection of the 'B-Spine' (B3) and 'F-Spine' corridors (F4) via Tyrellstown). As such, supplementing Option B3 with either B1 or B2 would be a better 'package'. There is potential for largely replicating the Option B1 route, so service provision along Blanchardstown Road North with either of the 'orbital' options B4 or B5. As such, the combined 'package' B2-B3 offers the greatest permeability benefits when considered collectively with orbital bus route changes.

Table 6.3: Local bus permeability/radial capacity improvements

Option/ Option Group	Advantages	Disadvantages
Option B1	Creates new local orbital bus connection between Ongar and Charlestown Shopping Centre ('F Spine') via Blanchardstown Centre, avoiding the need for interchange. Facilitates much improved bus interchange capacity with the Maynooth line at Clonsilla, with 'direct' service provision to/from the North Blanchardstown area and new development lands in the NE. Provides a 'direct' connection between Finglas (F-Spine) and North Blanchardstown. The current N4 service skirts most of the area and requires interchange at Blanchardstown Centre.	It does not add any capacity enhancement to the 'B Spine' or 'F Spine' routes. The route via Blanchardstown Road North to the Cherryhound-Tyrellstown Link Road does not serve the existing commercial areas to the south well.
Option B2	Creates a new local 'loop' service between Ongar and North Blanchardstown via Blanchardstown Centre, avoiding the need for interchange. Greater permeability than Option B1, whilst. proposed clockwise and anticlockwise services would give enhanced capacity. Facilitates much improved bus interchange capacity with the Maynooth line at Clonsilla, with 'direct' service provision to/from the North Blanchardstown area and new development lands in the NE.	It does not add any capacity enhancement to the 'B Spine' or 'F Spine' routes. The 'loop' routing as proposed avoids serving key attractors off Blanchardstown Road North i.e. Dublin Institute of Technology. However, there is potential for orbital service cross-linking improvements (Options B4 or B5) to close this gap. It provides no 'through' connection to Finglas and the present 'F-Spine' terminus at Charlestown Shopping Centre.
Option B3	Provides a 'direct' connection between Finglas (F-Spine) and North Blanchardstown by extending the 'Spine' corridor to Tyrellstown. Introduction of a new 'F-Spine' service 'F4' will uplift inbound and outbound PT capacity on this route into the City Centre. This will assist in addressing 'at-capacity' issues with PT service capacity reported in the ERM 2042 scenario' Connecting Tyrellstown to the 'F-Spine' will reduce pressure on Service B3 operating from the latter and along the 'B-Spine' to the City Centre. The ERM predicts outward over- capacity issues with Service B3 in the AM peak period at Corduff.	This option is isolation provides no significant improvement in bus accessibility and permeability between Blanchardstown Centre and North Blanchardstown. Extending the 'F Spine' to Tyrellstown Centre would achieve connection with the B3 route, so providing a 'core' service connection between the 'B-Spine' and 'F Spine' routes. However, it would require interchange at Tyrellstown. As such, PT journeys made using 'core' services from Ongar would potentially require two interchanges to get to the new development areas on the east side of North Blanchardstown. As such this option has greater benefit to trips from Finglas.

Option/ Option Group	Advantages	Disadvantages
Options B1- B2	Provides 'optimal' PT accessibility between South Blanchardstown and all parts of North Blanchardstown, including interchange options with the 'B Spine' services at Blanchardstown Centre.	Whilst providing a higher level of permeability and direct access from Ongar to most areas of North Blanchardstown, these collective options do not add any capacity enhancement to the 'B Spine' or 'F Spine' routes. Potential for 'surplus' capacity provision locally when proposed longer distance orbital service improvements operating through North Blanchardstown are considered.
Options B1-B3	Introduction of a new 'F-Spine' service 'F4' (Option B3) will uplift inbound and outbound PT capacity on this route into the City Centre. This will assist in addressing 'at-capacity' issues with PT service capacity reported in the ERM 2042 scenario. Connecting Tyrellstown to the 'F-Spine' will also reduce pressure on Service B3. Combining Option B1 with B3 puts in place the 'direct' service provision between Ongar and North Blanchardstown to improve local connectivity from South Blanchardstown missing with Option B3 in isolation. Improved rail interchange at Clonsilla is also facilitated. However, B2 will give better permeability in combination, providing orbital services can be used to serve the route along Blanchardstown Road North.	Large parts of the existing commercial/industrial area to the south of Blanchardstown Road North could remain inadequately served.
Options B2-B3	Introduction of a new 'F-Spine' service 'F4' (Option B3) will uplift inbound and outbound PT capacity on this route into the City Centre. This will assist in addressing 'at-capacity' issues with PT service capacity reported in the ERM 2042 scenario. Connecting Tyrellstown to the 'F-Spine' will also reduce pressure on Service B3. Combining Option B2 with B3 puts in place the 'direct' service provision between Ongar and North Blanchardstown to improve local connectivity from South Blanchardstown missing with Option B3 in isolation. Improved rail interchange at Clonsilla is also facilitated.	The combination of routes as proposed avoids serving key attractors off Blanchardstown Road North ie Dublin Institute of Technology. However, there is potential for orbital service cross-linking improvements (Options B4 or B5) to close this gap.

Table 6.4: Orbital bus capacity improvements

Option/ Option Group	Advantages	Disadvantages
Option B4	Diverting the BusConnects Service N8 route via North Blanchardstown would improve bus permeability and, for trips to/from North Blanchardstown, remove the need for interchange at the Centre. Whilst ERM data suggests the capacity in the AM peak is likely to be fully utilised in both directions by 2042, this re-routing would be beneficial in the inter-peak period. Additional peak period services N8A as a supplement could be used to cater for peak demands. If the route was extended from Blanchardstown Centre to Ongar it could additionally provide the main local linkage benefits given by Option B1	In isolation, further catering for demand to/from Swords would depend on the capacity available on Service A4 or the delivery of MetroLink
Option B5	Will create a new 'direct' Service between Swords and Blanchardstown Centre via the Airport, Horizon Logistics Park, DALP and North Blanchardstown. The present connection by bus requires two interchanges, the second at Blanchardstown Centre (N8). Analysis with the ERM model indicates that Service N8 is expected to be 'at capacity' in both directions by 2042 (AM). Will thus cater for PT patronage between Swords and North Blanchardstown which could otherwise be unsatisfied. If the route was extended from Blanchardstown Centre to Ongar it could additionally provide the main local linkage benefits given by Option B1	This option would not assist with catering for additional PT demand from the areas of North Dublin to the east of Swords Road. Interchange with existing Service N8 is possible at the airport hub, but ERM data (2042) suggests that capacity on this route is still fully utilised to the east of the M1. In other words, the N8 service will still require a 'peak' uplift in capacity. The implementation of MetroLink and an interchange hub with existing/improved N8 bus services at the airport hub could make a direct bus connection as proposed with Option B5 less attractive.
Option B6a Increase Service W4 Frequency ONLY	The BusConnects service frequency is 15 minutes between 7-9 am and 30 minutes between 9-10 am. Some potential for improving. A 10-minute frequency could be used as on other orbital routes ie N4/N6 This could increase existing 7-10 am service capacity by 90% (circa 600)	Variable highway operating conditions on the M50 in the peak periods could make achieving a 10-minute peak frequency challenging.

Option/ Option Group	Advantages	Disadvantages
Option B6b Extend Service W2 to Blanchardstown Centre ONLY	The BusConnects service frequency is 15 minutes between 6am and 11pm. Extending the route to Blanchardstown Centre from its existing northern terminus at the Liffey Valley Shopping Centre and maintaining the same frequency would give a capacity uplift of 792 (7-10 am) by direction	The only 'new' capacity is that associated with the extension from the Liffey Valley Shopping Centre and Blanchardstown Centre. The benefit this option has in catering for longer-distance trips to/from areas of SW Dublin is thus dependent on expected Service W2 operating conditions between Tallaght and Liffey Valley. 'Uplift' benefits may only be local.
Option B6c Add new Service W2A from Tallaght to Blanchardstown Centre ONLY	Using a 15-minute frequency would create wholly new directional capacities of 792 (7-10 am) between Tallaght and Blanchardstown Centre	May create surplus PT capacity on the W2 Service route between Tallaght and the Liffey Valley Shopping Centre, particularly outside the weekday peak periods. Could be considered a 'peak only' add-on to Option B6b.
Option B7	Fairly straight-forward extension of the existing Service N6 route from Finglas. Provides better bus permeability to certain areas of the existing Rosemount and Northwest Business Parks from Finglas than is achieved with Service N4 or the proposed F-Spine extension (Option B3)	The only 'new' capacity is that associated with the extension from Finglas Centre to Blanchardstown Centre. The benefit this option has in catering for longer-distance trips to/from areas of North Dublin is thus dependent on expected Service N6 operating conditions east of Finglas. 'Uplift' benefits may only be local. It would not serve the new development lands in the North Blanchardstown area well. However, the existing Service B6 routes via Charlestown Shopping Centre (F-Spine). As such, delivery of Option B3 would allow interchange with the proposed service extension (F4) to Tyrellstown through the new development zone. Mindful of the above and the existing connectivity provided by Service N4 (which is shown to have spare capacity from Finglas), the only benefit of Option B7 could be improved accessibility to areas of the existing commercial/industrial zone.

The options for improving orbital bus capacity to the north of North Blanchardstown are more 'stand-alone' than Options B1-B3 considered for improving 'local' connectivity/radial enhancement. There is also a degree of overlap, insofar as implementing either Option B4 or B5 would also achieve the improved cross-link between South Blanchardstown and North Blanchardstown which Option B1 seeks to put in place. However, Options B4 or B5 would need to extend beyond Blanchardstown Centre to Ongar and the railway station at Clonsilla to achieve the same 'direct' linkage and avoidance of the need for interchange at the Centre; also to achieve the rail interchange with the Maynooth line.

Options B4 and B5 also seek to improve bus connections to different areas in North Dublin and Swords respectively. However, Option B4 (by improving/supplementing the N8 Service) has an opportunity to cater for both, particularly with MetroLink in place and interchange at the airport 'hub'. In contrast, Option B5 is unable to service demand from the North Dublin areas without complementary bus enhancements.

With respect to public transport capacity to the south (M50), the overall demand analysis with a 50% car mode shift suggested target 'uplifts' of 2,700 and 1,700 in the northbound and southbound directions respectively at the 'Railway' screenline between 7-10 am. However, this somewhat simplistic assessment assumes that this proportion of shift will occur for 'all' car movements using the M50, so including longer distance movements between SW Dublin and Swords etc.

However, improvements or enhancements to Services W2 and W4 will realistically cater for and be attractive to movements between SW Dublin/Lucan and the wider Blanchardstown area. Using this assumption and the same car shift transfer (50%) the northbound and southbound demand 'uplifts' emerge as 1,800 and 1,700 respectively. Based on this assessment, Options B6b and B6c which both extend existing Service W2 to Blanchardstown Centre and supplement it, would both be required to make a material headway in catering for this level of public transport demand. By way of comparison the 2042 ERM public transport demand is only 700 and 800 in the northbound and southbound directions.

6.3 Results

6.3.1 Radial corridor

Criteria	Description	B1	B2	B3	B1-B2	B1-B3	B2-B3
Environment							
Decarbonisation	Supporting the decarbonisation of transport by encouraging mode shift away from private car.						
Environmental Impact	Provides positive impact on the local built and natural environment e.g. landscape, air quality etc.						
Economy							
Sustainable Growth	Support sustainable development and facilitate growth to 2040 by providing capacity aligned with demand.						
Journey Times	Improves time it takes to undertake similar end to end journey.						
Value for Money	Potentially provides good value for money.						

Criteria	Description	B1	B2	B3	B1-B2	B1-B3	B2-B3
Resilience	Provide resilience for the future (beyond 2040).						
Integration							
Integration	Provide integration with the existing and future proposed transport network.						
Accessibility							
Accessibility and Inclusion	Improves accessibility to public transport services and enhances inclusion, catering for the needs of all members of society.						
Safety							
Road Safety	Improves road safety.						
Health							
Physical Activity	Increases physical activity.						

6.3.2 Orbital corridor

Criteria	Description	B4	B5	B7	B6a	B6b	B6b-B6c
Environment							
Decarbonisation	Supporting the decarbonisation of transport by encouraging mode shift away from private car.						
Environmental Impact	Provides positive impact on the local built and natural environment e.g. landscape, air quality etc.						
Economy							
Sustainable Growth	Support sustainable development and facilitate growth to 2040 by providing capacity aligned with demand.						
Journey Times	Improves time it takes to undertake similar end to end journey.						
Value for Money	Potentially provides good value for money.						
Resilience	Provide resilience for the future (beyond 2040).						
Integration							

Integration	Provide integration with the existing and future proposed transport network.						
Accessibility							
Accessibility and Inclusion	Improves accessibility to public transport services and enhances inclusion, catering for the needs of all members of society.						
Safety							
Road Safety	Improves road safety.						
Health							
Physical Activity	Increases physical activity.						

6.3.3 Summary

In terms of the bus options to improve 'local' connectivity and radial capacity, the 'packages' that incorporate Option B3 score best in the MCA in terms of decarbonisation and encouraging sustainable growth. Those that combine Option B3 with either B1 or B2 rank highest in improving local accessibility to public transport services. As noted earlier, B2-B3 is potentially the best combination, as the orbital options B4 or B5 could be re-configured to mimic Option B1 in terms of local routing through North Blanchardstown and Blanchardstown Centre to Ongar. In terms of improving safety and physical activity, all options are broadly similar.

In the case of the northern orbital bus improvements, Option B4 which re-routes the existing N8 Service through North Blanchardstown (and supplements it with additional 'peak' service provision) ranks highest in terms of decarbonisation, encouraging sustainable growth and integration. If the Metrolink scheme is implemented between the new Swords development area and the City Centre, then interchange with N8 Services at the airport 'hub' can be used to create a step-change increase in orbital bus capacity from the north (M50) to Blanchardstown as a whole.

Rerouting N8 Services via North Blanchardstown, rather than via the M50 to the N3 Navan Road interchange as now, will also improve the directness of service in serving the new development lands and avoid a need for interchange at Blanchardstown Centre. Option B5 scores moderately well but does not have the same potential for capturing and accommodating additional PT demand from both the North Dublin suburbs and the Swords area.

In the case of orbital connection to the south (M50) the assessed demand between SW Dublin/Lucan and Blanchardstown as a whole (assumed 50% car mode shift) dictates wholly new service provision between the Liffey Valley Shopping Centre (C-Spine 'hub') and Blanchardstown Centre. As such, the Option package B6b-B6c ranks highest in terms of decarbonisation and promoting sustainable growth, as it is the only one that could reasonably match or get close to satisfying the level of demand with assumed car mode shift.

7. Summary

This report has outlined the approach and results from the study of the North Blanchardstown area, as defined by the NTA for the purposes of providing input into the preparation of the Transport Strategy for the Greater Dublin Area. The study area is heavily reliant on the existing road network which is forecast to operate with an overall moderate level of congestion in 2042, aside from congestion hotspots on the N3 Navan Road and the M50 which bound the area.

This, alongside the study area's proximity to key trip attractors in South Blanchardstown (Centre) and the Dublin Airport area provide an opportunity to shift car trips to public transport and active modes through the provision of high-quality infrastructure and services. From the demand analysis, consideration of capacity along the 'B Spine' and 'F-Spine' radial routes to Blanchardstown and Finglas respectively was undertaken, as well as orbital capacity around the M50 corridor between Southwest Dublin (Tallaght) and the Swords area to the north.

7.1 Public Transport Options

Given the early nature of this study, a qualitative Multi Criteria Analysis (MCA) was considered an appropriate tool to guide the assessment of public transport options. Building on the key themes of the CAF, a set of criteria which sit within these overarching themes has been developed to enable a more detailed assessment of options to be undertaken. These criteria have been based on the current Transport Strategy for the Greater Dublin Area objectives provided by the NTA.

7.1.1 Radial Corridor/Local Connectivity

Following the development of specific long list public transport options for the radial corridor, a high level sift was undertaken using forecast trips from the Eastern Regional Model (ERM). The radial corridor demand for the 'B Spine' calculated in Section 4.4.2 was used to inform the identification of appropriate options to serve this corridor. Different public transport modes have theoretical capacity ranges, and so demand level viabilities, which were used as the basis by which to short-list options to progress through to the assessment stage. In the case of North Blanchardstown, heavy rail was not considered a viable 'primary' option for this corridor as the Maynooth line is located well to the south. As such it would be wholly reliant on adequate bus interchange. Metro is neither a viable option here. As such the modes considered were:

- Conventional bus;
- Bus with priority infrastructure; and
- Light rail extension (Luas)

A further light rail extension of the Luas 'Green Line' from Finglas was rejected as the expected PT uplift demand was insufficient to justify this intervention and cost. As such three bus improvement options (B1-B3) were examined individually and in combination to address capacity and connectively issues. These were as follows:

- **Option B1**: Create new local orbital bus connection (B5) between Ongar and Charlestown Shopping Centre ('F Spine') via Blanchardstown Centre. Rail Interchange with Maynooth Line at Clonsilla;
- **Option B2**: Create a new L65 '2-way loop' Service operating between South Blanchardstown (Ongar) and through North Blanchardstown to the Cherryhound development lands. Rail Interchange with Maynooth Line at Clonsilla. Bus contraflow SB required at N3/R156 over-bridge; and
- **Option B3**: Extend the 'F Spine' corridor northwards into North Blanchardstown, preferably using the new road connection with the N2/R135 partial interchange to improve 'directness' and accessibility. Add a new 'spine' service (F4) to Tyrellstown given predicted at-capacity conditions on this 'Spine' between Finglas and the City Centre.

Comparative review indicated that Options B1 to B3 in isolation could all provide useful but different public transport network benefits in improving 'local' bus permeability between South Blanchardstown/Finglas and

North Blanchardstown and contributing to radial public transport capacity enhancement to the City Centre. However, of the three, Option B3 is the only one that would directly enhance radial public transport capacity (F-Spine), whilst at the same time improving connectivity to North Blanchardstown by extension of this 'Spine' corridor to Tyrellstown. Improved connectively with Option B3 alone largely benefits Finglas, with connectively with South Blanchardstown (and expressly Ongar) remaining less than ideal (despite lateral connection of the 'B-Spine' (B3) and 'F-Spine' corridors (F4) via Tyrellstown).

As such, supplementing Option B3 with either B1 or B2 would be a better 'package'. Not unexpectedly, the 'packages' that incorporate Option B3 score best in the MCA in terms of decarbonisation and encouraging sustainable growth. Those that combined Option B3 with either B1 or B2 ranked highest in improving local accessibility to public transport services.

7.1.2 Orbital Corridor

A similar exercise was used to sift options for orbital PT improvements. In this case the variants considered were:

- Conventional bus;
- Bus with priority infrastructure; and
- Metro

A Metro extension from the MetroLink corridor to Blanchardstown Centre was rejected as the expected PT uplift demand was insufficient to justify this intervention and cost. As such four bus improvement options (B4-B7) were examined individually and in combination to address capacity and connectively issues. These were as follows:

- **Option B4**: Create a new 'peak period' orbital Service N8A between the M50/N2 interchange and Blanchardstown Centre via North Blanchardstown, preferably using the Option H1 road connection with the N2/R135 partial interchange. Re-route existing Service N8 the same way;
- **Option B5**: Create a new 'direct' Service between Swords and Blanchardstown Centre via the Airport, Horizon Logistics Park, DALP and North Blanchardstown (R132, R108 and R135-Option H1 Link);
- **Option B6**: Increase the peak frequency of the single Service W4 currently proposed from SW Dublin (**B6a**). Additionally, consider Extending Service W2 to Blanchardstown Centre (**B6b**) or add new Service W2A Variant (**B6c**)
- **Option B7**: Extend orbital Service N6 from Finglas to Blanchardstown Centre via North Blanchardstown.

The options for improving orbital bus capacity to the north of North Blanchardstown are more 'stand-alone' than those considered for improving 'local' connectivity/radial enhancement. There is, however, a degree of overlap, as implementing either Option B4 or B5 would also achieve the improved cross-link between South Blanchardstown and North Blanchardstown which Option B1 proposes. However, Options B4 or B5 would need to extend beyond Blanchardstown Centre to Ongar and the railway station at Clonsilla to achieve the same 'local' linkages. Options B4 and B5 both improve bus connections to different areas in North Dublin and Swords respectively. However, Option B4 (by improving/supplementing the N8 Service) has an opportunity to cater for both, particularly with MetroLink in place and interchange possible at the airport 'hub'. In contrast, Option B5 is unable to service demand from the North Dublin area without complementary bus enhancements.

Improvements or enhancements to Services W2 and W4 (Option B6 variants) will realistically cater for and be attractive to movements between SW Dublin/Lucan and the wider Blanchardstown area. Using a car shift transfer assumption of 50%, the northbound and southbound demand 'uplifts' emerge as 1,800 and 1,700 respectively. Based on this assessment, Options B6b and B6c which both extend existing Service W2 to Blanchardstown Centre and supplement it, would both be required to make a material headway in catering for this level of public transport demand. By way of comparison the 2042 ERM public transport demand is only 700 and 800 in the northbound and southbound directions.

7.2 Supplementary Options

7.2.1 Highway Infrastructure

Creation of a new internal access road between the Cherryhound-Tyrrelstown Link Road and the part of the R135 west of the N2 (Option H1) was considered worthy of taking forward but was not considered in the MCA. This is because providing adequate vehicular access to the 'greenfield' lands to the south of the Cherryhound-Tyrellstown Link Road will be a necessary requirement for bringing forward industrial/commercial development. As such, a road link will be required to this end, and whilst this may not follow the exact alignment indicated in the report, there would be clear benefit in achieving a junction connection with the southernmost part of the R135 within North Blanchardstown. This opens-up better bus penetration opportunities for services routing via the M50/N2 interchange.

7.2.2 Cycle Interventions

Based on an assessment of 'gaps' in the cycle network connectivity, three options were considered in the long list assessment as follows:

- **Option C1**: In association with Option H1, introduce a new cyclist/pedestrian linkage between the Cherryhound-Tyrellstown Link Road and the R135 across the eastern part of the North Blanchardstown area. This would sensibly be done as part of new highway link proposals to achieve suitable access through the NE area reserved for new general employment. This would also enable direct cycle connectively between Finglas and North Blanchardstown to be achieved using the ramped cycle-bridge already present at the M50/N2 interchange;
- **Option C2**: Introduce cycle path and allied crossing facilities to the N2 interchange and extend provision eastward to the R135 junction; and
- **Option C3**: Improve off-road cycle facilities between Ongar and Tyrellstown via the R156/N3 interchange, Damastown Road, Damastown Close and Damastown Avenue.

None of the above were considered as part of the MCA within this report. However, Option C1 and C2 were alternatives considered to improve cycle connectivity across the N2 Whilst Option C2 is a shorter connection to the R135 from the Cherryhound-Tyrellstown Link Road , it would take cyclists routing from/to Finglas and the airport zone well off the 'desire line' and would fail to achieve any penetration to the development lands south of the link. Mindful that highway infrastructure will be required to service this land, Option C1 was preferred, and in any event an off-line 'shared use' footway/cycleway could be provided in isolation. As such, Options C1 and C3 were recommended to be taken forward and long-list option C2 dismissed.

Appendix A. Do Minimum Model Run Transport Scheme

A.1 Road Schemes

The Do Minimum model run contains the following road schemes:

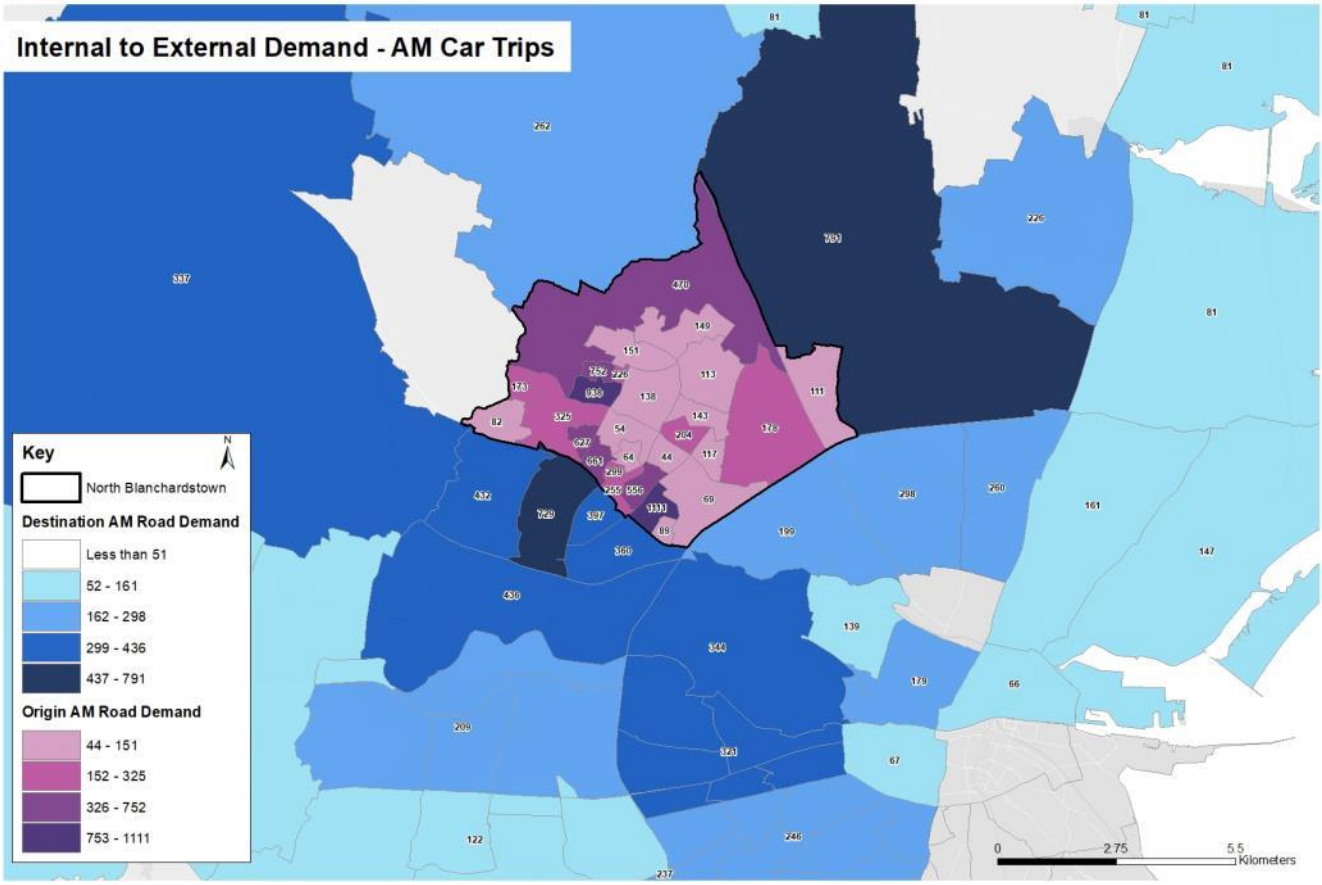
A.2 Bus schemes

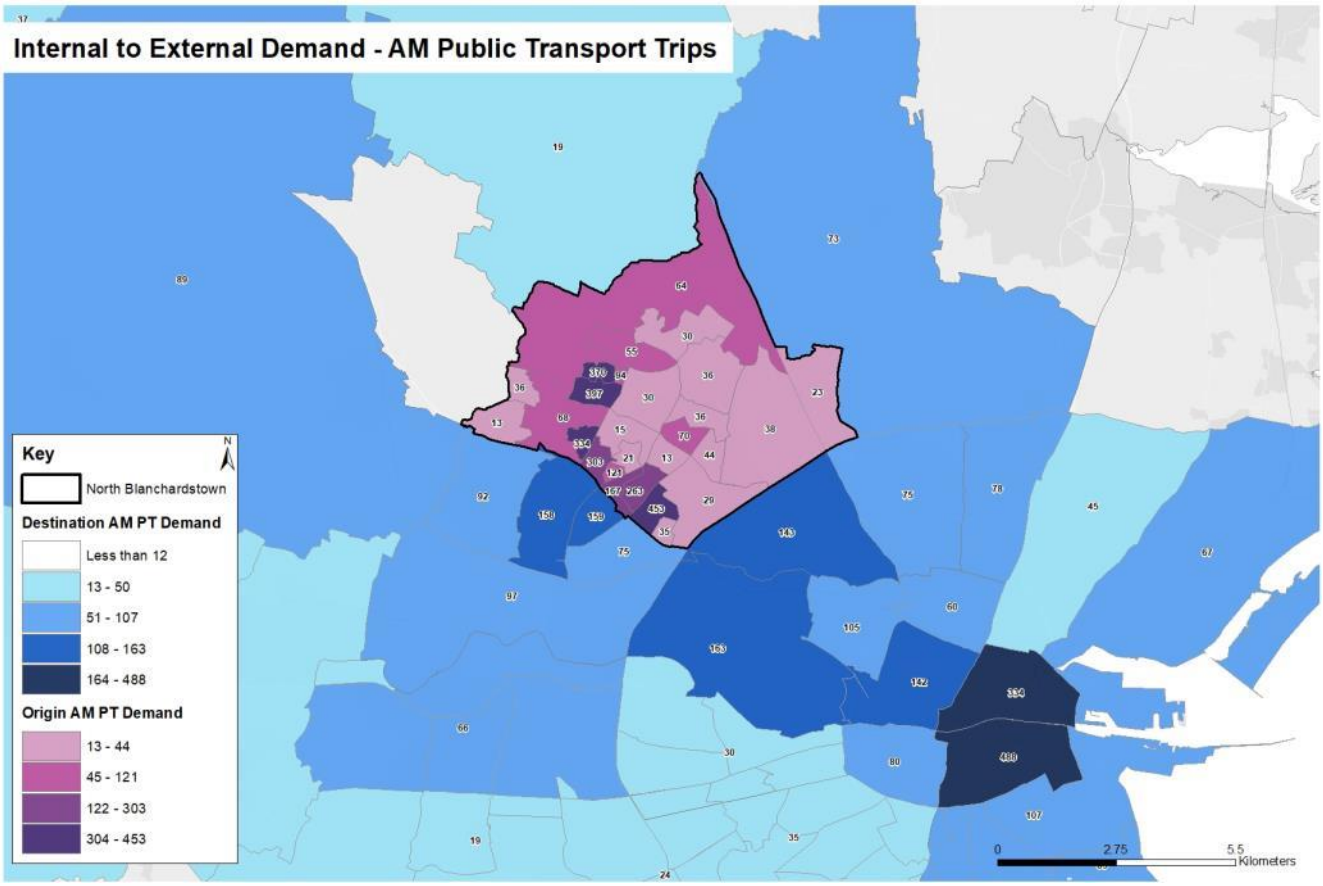
The Do Minimum model runs contains the bus services and frequencies related to the New Dublin Area Bus Network. The model does not include any of the of the associated BusConnects bus priority infrastructure proposals which would improve journey times.

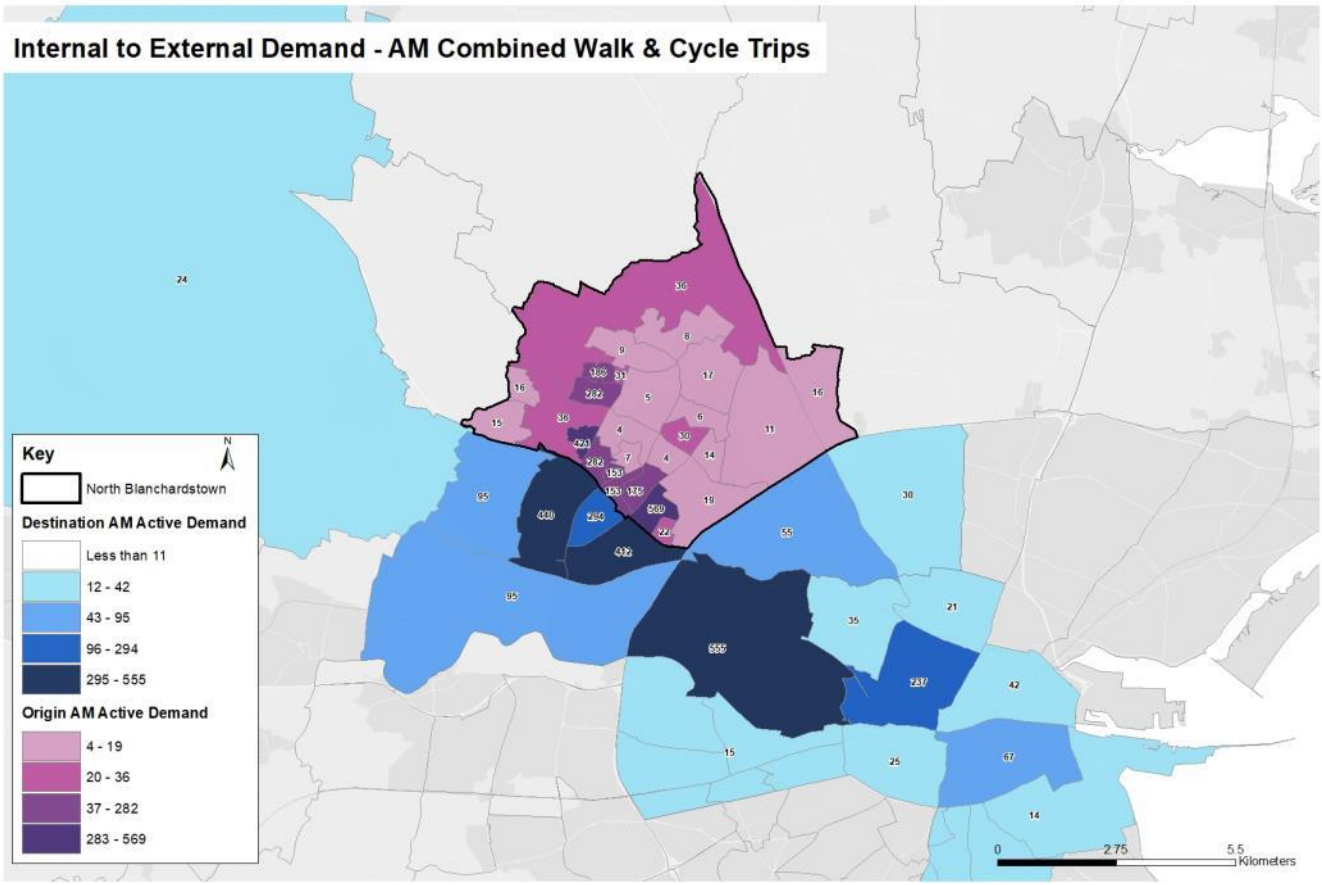
A.3 Rail schemes

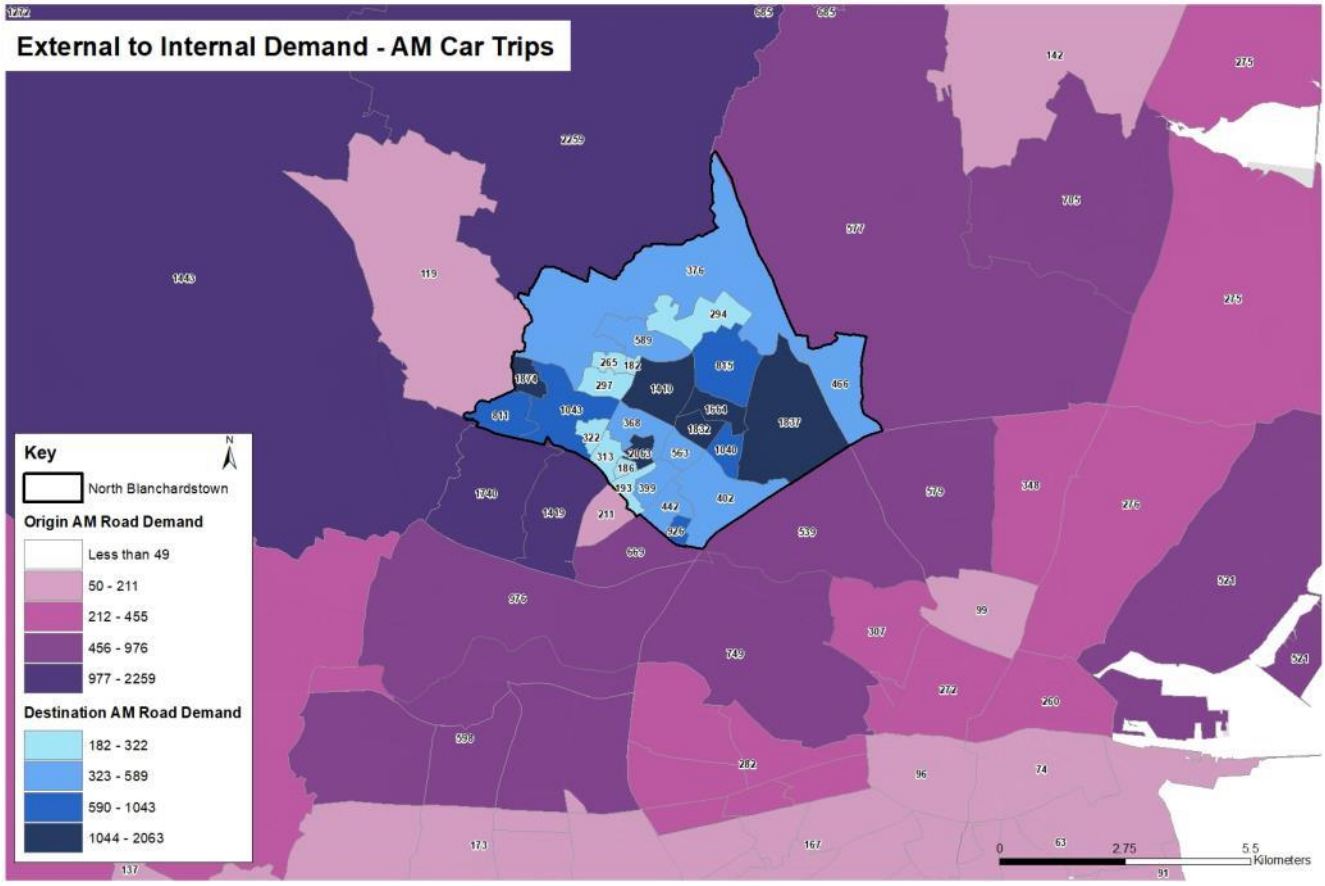
The Do Minimum model runs contains the following rail schemes:

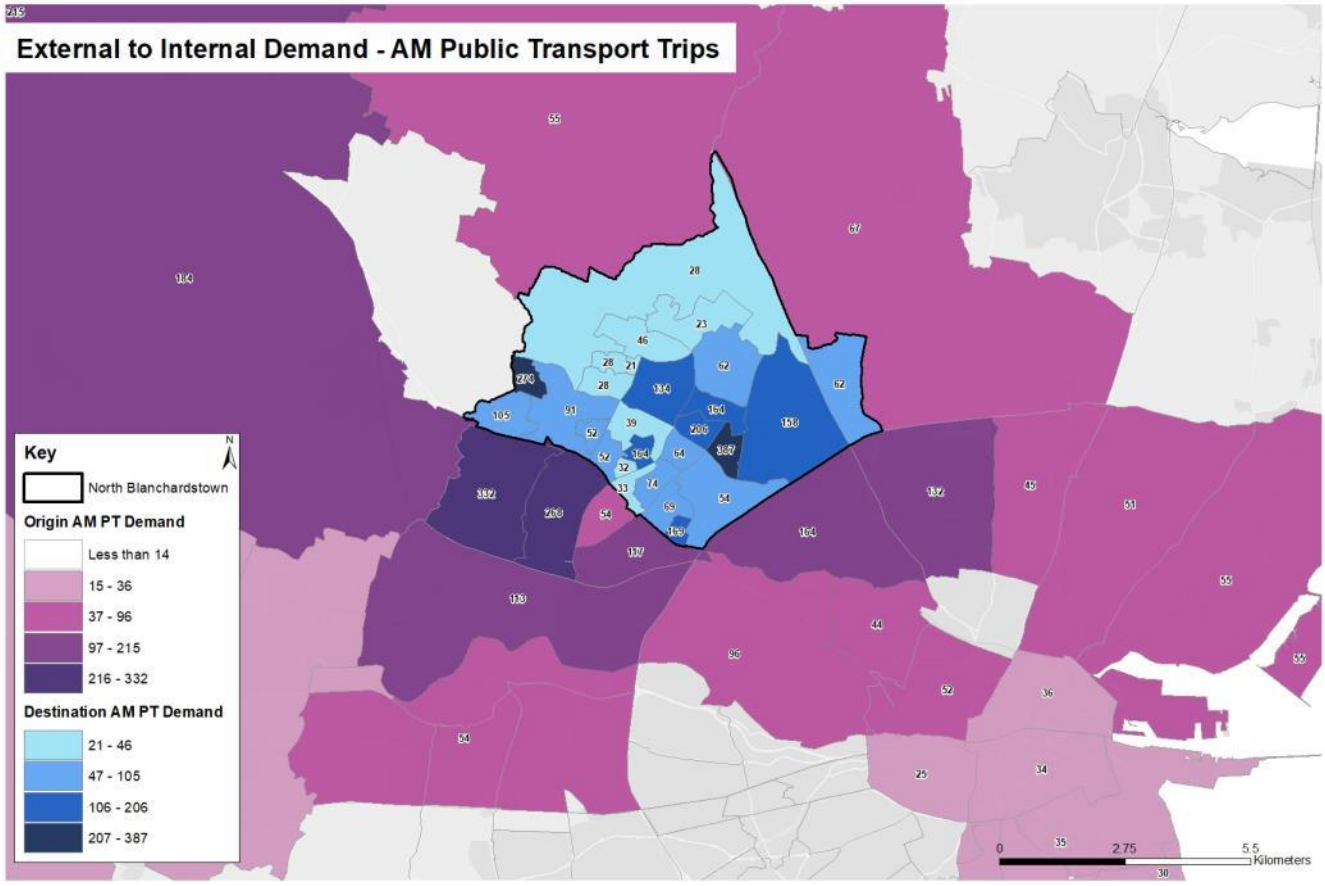
Appendix B. Demand Maps by Mode

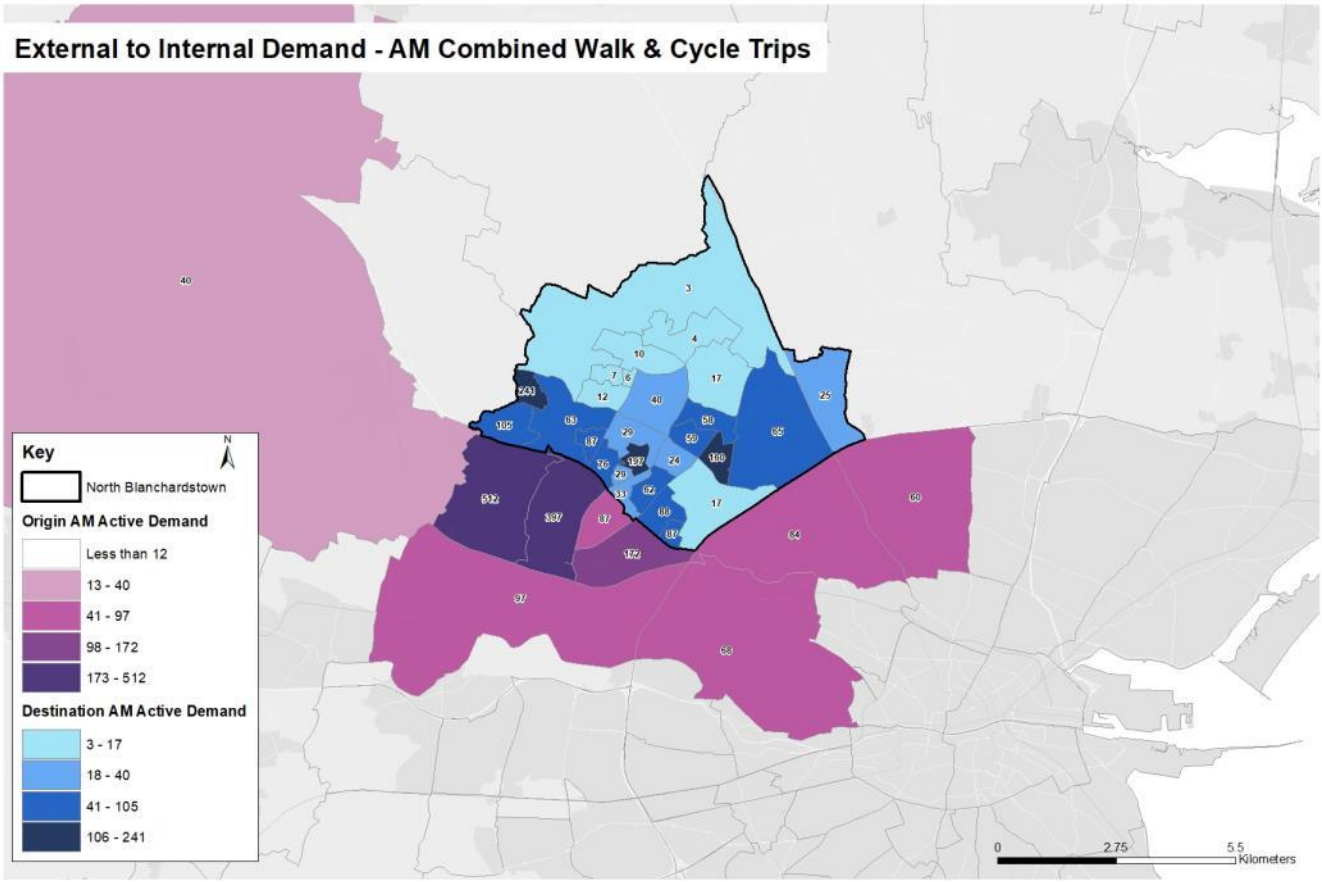



Internal to External Demand - AM Public Transport Trips
Key
North Blanchardstown
Destination AM PT Demand
Less than 12
13 - 50
51 - 107
108 - 163
164 - 488
Origin AM PT Demand
13 - 44
45 - 121
122 - 303
304 - 453
0
2.75
5.5
Kilometers

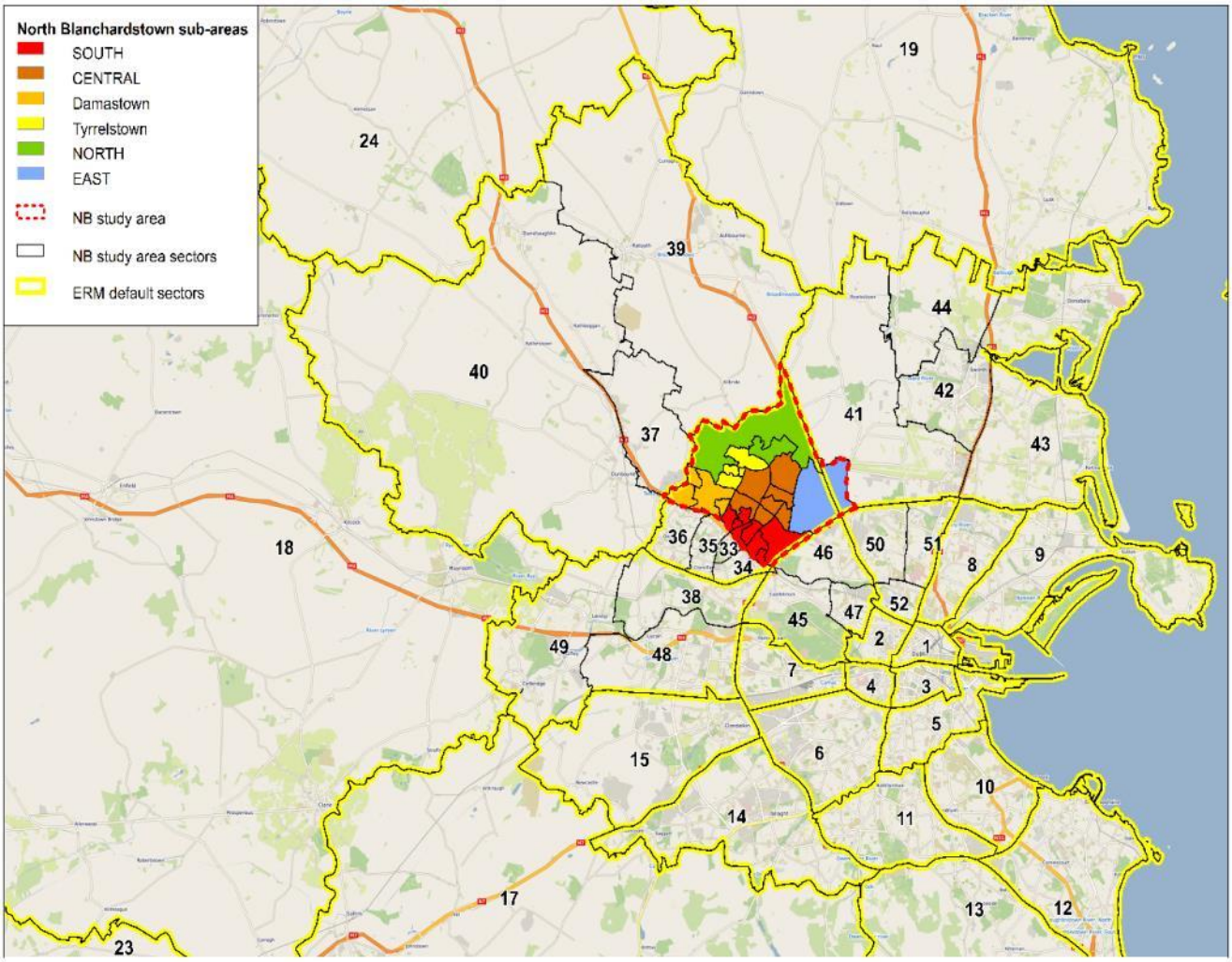

Internal to External Demand - AM Combined Walk & Cycle Trips
Key
North Blanchardstown
Destination AM Active Demand
Less than 11
12 - 42
43 - 95
96 - 294
295 - 555
Origin AM Active Demand
4 - 19
20 - 36
37 - 282
283 - 569
0
2.75
5.5
Kilometers


External to Internal Demand - AM Car Trips
Key
North Blanchardstown
Origin AM Road Demand
Less than 49
50 - 211
212 - 455
456 - 976
977 - 2259
Destination AM Road Demand
182 - 322
323 - 589
590 - 1043
1044 - 2063
0 2.75 5.5 Kilometers


External to Internal Demand - AM Public Transport Trips
Key
North Blanchardstown
Origin AM PT Demand
Less than 14
15 - 36
37 - 96
97 - 215
216 - 332
Destination AM PT Demand
21 - 46
47 - 105
106 - 206
207 - 387
0 2.75 5.5 Kilometers


External to Internal Demand - AM Combined Walk & Cycle Trips
Key
North Blanchardstown
Origin AM Active Demand
Less than 12
13 - 40
41 - 97
98 - 172
173 - 512
Destination AM Active Demand
3 - 17
18 - 40
41 - 105
106 - 241
0
2.75
5.5
Kilometers

Appendix C. Corridor Analysis - ERM



Corridor		Sectors in each corridor					
1	NE: (EXT) - M1	19	20	29	30	31	32
2	NE: Swords/Swords North	42	44				
3	NE: Malahide	43					
4	NE: Airport Zone	41					
5	East: North Dublin	8	9	51			
6	Finglas	46	50				
7	Castleknock	45					
8	Blanchardstown South	33	34	35	36		
9	M2/N2 Corridor (External)	39					
10	M3/N3 Corridor (External)	37	40	24			
11	N4 Lucan area	38	48				
12	M4/N4 Corridor (External)	18	49				
13	South: SW Dublin: Tallaght/Clondolkin	14	15				
14	South: SW Dublin: Kimmage/Ballyfermot	6	7				
15	SE Dublin (towards Bray)	5	10	11	12	13	
16	City Centre	1	2	3	4	47	52
17	South of Dublin	16	17	21	22	23	
18	West of Dublin	25	26	27	28		

External Demands: 2042 - AM (7-10 am) - ERM Output

To North Blanchardstown

CORRIDOR/Location	Car	PT	Cycle	Walk	TOTAL	NDBN Bus Services
NE: (EXT) - M1	1167	51	0	0	1218	NA
NE: Swords and Swords North	847	14	0	0	861	N8**
NE: Malahide	275	9	0	0	284	
NE: Airport Zone	577	67	3	5	652	N8*
East: North Dublin	1146	150	20	0	1316	N8**, N4**
East 'Local': Finglas	1118	296	80	65	1559	N4, L62
East 'Local': Castleknock	749	96	27	41	913	34*,35,37*
South 'Local' Blanchardstown South	4039	771	393	775	5977	B3*, L61,L62*, N4*
NW: M2/N2 Corridor	2259	55	7	3	2323	None
NW: M3/N3 Corridor	2834	402	22	21	3278	L64*
South: Lucan	1574	167	63	43	1847	L52*, W4*
West: M4/N4 Corridor	853	50	3	0	905	B2*
South: SW Dublin: Tallaght/Clondolkin	579	25	5	1	610	W8*
South: SW Dublin: Kimmage/Ballyfermot	449	27	1	0	477	W8**
SE: SE Dublin	616	127	1	0	744	B Spine' - B1*, B2*, B3, B4*
East: City Centre	1107	205	22	6	1340	
SE: South of Dublin (EXT) - Bray	303	12	0	0	315	
West of Dublin (EXT)	92	13	0	0	105	NA
TOTAL	**20583**	**2536**	**645**	**960**	**24724**	

From North Blanchardstown

CORRIDOR/Location	Car	PT	Cycle	Walk	TOTAL	NDBN Bus Services
NE: (EXT) - M1	118	9	2	0	129	NA
NE: Swords and Swords North	257	11	0	0	268	N8**
NE: Malahide	84	8	0	0	92	
NE: Airport Zone	791	73	4	3	871	N8*
East: North Dublin	566	190	23	1	780	N8**, N4**
East 'Local': Finglas	497	218	54	32	801	N4, L62
East 'Local': Castleknock	344	163	187	368	1062	34*,35,37*
South 'Local' Blanchardstown South	1918	484	137	1104	3643	B3*, L61,L62*, N4*
NW: M2/N2 Corridor	262	19	1	10	292	None
NW: M3/N3 Corridor	436	129	16	10	591	L64*
South: Lucan	645	163	37	67	912	L52*, W4*
West: M4/N4 Corridor	192	51	1	0	244	B2*
South: SW Dublin: Tallaght/Clondolkin	567	65	25	2	659	W8*
South: SW Dublin: Kimmage/Ballyfermot	358	43	2	0	403	W8**
SE: SE Dublin	314	299	16	0	629	B Spine' - B1*, B2*, B3, B4*
East: City Centre	534	1208	422	6	2170	
SE: South of Dublin (EXT) - Bray	110	7	0	0	117	
West of Dublin (EXT)	15	1	0	0	16	NA
TOTAL	**8008**	**3141**	**927**	**1603**	**13679**	

Notes:

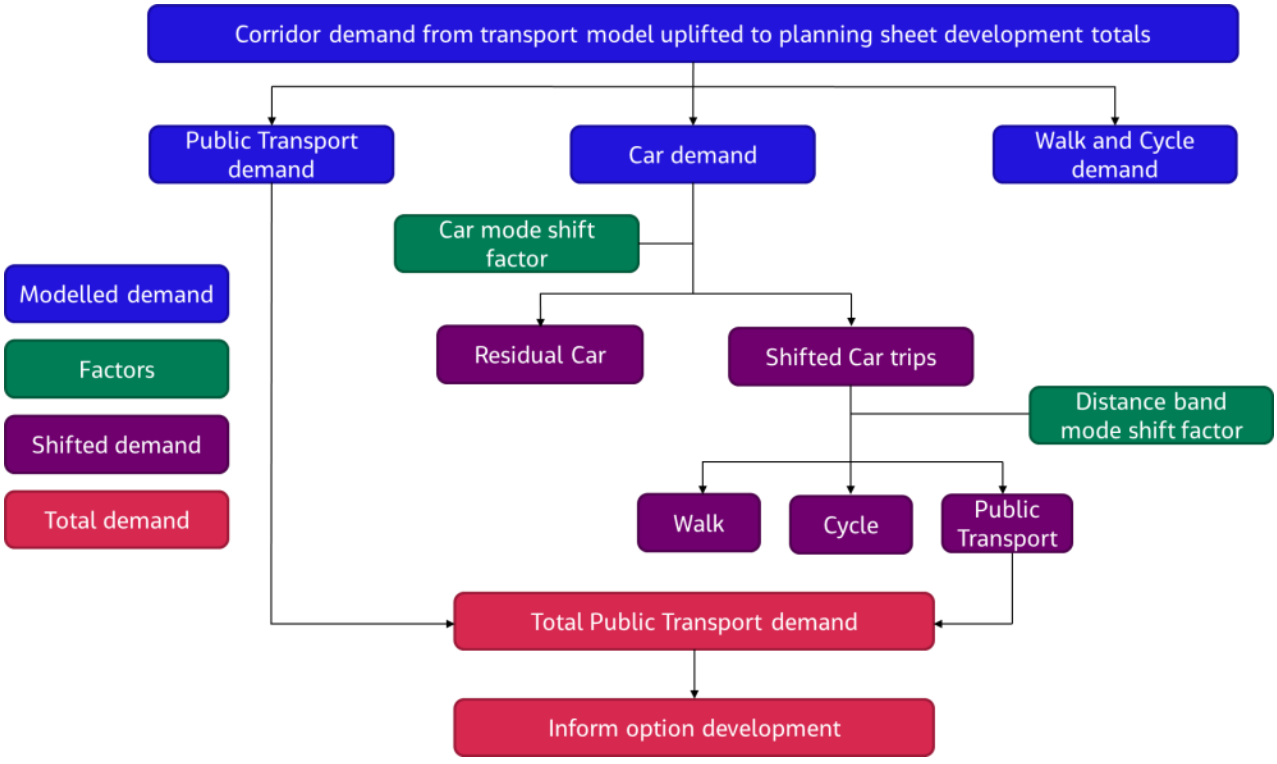
1. * NDBN: Requires a single service interchange
2. ** NDBN: Requires more than one service interchange

Appendix D. Mode shift analysis methodology

This technical note explains the mode shift calculation used to inform the option development process for each area being considered as part of the Greater Dublin Area Transport Studies. The mode shift calculation is based on the Eastern Regional Model (ERM) and the planning sheets provided by the NTA with the results providing an indicative number of additional public transport trips which need to be catered for if a mode shift away from car is achieved.

This method produces an indicative set of results which provides the order of magnitude of changes in demand which is considered sufficient to inform option development at this early stage. It is noted that the results are affected by the underlying assumptions of the planning sheet and ERM i.e. demand is assigned to a constrained network and that no model run has been undertaken to identify mode shift.

This exercise has been undertaken for the AM period only when there is the largest car demand in the ERM. The flow chart below shows the overall process underpinning the mode shift calculation.



First a corridor is identified (e.g. outside the M50 into the city centre) and the transport demand using the corridor is obtained from the ERM, disaggregated by mode – public transport, car and walk and cycle.

A factor is then applied to the car demand to create the mode shift away from car to one of the other modes. Two factors for mode shift have been applied in this study: 25% of car trips shift and 50% of car trips shift. This aims to provide a broad order of magnitude of demand to inform option development and assessment.

The shifted car trips are then allocated to become either a new walking, cycling or public transport trip. This decision is based on the trip lengths of the shifted car trips as it is assumed that shorter trips are more likely to become walking trips and longer trips are more likely to become public transport trips. The trip length distributions for each mode are obtained from the ERM.

Three bands were defined:

- A lower band bounded a distance which 75% of walking trips in the ERM are shorter than or equal to;
- A middle band bounded by a distance which 75% of cycling trips in the ERM are shorter than or equal to; and
- An upper band for any trips with a longer distance.

For the North Blanchardstown study area, the following bands and mode shares by distance are obtained from the ERM:

Distance band	Walk	Cycle	Public Transport
0-2.7	79.7%	5.2%	15.1%
2.7-5.9	45.4%	12.7%	41.9%
5.9+	10.9%	9.4%	79.7%

In the lower band of trips less than 2.7km, 79.7% of the trips in the ERM are walking trips, but there are still 5.2% of trips which are cycle trips and 15.1% of trips which are public transport trips.

The proportion of trips in each band made by walk, cycle and public transport were derived from the ERM, and applied to the shifted car trips. This gives a number for the shifted public transport trips which can be added to the public transport trips from the ERM to provide a total public transport demand for the corridor. This number can then be used to inform the development of options to support the estimated demand along the corridor.

Appendix E. Corridor capacity assessment

External Demands – 2042 AM (7-10AM) – to North Blanchardstown

CORRIDOR/Location	Car - ERM	PT - ERM	Car - With 50% Mode Shift	PT - With Mode Shift	PT 'Uplift' DEMAND	ADDED PT Capacity UPLIFT - Seated							
						B1	B2	B3	B4	B5	B6	B7	TOTAL
NE: (EXT) - M1	1167	51	584	515	464								0
NE: Swords	847	14	423	352	338					792			792
NE: Malahide	275	9	138	118	109								
NE: Airport Zone	577	67	289	297	230				360	792			1152
East: North Dublin	1146	150	572	607	457				360			1008	1368
East 'Local': Finglas	1118	296	559	650	354			792				1008	1800
East 'Local': Castleknock	749	96	374	377	281								0
South 'Local' Blanchardstown South	4039	771	2019	1774	1003	792	1296		360	792		1008	4248
NW: M2/N2 Corridor	2259	55	1129	955	900								0
NW: M3/N3 Corridor	2834	402	1417	1529	1127								0
South: Lucan	1574	167	787	755	588								0
West: M4/N4 Corridor	853	50	426	390	340	792	1296						*2088
South: SW Dublin: Tallaght/Clondolkin	579	25	290	259	234						792		792
South: SW Dublin: Kimmage/Ballyfermot	449	27	224	203	176								
SE: SE Dublin	616	127	308	373	246			792					**792
East: City Centre	1107	205	554	646	441								
SE: South of Dublin (EXT) - Bray	303	12	152	133	121								
West of Dublin (EXT)	92	13	46	50	36								0
TOTAL	**20583**	**2536**	**10292**	**9982**	**7446**								

1. * Options B1 and B2 - Rail Interchange with Maynooth line at Clonsilla
2. ** Improved bus access from 'B Spine' (Blanchardstown Centre) to North Blanchardstown with B1, B2, B4 and B5
3. Assumed Service Frequencies:
- Option B1: 15min - 11 buses (7-10am)
- Option B2: 20min - 9 buses (7-10am) - assumes services operating clockwise and anticlockwise on 'loop'
- Option B3: 15min - 11 buses (7-10am) - assumes new 'F-Spine' service (F4) extending to Tyrellstown
- Option B4: 30min (as N8) - 5 buses (7-10am)
- Option B5: 15min - 11 buses (7-10am)
- Option B6: 15min (as W2) - 11 buses (7-10am) - assumes new W2A service extending to Blanchardstown Centre
- Option B7: 10min (as N6) - 14 buses (7-10am) - Extension of existing bus service route N6

External Demands – 2042 – AM (7-10AM) – From North Blanchardstown

CORRIDOR/Location	Car - ERM	PT - ERM	Car - With 50% Mode Shift	PT - With Mode Shift	PT 'Uplift' DEMAND	ADDED PT Capacity UPLIFT - Seated							
						B1	B2	B3	B4	B5	B6	B7	TOTAL
NE: (EXT) - M1	118	9	59	56	47								0
NE: Swords	257	11	128	114	103					792			792
NE: Malahide	84	8	40	40	32								
NE: Airport Zone	791	73	396	389	316				360	792			1152
East: North Dublin	566	190	284	416	226				360			1008	1368
East 'Local': Finglas	497	218	249	393	175			792				1008	1800
East 'Local': Castleknock	344	163	172	281	118								0
South 'Local' Blanchardstown South	1918	484	959	829	345	792	1296		360	792		1008	4248
NW: M2/N2 Corridor	262	19	131	124	105								0
NW: M3/N3 Corridor	436	129	218	302	173								0
South: Lucan	645	163	322	369	206								0
West: M4/N4 Corridor	192	51	96	127	76	792	1296						*2088
South: SW Dublin: Tallaght/Clondolkin	567	65	179	186	121						792		792
South: SW Dublin: Kimmage/Ballyfermot	358	43	284	291	248								
SE: SE Dublin	314	299	157	424	125			792					**792
East: City Centre	534	1208	267	1421	213								
SE: South of Dublin (EXT) - Bray	110	7	55	51	44								
West of Dublin (EXT)	15	1	7	7	6								0
TOTAL	**8008**	**3141**	**4004**	**5818**	**2677**								

Notes

1. * Options B1 and B2 - Rail Interchange with Maynooth line at Clonsilla
2. ** Improved bus access to 'B Spine' (Blanchardstown Centre) from North Blanchardstown with B1, B2, B4 and B5
3. Assumed Service Frequencies:

- Option B1: 15min - 11 buses (7-10am)
- Option B2: 20min - 9 buses (7-10am) - assumes services operating clockwise and anticlockwise on 'loop'
- Option B3: 15min - 11 buses (7-10am) - assumes new 'F-Spine' service (F4) extending to Tyrellstown
- Option B4: 30min (as N8) - 5 buses (7-10am)
- Option B5: 15min - 11 buses (7-10am)
- Option B6: 15min (as W2) - 11 buses (7-10am) - assumes new W2A service extending to Blanchardstown Centre
- Option B7: 10min (as N6) - 14 buses (7-10am) - Extension of existing bus service route N6