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MetroLink

Transport Infrastructure Ireland

Review of Charlemont Station

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Overview of Note

Previous work undertaken for the MetroLink EIAR did not indicate any notable level of drop-off at Charlemont.

To supplement this, and to provide more detailed information, we have collated further information and data and provided further analysis. This includes a review of review of Airport Passenger Survey data from the NTA, and review of operation of drop-off at existing Luas stops during the AM period.

The data demonstrates that there is unlikely to be any significant volume of passenger drop-off due to Airport travel or general travel purposes at the Charlemont station, and not providing drop-off facilities will support the overall objective of reducing reliance on private car and promoting public transport and active travel.

Issues such as drop-off are enforcement and traffic management issues. The use of the streets around Metrolink stations will be regularly monitored and TII will work with Dublin City Council and the NTA to ensure that appropriate traffic management measures are implemented to discourage any drop-off from occurring.

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General Overview

The National Transport Authority (NTA) Transport Strategy for the Greater Dublin Area (GDA) 2016-2035 (the 2016 Strategy) and the 2022-2042 Strategy (the 2022 Strategy) defines the future public transport network to serve existing and future demand for the GDA area. This consists of Bus, Heavy Rail (DART, Commuter, Intercity), Light Rail (Luas) and Metrolink. A section of this is shown on Figure 1. This network has been developed to provide an "Inclusive Transport System", that will deliver a high quality, equitable and accessible transport system, which caters for the needs of all members of society.

Metro lines are fully segregated light rail systems. They generally form lines with stations located approximately every 1 km in urban environments, with stations designed to integrate within the urban fabric. The majority of the catchment is within 5 -10 minutes walking distance of the stations. At Charlemont, Metrolink joins with the Green Line Luas line forming an integrated light rail service, with the Green Line then having stations every 600-700m.

MetroLink has been designed to be part of an integrated transport solution for the GDA. The objectives of this are to promote sustainable and active travel, to enhance public transport services, and to address climate change, by promoting sustainable travel and reducing reliance on the private car.

Similar to the existing LUAS stops and many of the DART stations in the City Centre, there is no provision of drop-off facilities at any of the city centre Metrolink stations. Providing for drop-off facilities would encourage people to make short distance trips by car and would undermine the objective to promote sustainable modes of transport.

The NTA's Eastern Regional Model has been utilised for the modelling of the project. This model covers the full extent of the Greater Dublin Area and contains all public transport services and the road network. The ERM contains a variable demand module that is used to derive levels of trip making between zones by mode and time of day. A series of choice models derive each of these components in an iterative algorithm. A choice model is essentially a model of human behaviour which replicates as closely as possible observed behaviour. This is combined with an assignment model that allocates the demands onto the various networks. The travel times from the assignment model are then fed back to the demand model, which re-evaluates the travel choice estimates. Census data, National Household Travel survey data and a significant volume of traffic flow counts, journey time information and public transport user counts, airport passenger data etc. are utilised in the calibration and validation of the model.

Metrolink provides excellent quality interchange opportunities with Luas green line at Charlemont, Dart at Tara and the heavy rail network at Glasnevin. There is also seamless interchange opportunity at St Stephens Green East with many of the Spine Bus services for BusConnects, including the E and F-Spines which will interchange at St. Stephen's Green East, see Figure 1. There are other interchange opportunities with many other bus services at other stations.

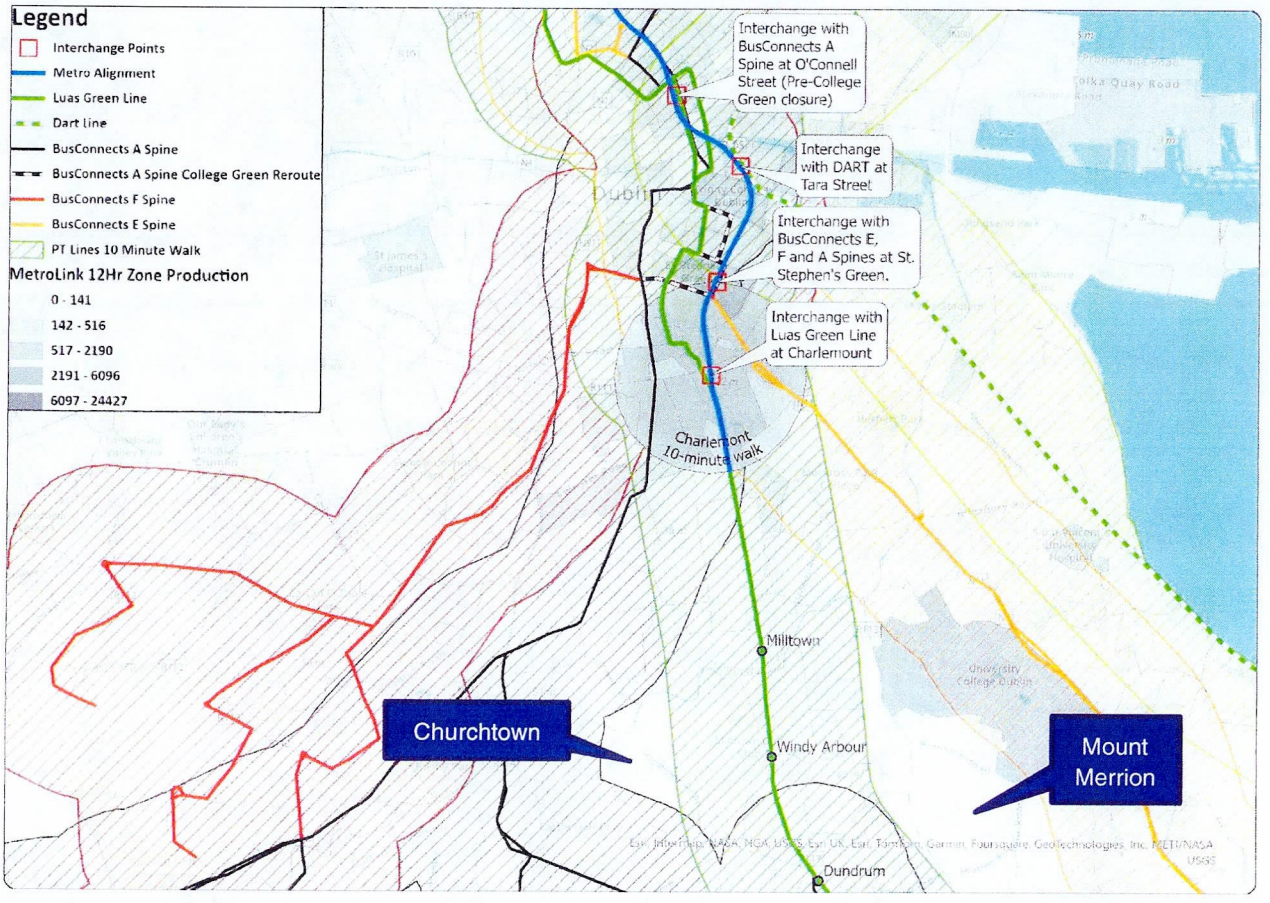

Figure 1: Public Transport Interchange with MetroLink from South Dublin

As can be seen in Figure 1, much of South Dublin is served by high frequency public transport options with only two areas not falling within this catchment – Mount Merrion between the Luas Green Line and E-Spine, and Churchtown between the Luas Green Line and BusConnects A-Spine. The catchment of these public transport spines has been judged as being within the acceptable 800m walking distance (as set out by the Chartered Institution of Highways and Transportation, Providing for Journeys on Foot - 2000) with this distance being seen as the acceptable distance for people to walk to access public transport services for commuting.

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Existing Luas Services and Survey Data

Boarding Surveys were undertaken at Luas in February 2024 to observe whether any significant volume of passenger drop-off was occurring.

At Windy Arbour in the AM peak (8AM to 9AM), a suburban stop which has a formal drop-off location, almost 23% of boarders were dropped off by car. At Beechwood, Phibsborough and Cabra, which do not have drop-offs facilities and are closer to the city, nearly all boarders arrived on foot with a 0-4% car drop-off rate at these stations for all boarders (In the case of Beechwood, no passengers were dropped off by car).

The low drop-off rate at Luas Stations without drop-off locations would indicate that, where formal drop-offs are not in place or for stations close to the city centre, people are likely to be deterred from arriving by car and utilise more sustainable modes.

Results of Boarding Surveys are shown in Appendix A.

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Charlemont Station – Travel Patterns

Charlemont MetroLink Station will service both local area trips and interchange trips, with Luas and bus services linking this location to much of South Dublin. Charlemont is home to a number of key attractions as shown in Figure 2. Furthermore, it is passed within a 10-minute walk by the BusConnects A-Spine, E-Spine, Local Buses 86, 87, 88 and the Luas Green Line, see Figure 4.

Charlemont is a key area of residence and employment for the south city centre, with dense concentrations of employment seen to the north of the Grand Canal at this location. Residential densities surrounding the station are low, with the high residential density being located to primarily to the east and southeast, see Figure 2 and Figure 3.

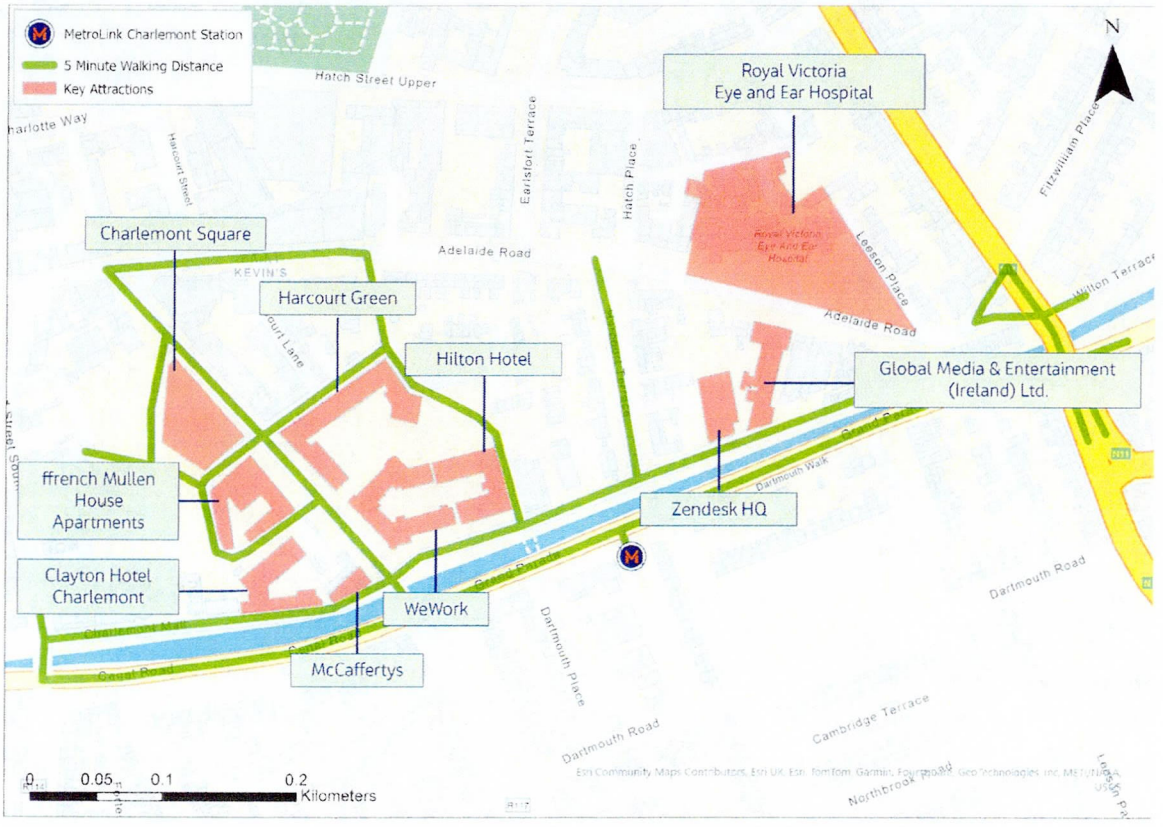

Figure 2: Charlemont Key Attractions

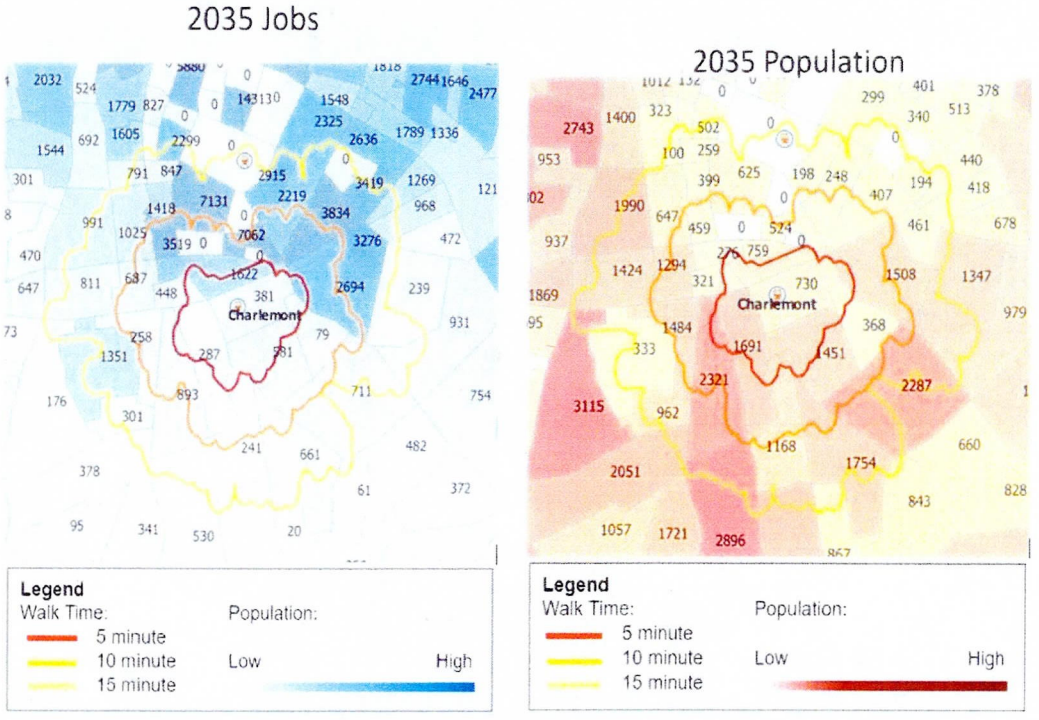

Figure 3: 2035 Jobs and Population in Charlemont Area

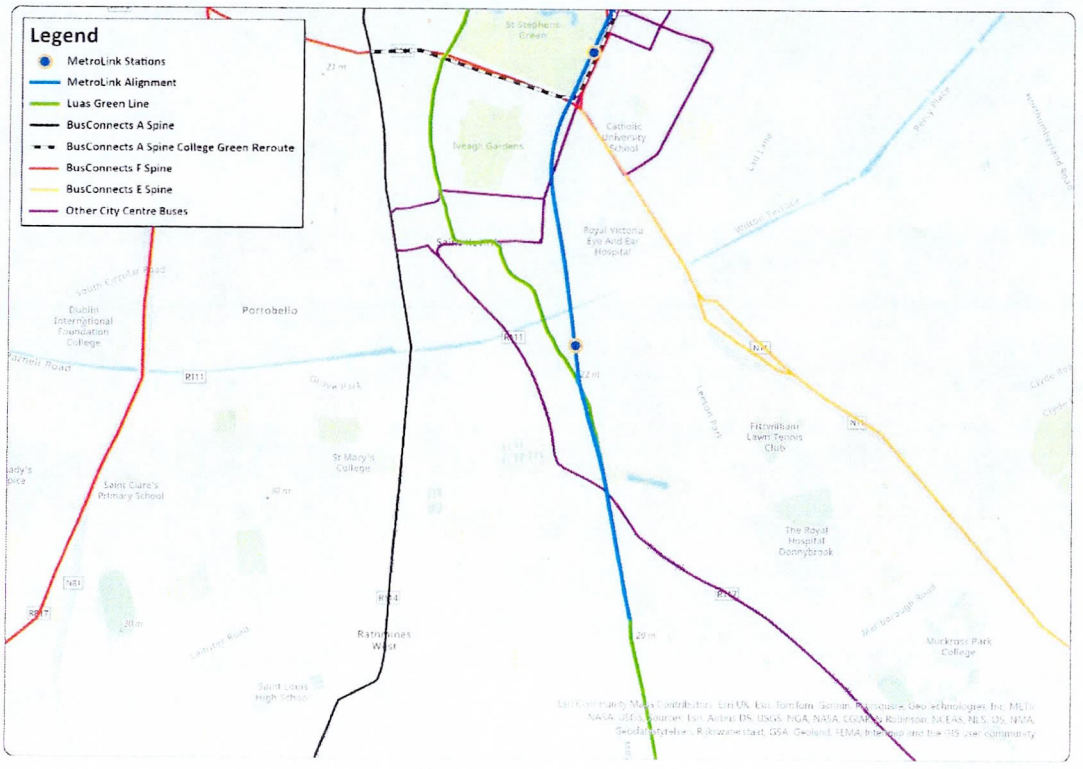

Figure 4: Charlemont Local Transport Options

Through demand modelling under a MetroLink scenario, future travel demand for MetroLink passengers, utilising Charlemont Station has been assessed to identify local area demand as well as interchange demand. This model has identified public transport lines (A-Spine, E-Spine, Local Routes 86, 87,88, and Luas Green Line) passing nearby to Charlemont, as well as several zones surrounding the Charlemont MetroLink station.

The result of this modelling finds that the highest demand at Charlemont arises from high quality public transport corridors, with the Luas Green Line seeing over 8000 passengers per 12 Hour Peaks Period interchanging to/from the Luas and MetroLink at Charlemont, see Figure 5. These passengers are spread throughout south Dublin for stations south of Charlemont where the most logical interchange is at Charlemont. Considerable daily volumes of interchanging passengers are seen, particularly in the outer suburbs such as Dundrum and employment areas such as Sandyford. Meanwhile, stations between Brides Glen Central Park see a low demand for trips interchanging at Charlemont, with the numbers of these stations aggregated into a single value to reflect this.

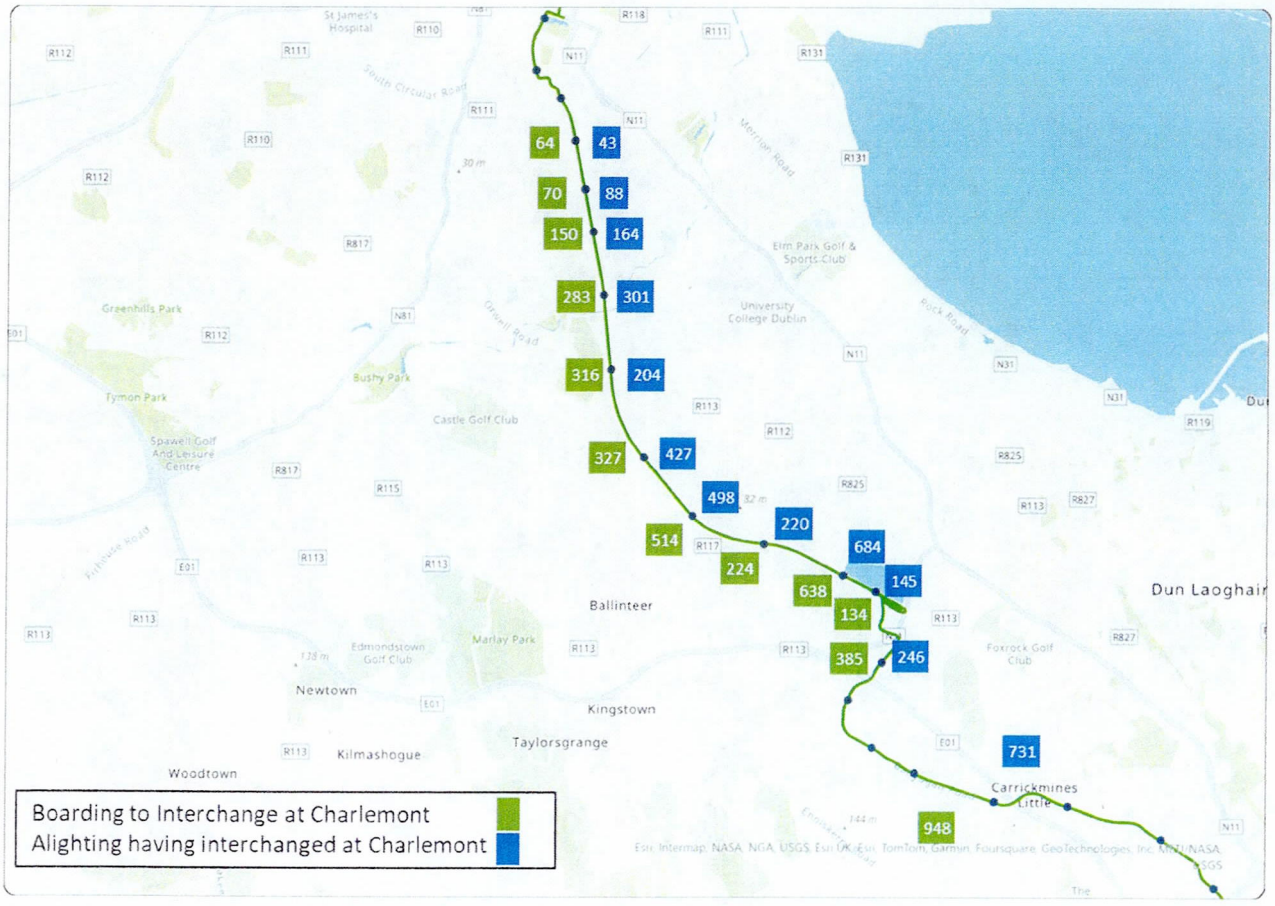

Figure 5: Forecast Luas Boarding and Alighting from MetroLink Interchange at Charlemont (12 hr)

Trips boarding and alighting MetroLink are shown for the local Charlemont area in Figure 6. This figure shows the relatively lower daily demand for MetroLink in comparison to demand observed for interchange to/from the Luas Green Line at this location. The modelling results displayed in Figure 6 indicate the local 12 Hr demand for MetroLink at Charlemont, with ~6,000 local trips forecast to utilise Charlemont Station (displayed in Figure 6), along with the ~8,000 daily trips forecast to interchange from the Luas Green Line (displayed in Figure 5) in the 12 Hour Peaks Period. When local demand to/from Charlemont Station (displayed in Figure 6) is observed, it can be seen that the highest level of demand is from areas to the east and west of Charlemont Station rather than to the north and south. The two local zones with highest demand to/from Charlemont Station, A and G, are easier accessed from footpaths on the Grand Canal, while the two zones with the next highest demand, D and F, are likely to see a split of roughly 50% of users utilizing the Grand Canal walking routes and Dartmouth Road to make their journey on foot. As well as local zones, Charlemont Station is also likely to see considerable levels of interchange with BusConnects Routes 86, 87, and 88 which serve the Ranelagh Road. These routes serve stops on the Ranelagh Road South of Dartmouth Road, as well as stops on Charlemont Street adjacent to the Charlemont Square development. As such, a 25/75% split has been assumed for interchanging passengers utilising the north versus south entrance of Charlemont Station.

Based on the trip making outlined in Figure 6, and expected usage of certain entrances from each zone, it is estimated that approximately 4,395 people will utilize the southern access per 12 hour period. This is ~15% of the total passengers at the station in the opening year.

This is a similar volume of passengers to the DART stations at Clontarf Road, Killester or Greystones.

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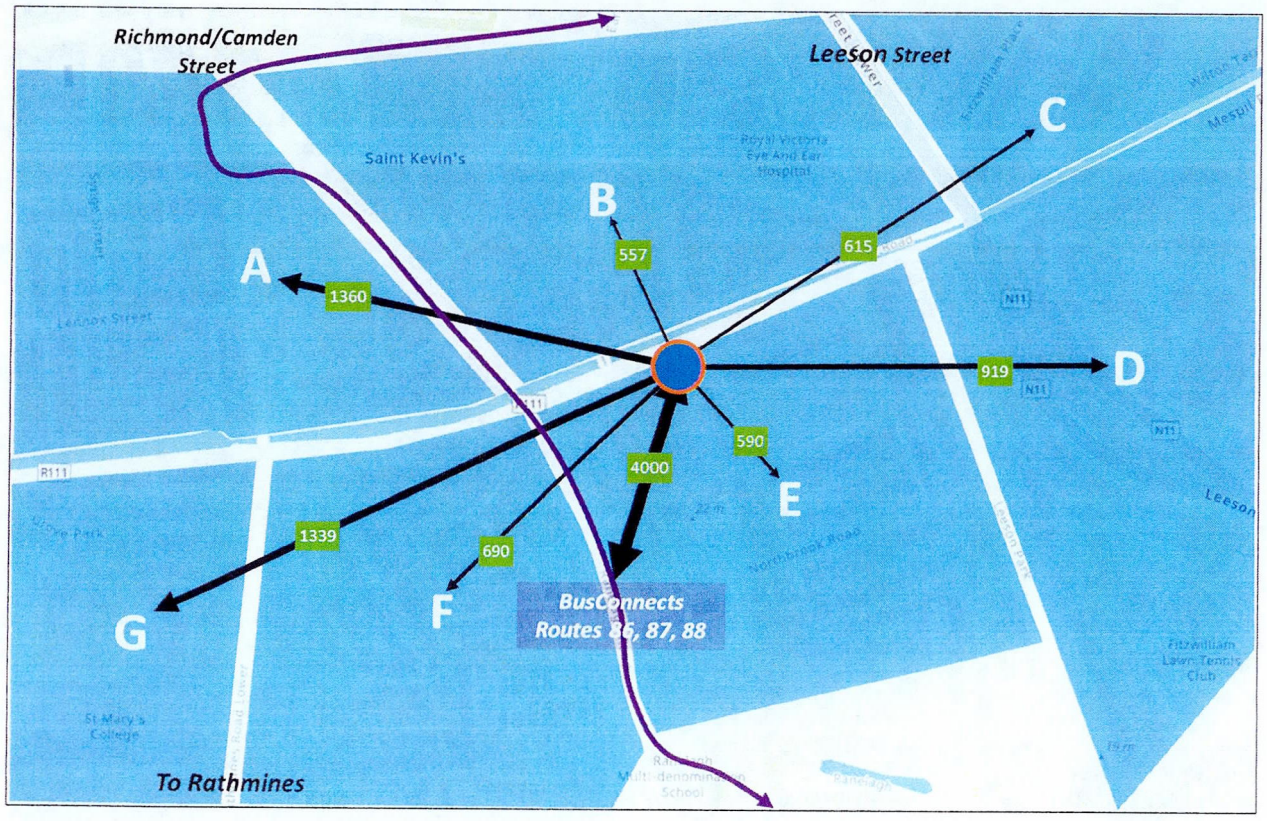

Figure 6: MetroLink B&A from Charlemont Local Area

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Dublin Airport – South Dublin Patterns

We have recently received the data from the 2022 NTA Dublin Airport Passenger Survey results and have assessed this data in terms of drop-off.

In terms of duration of trip, close to 30% of passengers at Dublin Airport undertake trips for less than 3 nights and 37% have trips for between 4-7 days[1]. These travelers are generally travelling with small baggage, they can easily navigate most vertical circulation solutions and transport modes. There will still be a significant portion of people that don't use the Metrolink or public transport to access the Airport. Instead, they will use transport methods like a taxi to access the Airport because for them it better meets with their needs, for example, if they have very large baggage or the time of their flight.

Travelers to and from airports are regularly moving between different floor levels both at the airports and at transport interchanges, to access onwards travel solutions. It will be no different for people moving from Luas to Metrolink at Charlemont; they will utilise the vertical circulation solutions provided – steps, lifts, escalators, depending on their preference and needs. Discussions with other operators indicates that once passengers have made the choice to use public transport, interchange between modes doesn't discourage them, provided the interchange is attractive and good quality.

As reported in Diagram 9.56 of MetroLink EIAR Chapter 9, the modal share impacts predicted as a result of MetroLink will be a 6% reduction (58% to 52%) in car usage (car driver, taxi, car passenger) for the Eastern Regional Model (ERM) region.

The 2022 NTA Dublin Airport Passenger Survey results have been analysed to extract various mode shares for different areas relevant to MetroLink, with the results outlined below in Table 1.

Table 1: 2022 Dublin Airport Census Mode Shares (2022 NTA Dublin Airport Passenger Survey)

	Proportion of Trips	Bus	Car (Driver)	Car (Passenger)	On Foot	Taxi	Other
Overall	100%	27%	18%	22%	1%	25%	7%
Dublin	63%	23%	10%	21%	1%	37%	8%
Outside Dublin	37%	34%	32%	24%	0%	5%	6%
Charlemont (800m)	2%	34%	2%	9%	0%	44%	11%
Charlemont 5km	3%	24%	11%	20%	0%	43%	2%
South Dublin	13%	25%	19%	31%	0%	22%	2%

The table above presents the results from the NTA Dublin Airport, for the following geographical areas:

- Dublin;

[1] https://www.dublinairport.com/b2b/airline-support/dubplus-partner-marketing/performance-data

- Outside of Dublin;
- Area 800m (10 minutes walking) around Charlemont station;
- The area bound by the canal to the north and within 5km of Charlemont to the south; and
- All of the areas within the South Dublin County/Dun Laoghaire Rathdown areas.

The "Charlemont 5km' area is shown in Figure 7. It depicts all Census Small Areas (CSAs) within a 5km radius and south of the Grand Canal.

Considering the cohorts of mode of travel in this area, the most likely group that could be dropped off at Charlemont is the "car passenger" group. Public Transport users are unlikely to now be dropped off and taxi users who are likely using taxis for business, time, or convenience reasons are unlikely to change modes.

The modal shift for private car travel is likely to occur within the "Car Driver" and "Car Passenger" group. If any group of users is likely to switch from being dropped off at the Airport to the being dropped off at Charlemont, it is the Car Passenger group. Given that this user group will also have access to public transport connections, it is very unlikely that all of the car passengers would be drop-offs at the MetroLink.

Figure 7: Census Small Areas 5km South of Charlemont Station

Based on 2022 NTA Dublin Airport Passenger Survey, 3% of all airport trips are to/from the "Charlemont 5km" this area, with a 31% private car share (both passengers and drivers).

Assuming an annual usage of 32,000,000 passengers at Dublin Airport, it is calculated that this area will account for an average of 2,892 daily trips. Given the 6-percentage point predicted modal shift from private car to public transport in the as a result of MetroLink, this would see a daily modal shift to/from Dublin Airport of 174 trip makers from private car to public transport for this area. With these trips being split across Car Driver and Car Passenger.

While the vast majority of these areas see good interchange potential with MetroLink as outlined in Figure 1, and are likely to use the Public Transport to access Metrolink, if 50% of these 174 trips utilised private car drop off at Charlemont to access MetroLink for trips to Dublin Airport, this would amount to 5.4 drop offs per hour for a 16 Hour Period. This is summarised in Table 2.

Table 2: Modal Shift Estimate

Item	Volume
Airport Annual Passengers	32,000,000
Daily Airport Passengers	87,671
Proportion of Airport Passengers from 5km South of Charlemont	3%
Daily Airport Passengers from 5km south of Charlemont	2,892
Daily "Car Passengers" and "Car Driver" from 5km south of Charlemont (31% Mode Share)	896
Daily Modal Shift from 5km south of Charlemont (6% reduction in "Car Passengers" and "Car Driver" (25% Mode Share)	174
50% Car Passenger	87
Hourly Average for a 16-hour Period (06:00 – 22:00)	5.4

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Summary and Conclusion

Achieving the objectives of the NTA Greater Dublin Area Transport Strategy, in building a sustainable, accessible and effective transport system for the Greater Dublin Area, requires the promotion of sustainable travel and reducing reliance of private car.

Metrolink has been developed to be part of an integrated Public Transport network and to meet with the overall objective of the Strategy. As with other rail stations in the city centre, the design does not facilitate drop-off facilities at any of the city centre Metrolink stations. The design deters private car passenger drop off and encourages public transport and active mode journeys to Metrolink stations. The Boarding Survey undertaken of Luas stops shows that there is very little drop off activity at stations close to the city centre.

Metrolink has excellent interchange connections with a significant portion of South Dublin area through public transport catchment areas, and the high numbers of transfer to/from services is evident in the modelling results. Local residents and Metrolink users covered by these public transport corridors are unlikely to bypass a local Luas/ Dart / Bus stop to drive to Charlemont, when there is a high quality integrated public transport offering available to them.

The NTA Dublin Airport Passenger Survey data has been reviewed to better understand if there is any potential additional drop-off due to journeys to Dublin Airport utilising MetroLink. The results of this demonstrate that there is very little potential for drop-off at Charlemont due to the Airport users, estimated at worst case as 5 per hour.

TII will work with Dublin City Council to ensure traffic/parking enforcement of the Charlemont area and to ensure that there is appropriate traffic management measures in place to discourage any drop-off from occurring.

Appendix A. Luas Boarding Survey

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Introduction

On Wednesday 21st February, two teams undertook morning peak boarding surveys at four Luas Stations along the Luas Green Line. These surveys were undertaken to ascertain the level of demand for private car drop off at public transport stations, and how this demand is affected by drop off facilities and distance to the city centre.

The Luas Green Line stops chosen were as follows:

- Windy Arbour – this is a suburban stop approximately 5km south of Dublin city centre. This stop contains a private car drop off.
- Beechwood – this is an inner suburban stop approximately 2.5km south of Dublin city centre. This stop contains no drop off, however is located on a residential road which links Rathmines and Ranelagh.
- Phibsborough – this is an inner suburban stop approximately 2.5km north of Dublin city centre. This stop has no dedicated drop-off but is located between two regional roads (R101 and R147).
- Cabra – this is an inner suburban stop approximately 3km north of Dublin city centre. This stop has no dedicated drop off and is accessed from a local residential street linking Cabra and Phibsborough.

Each team surveyed two stops between 8AM and 9AM on the morning in question, with each stop being surveyed for 20-minutes and the results factored up to 1-hour. In the case of Phibsborough, which contains a north and south entrance, each entrance was surveyed for 20-minutes to ensure all passengers were captured.

The data which was counted was total number of boarders, boarders from private car drop-off and boarders who arrived by bicycle.

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Results

Results captured are set out in Table 3.

Table 3: 20-Minute AM Peak Luas Boarding Counts

Type	Windy Arbour	Beechwood	Phibsborough	Cabra
On -Foot	103	101	109	48
Bicycle	1	1	1	0
Drop-off	31	0	4	2
One Hour Count	135	103	114	50

Results scaled up to 1-hour which are shown in Table 4.

Table 4: 1-Hour AM Peak Luas Boarding Counts

Type	Windy Arbour	Beechwood	Phibsborough	Cabra
On -Foot	308	304	327	144
Bicycle	4	4	3	0
Drop-off	92	0	12	6
One Hour Count	404	308	342	150

Proportioned results have been processed and presented in Table 5.

Table 5: Mode Share Proportions at Luas Stops

Type	Windy Arbour	Beechwood	Phibsborough	Cabra
On -Foot	76%	99%	96%	96%
Bicycle	1%	1%	1%	0%
Drop-off	23%	0%	4%	4%
One Hour Count	100%	100%	100%	100%

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Interpretation of Results

The low drop-off rate at Luas Stations without formal drop-off locations would indicate that there is not a major demand for this type of interchange where formal drop-offs are not in place, as well as stations closer to the city where car ownership is generally lower.

In cases where drop-off is facilitated, as seen at Windy Arbour, there is a clear demand (23% drop-off rate) for drop-off due to the ease of drop-off, but also the outer residential nature of the area. As stops move closer to the city, as seen at Beechwood in particular which closely mimics the road layout of Charlemont's south entrance where there is a residential and relatively uncongested network, there were no drop-offs, indicating that there is little/no demand to drop-off passengers due to the difficulty in both driving to stations, but also dropping off passengers once the station has been reached. When considering Charlemont's north entrance, this is not dissimilar to Phibsborough where the station entrance is on a well trafficked Regional Road which poses an extremely unattractive environment for drivers to drop passengers off at. This is supported by the relatively low drop-off rate at this station with just 4% of all passengers utilising drop-off.