JACOBS IDOM

MetroLink

Cycle Parking Overview

ML1-JAI-TRA-ROUT_XX-RP-Y-00037 | P01.1

2024/03/26

MetroLink

Project No:	32108600
Document Title:	Cycle Parking Overview
Document No.:	ML1-JAI-TRA-ROUT_XX-RP-Y-00037
Revision:	01
Date:	2024/03/26
Client Name:	Transport Infrastructure Ireland
Client No:	/
Project Manager:	Paul Brown
Author:	Matthew Foy
File Name:	Cycle Parking Overview.docx

Document history and status

Revision	Date	Description	Author	Checker	Reviewer	Approver
01	26/03/2024	Issued To ABP	MF	BW	MT	PB

Contents

1. Introduction

To determine the potential demand for cycle parking a review of standards and guidance was undertaken in late 2019, early 2020. The outcome of this review was that the most appropriate Irish standard at that time was from the National Transport Authority (NTA) National Cycle Manual (NCM) (2011). The recommendation from the NCM was that the cycle parking should represent 2.5% of the daily boarders at each station, as informed by the analysis undertaken in the preparation of the NCM. This approach doesn't take into account the catchment of the station or the characteristics of the receiving environment around the station. Owing to the omission of local catchment in the NCM, a project-specific methodology was employed to predict cycle parking demand.

A methodology that takes into account the distance of the origin and destination of users of the Metrolink and the characteristics of the receiving environment around the station was adopted. This is detailed in 3.1 below.

1.1 Proposed Facilities

For each station, the following cycle spaces have been proposed (as indicated in EIAR Chapter 4 Description of the MetroLink Project):

- **Estuary Station:** a total of 254 cycle spaces-located next to the station, a building located on the west side of the station will provide shelter for 127 cycles, with a further 127 cycle stands located nearby;
- **Seatown Station**: 480 cycle spaces are proposed- a landscaped plaza is located in front of the entrance to the station with a building for bicycle storage offset to the east side of the plaza with a provision for 240 bicycles. A further 240 bicycles spaces will be provided located along the landscaped boundary with the R132 and on the east side of the station building;
- **Swords Central Station:** 942 cycle spaces are proposed- a bicycle storage building is proposed, offset and slightly in front of the plaza on one of the access routes to the station, which is designed to accommodate 471 bicycles. A further 471 spaces will be provided around the station;
- **Fosterstown Station:** 422 cycle spaces are proposed- a bicycle storage building will be provided in front of the station building, separated by the plaza and angled to reduce its dominance overlooking the plaza ad station entrance. The building will provide covered storage for 211 bicycles with a further 211 spaces provided at locations around the station but set back from pedestrian desire lines;
- **Dublin Airport:** Parking for 72 cycles is provided;
- **Northwood Station:** 204 cycle spaces are proposed, which will be provided near both entrances;
- **Ballymun Station:** 292 cycle spaces proposed within the public realm;
- **Collins Avenue:** 370 cycle spaces will be provided at this station;
- **Griffith Park:** 176 cycle spaces are proposed - half will be located in a bicycle parking facility and the remainder in on-street bicycle stands;
- **Glasnevin:** 120 proposed cycle spaces are proposed;
- **Mater:** 70 cycle spaces are proposed in Sheffield stands, located on a shared surface plaza to Eccles Street;
- **O'Connell Street:** No cycle spaces are proposed;
- **Tara Street:** 256 cycle spaces are proposed;
- **St Stephen's Green:** 82 cycle spaces are proposed alongside the outer part of the pavement on St Stephen's Green East; and,

- **Charlemont:** 162 cycle spaces are proposed, most of which will be provided around the southern entrance, with the remainder integrated with the urban design along the internal roads towards the northern entrance.

2. NTA GDA Strategy 2022-2042

The NTA GDA Strategy contains specific measures that are of direct relevance to the provision of cycle parking for Metrolink and for the wider environs, of particular relevance are measures CY5 and CY6 which are presented below.

Measure CYC5 – Cycle Parking

It is the intention of the NTA to deliver, through the statutory planning process and liaison with relevant stakeholders, high quality cycle parking at origins and destinations, serving the full spectrum of cyclists including users of non-standard cycles.

Measure CYC6 – Cycle Parking Strategies

Local authorities will prepare public cycle parking strategies in order to ensure that there is sufficient short-stay safe and secure cycle parking available on-street and/or off-street, including spaces for cargo bikes and other non-standard bike designs, in city, town and village centres.

In addition, the GDA Strategy INT5 notes the intention of the NTA to deliver Mobility Hubs. The concept of Mobility Hubs is a new addition to the NTA GDA Strategy, the facilities at Mobility Hubs cover a range of different transport modes, including shared transport, and can also include features such as travel information, lockers, parcel collection etc.

NTA is working with the Department of Environment, Climate and Communication (DECC) to develop an overarching national strategy for Mobility Hubs. The overarching strategy will define the different typologies of hubs, including the components and design principles and outline a delivery strategy for a programme of Mobility Hubs nationally. A Preliminary Business Case for the Mobility Hubs Programme is currently under consideration by DECC. NTA are current developing concept design proposals for the different typologies of Mobility Hubs.

Following this, a separate project will be undertaken to develop Mobility Hub designs at the appropriate locations on the network.

Measure INT5 – Major Interchanges and Mobility Hubs

It is the intention of the NTA, in conjunction with TII, Irish Rail, local authorities, and landowners to deliver high quality major interchange facilities or Mobility Hubs at appropriate locations served by high capacity public transport services.

These will be designed to be as seamless as possible and will incorporate a wide range of facilities as appropriate such as cycle parking, seating, shelter, kiosks selling refreshments plus the provision of travel information in printed and digital formats.

3. Calculation of Demand

3.1 Metrolink Approach

Cycling demand was calculated for the 2035 opening year as well as the Opening Year +5 Years using the project-specific demand-led methodology.

The project-specific demand-led methodology considered Boarding and Alighting numbers as well as local catchments for stations split by geographic region.

Figure 3—1:Zones for Cycle Parking

Outer Dublin/Outer-City Stations (concerned with boarding figures):

- During the AM peak period, cycling provisions will be calculated for 10% of First Boarders that have origins within the 5-10-minute walking isochrone, and 50% of First Boarders in the 10+ minute walking isochrone.

- During each of the Lunchtime (LT), School Run (SR) and PM peaks, cycling provisions will be calculated for 10% of First Boarders beyond the 5-minute walking isochrone.

City Centre Stations (concerned with alighting figures):

- During the AM peak period, cycling provisions will be calculated for 10% of Final Destinations that have destinations within the 5-10-minute walking isochrone, and 50% of Final Destinations in the 10+ minute walking isochrone.

- Provisions will be calculated for the AM peak period only.

Calculations were done for one direction in each scenario. For example, for the Outer Dublin and Outer-City stations, numbers were quantified for people who are cycling towards the station and leave their bikes there. Similarly, for the Dublin City Centre stations, numbers were quantified for people taking a bike from the stands provided and cycle away from the station, i.e. this was not a dynamic analysis.

A dynamic analysis considers the arrival and departure of people cycle parking at a station, it is a process that is generally used for parking facilities to determine demand.

4. Estimates of Potential Cycle Demand and Provision

Passenger demand has been modelled for both 2035 (Opening Year) and 2050 (Design Year/Opening Year + 15 Years), with a 21% growth between the scenarios, resulting in a 7% growth between Opening Year and Opening Year + 5 Years.

The potential cycle demand in the 2035 Opening Year, and in the Opening Year + 5 Years, has been calculated using the Demand Approach methodology outlined in Section 2.1 above. Table 4.1 presents the potential cycle demand in both the Opening Year and the Opening Year + 5 Years.

Table 4.1 also presents the shortfall of potential cycle demand that will not be accommodated by the Project proposals in both the Opening Year and Opening Year +5 Years. In many locations, public realm constraints and the need to balance the provision of cycle parking with other constraints, have restricted how much cycle parking can be provided.

As a large proportion of First Boarders at Estuary will be using the Park and Ride Facility, project-specific methodology calculations have not been carried out for this station, denoted by the * in the following tables. However, the NCM methodology found that 254 cycle parking spaces would be appropriate at this location, which is the figure proposed by MetroLink.

It is noted that a commitment has been made to Fingal County Council (FCC) to provide for up to 1,000 parking spaces at Estuary, which will delivered in phases linked to the quantum of development completed at the Lissenhall lands.

Table 4.1: Potential Cycle Demand Accommodated by Project Proposals

		Updated Demand		MetroLink Proposals	Demand Not Accommodated by Proposed Spaces	
Station	**Location**	**Potential Cycle Demand 2035 Opening Year**	**Potential Cycle Demand Opening Year (2035) + 5 Years**	**No of Spaces Proposed**	**Opening Year**	**Opening Year + 5 Years**
Estuary	**Outer Dublin**	*	*	**254**	*	*
Seatown	**Outer Dublin**	765	819	**480**	285	339
Swords	**Outer Dublin**	1,233	1,320	**942**	291	378
Fosterstown	**Outer Dublin**	788	843	**422**	366	421
Dublin Airport	**Outer Dublin**	-	-	**72**	-	-
Dardistown	**Not open to public**	-	-	**-**	-	-
Northwood	**Outer City**	686	734	**204**	482	530
Ballymun	**Outer City**	973	1,042	**292**	681	750
Collins Avenue	**Outer City**	1,157	1,238	**370**	787	868
Griffith Park	**Outer City**	411	440	**176**	235	264
Glasnevin – Metro+Rail	**Outer City**	496	531	**120**	376	411
Mater	**City Centre**	164	175	**70**	94	105
O'Connell Street	**City Centre**	236	253	**0**	236	253
Tara Street	**City Centre**	973	1,041	**256**	717	785
St. Stephen's Green	**City Centre**	871	932	**82**	789	850
Charlemont	**City Centre**	808	865	**162**	646	703

5. Further Considerations

5.1 Location of Zone Centroids and Walking Network

The methodology for calculating potential cycle demand utilised the 5, 10 and 10+ walking distance isochrones around each of the stations. The zones around the station were allocated proportions of expected cycling uptake by associated walking distance depending on position of the centre (centroid) of the zone.

Whilst the centroid of the zone may be geographically correct, it may not reflect the existing or planned distribution of population within the zone. This is particularly true for large geographical zones.

In a similar way, the walking isochrones do not reflect the future pedestrian network, or informal pathways that may be commonly used, and therefore there may be zones which fall outside of the catchment, despite existing informal connections or future planned connections which would improve accessibility to and from the zone. If improvements were made to the permeability in the area, then the 5-10min walking catchment may incorporate zones previously within the 10-15min catchment.

Figure 5—1 presents the walking isochrones and zone centroids around Collins Avenue station. According to the zone centroids (denoted by the green dots), Dublin City University (DCU) is within the 10-15min walking catchment east of Collins Avenue station. Whilst the placement of the centroid may be geographically correct, many of the DCU buildings and associated population fall within the 10min walking catchment. As a result, 50% of active mode passengers from this zone are included in calculations for potential cycle demand, whereas only 10% would be included if this zone fell within the 10min walking catchment. Evidently, there are instances along the alignment where potential cycle demand may be inflated for this reason. Similarly, if permeability improvements were made to locations where informal pedestrian networks have not been captured, there may be a reduced demand for cycle provisions.

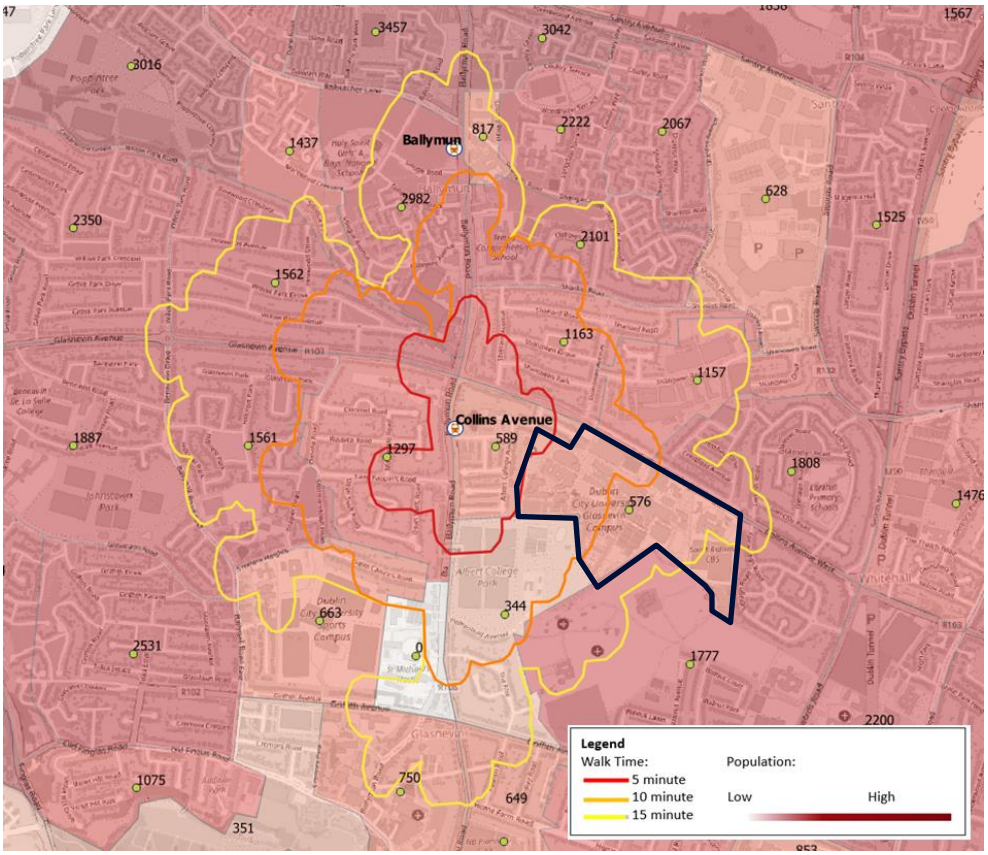

Figure 5—1: Walking Isochrones around Collins Avenue Station

5.2 Potential Demand Accommodated by Shared Mobility

Following the calculation of potential cycle demand using the identified methodology, the impact of shared mobility, i.e. bike sharing schemes, was explored, with results and analysis presented in ML1-JAI-TRA-ROUT_XX-RP-Z-00001.

Uitilising shared mobility data from various public transport locations across the UK and Ireland, the potential impact of shared mobility on the proposed cycle parking demand at the MetroLink stations is presented below for the following scenarios:

- Minimum turnover ratio: 1 parking event (drop off or collection of shared bicycles) per 3hr period (based on findings at Broadstone Luas Green Line stop):
- Maximum turnover ratio: 4 parking events per 3hr period (based on findings at Charlemont Luas Green Line stop); and,
- Average turnover ratio: 2.7 parking events per 3hr period (based on average turnover ratio in morning peak period).

Table 5.1 and Table 5.2 present the Opening Year and Opening Year +5 Years demand that can be accommodated if the Project utilised shared mobility solutions. The estimates assume that the average turnover ratio of 2.7 events per 3hr period will be achieved at City Centre locations. Both Table 5.1 and Table

5.2 show that only the potential demand at Mater station could be accommodated by the Project proposals if the average turnover ratio is achieved.

At the time of analysis, it was assumed that stations in the Outer Dublin and Outer City locations would predominantly require long-stay parking, and that there would not be a significant demand for short-stay or shared bicycle parking. From the data extracted, there is a range of turnover events at shared bicycle systems at public transport locations in the AM peak period, from 1.6 trips per 3-hour period, to 4.3 trips per 3-hour period. The data indicates that sites located on the outskirts of Dublin City Centre achieve higher turnover ratios, illustrating that if a shared mobility scheme is provided in the vicinity of Outer Dublin and Outer City locations, there will be demand for this mode as a means to access the Project, thus reducing the demand for cycle parking provisions at the stations in these locations.

Table 5.1: Remaining Demand to be Accommodated in Opening Year

Station	Location	Cycle Parking Demand in Opening Year	No of Spaces Proposed	Demand accommodated by shared mobility with average turnover (2.7 events per 3hrs)	Remaining demand to be accommodated by local authorities in Opening Year
Glasnevin – Metro+Rail	Assessed as: 50% Outer City 50% City Centre	*496*	120	**222**	274
Mater	City Centre	*164*	70	**189**	-
O'Connell Street	City Centre	*236*	0	**0**	236
Tara Street	City Centre	*973*	256	**691**	282
St. Stephen's Green	City Centre	*871*	82	**221**	650
Charlemont	City Centre	*808*	162	**437**	371

Table 5.2: Remaining Demand to be accommodated in Opening Year + 5-Years

Station	Location	Cycle Parking Demand in Opening Year +5 Years	No of Spaces Proposed	Demand accommodated by shared mobility with average turnover (2.7 events per 3hrs)	Remaining demand to be accommodated by local authorities in Opening Year +5 Years
Glasnevin – Metro+Rail	Assessed as: 50% Outer City 50% City Centre	*531*	120	**222**	309
Mater	City Centre	*175*	70	**189**	-
O'Connell Street	City Centre	*253*	0	**0**	253
Tara Street	City Centre	*1,041*	256	**691**	350
St. Stephen's Green	City Centre	*932*	82	**221**	711
Charlemont	City Centre	*865*	162	**437**	428

5.3 Dynamic Analysis

A dynamic analysis has now been undertaken to identify when the peak demand for cycle parking occurs at each of the stations, in recognition of the ongoing arrival and departure of passengers. It was assumed that each hour within the peak 3-hour period has an even split of passengers (approximately 33% of peak period passengers per hour).

Considering the number of boarding and alighting passengers, and the calculated potential demand for cycle provisions it is possible to determine the number of potential cyclists arriving and departing, and therefore to identify the net number of spaces required.

As part of the methodology presented in (section 3.1) for both the Outer Dublin and Outer City stations, the cumulative cycle demand from each of the peak periods (AM, LT, SR and PM) was identified.

However, this dynamic analysis demonstrates that the peak demand occurs in the AM peak period only, and the potential demand for cycle provisions decreases for the remainder of the day. Table 5.3 presents the shortfall of the peak hour demand that is accommodated by the number of spaces provided at each of the stations. As shown, the proposed spaces are sufficient to cover the peak demand at several of the stations along the alignment. However, a shortfall can particularly be seen at city centre locations.

Table 5.3: Shortfall of Peak Demand Accommodated by Spaces based on Dynamic Analysis

Station	Proposed Spaces	Peak Demand	Shortfall
Estuary	**254**	-	-
Seatown	**480**	363	-
Swords Central	**942**	749	-
Fosterstown	**422**	553	131
Dublin Airport	**72**	-	-
Dardistown	**-**	-	-
Northwood	**204**	393	189
Ballymun	**292**	570	278
Collins Avenue	**370**	276	-
Griffith Park	**176**	119	-
Glasnevin	**120**	264	144
Mater	**70**	59	-
O'Connell Street	**0**	121	121
Tara Street	**256**	705	449
St Stephen's Green	**82**	745	663
Charlemont	**162**	446	284

6. Conclusions

Based on the demand analysis undertaken, whether the dynamic analysis or the analysis accounting for shared mobility, there are a number of stations (in particular in the City Centre) where the estimated demand for cycle parking is higher than the provision. The cycle parking demand is based on the delivery of the planned cycle networks and infrastructure within the GDA Transport Strategy.

Cycling parking within the city area will service a range of usages and functions, including the MetroLink and other origins and destinations in the environs of the station and surrounding area of the city. The importance of the delivery of cycle parking to service the many needs of the city is reflected in the Measures in the NTA's GDA Transport Strategy, in particular measure CYC6, which requires the local authorities to develop a public cycle parking strategy. In addition, the NTA have confirmed that they will work will the local authorities and transport operators to ensure that there is sufficient cycle parking provision to meet the needs of Metrolink and the wider city requirements.

7. Supporting Letter from NTA

Note the reference to the Strategy relate to the Draft Strategy and the correct references are:

CYC5 – Cycle Parking

CYC6 – Cycle Parking Strategies

INT5 – Major Interchanges and Mobility Hubs

JACOBS IDOM

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Dún Scéine, Lána Fhearchair
Baile Átha Cliath 2, D02 WT20

Dún Scéine, Harcourt Lane
Dublin 2, D02 WT20

t 01 879 8300

info@nationaltransport.ie
www.nationaltransport.ie

Aidan Foley
Project Director - MetroLink
Transport Infrastructure Ireland
Parkgate Business Centre
Parkgate Street
Dublin 8

23rd January 2024

Re: MetroLink - Cycle Parking Provision

Dear Aidan,

I am writing to confirm the approach that has been agreed with NTA in respect of the provision of cycle parking at proposed stations for the MetroLink scheme. As part of the design and development of the MetroLink project, NTA agreed the approach used in Appendix A4.1 of the EIAR for estimating demand for cycle parking at stations and the appropriate level of parking to be provided. NTA acknowledges that it is not expected to fully accommodate the projected cycle parking demand at stations within the MetroLink scheme. Where necessary, additional cycle parking will be delivered by NTA through other interventions, as part of wider strategies taking account of the wider transport needs in areas along the MetroLink corridor.

The approach adopted for the MetroLink project recognises the need to integrate cycle parking into the wider public realm serving both the needs of MetroLink and other origins and destinations in the environs of the stations. In addition, the use of shared mobility options and potential for mobility hubs at locations such as MetroLink stations in the future will further influence the demand for dedicated cycle parking facilities.

The Greater Dublin Area Transport Strategy 2022-2042 sets out the measures relating to cycle parking and mobility hubs, including:

- Measure CYC3 – Cycle Parking: It is the intention of the NTA to deliver, through the statutory planning process and liaison with relevant stakeholders, high quality cycle parking at origins and destinations, serving the full spectrum of cyclists including users of non-standard cycles., it is NTA's intention to deliver high quality cycle parking at origins and destinations serving the full spectrum of cyclists;
- Measure CYC4 – Cycle Parking Strategies: Local authorities will, as part of Development Plans and Local Area Plans, prepare public cycle parking strategies in order to ensure that there is sufficient short-stay cycle parking available on-street in city, town and village centres;
- Measure INT4 – Major Interchanges and Mobility Hubs It is the intention of the NTA, in conjunction with TII, Irish Rail and the local authorities, to deliver high quality major interchange facilities or Mobility Hubs at appropriate locations served by high capacity public transport services. These will be designed to be as seamless as possible and will incorporate a wide range

of facilities as appropriate, such as cycle parking, seating, shelter, kiosks selling refreshments plus the provision of travel information in printed and digital formats.

NTA will work with Fingal County Council and Dublin City Council, along with other relevant stakeholders, during the further design and development of MetroLink and the implementation of other plans to ensure the appropriate provision of cycle parking and other facilities will be planned and delivered to meet the projected demand in the areas served by MetroLink.

In this regard, NTA considers that the current level of cycle parking provision proposed as part of the MetroLink project is appropriate and that supporting measures will be implemented in line with the Transport Strategy for the Greater Dublin Area 2022-2042 that will ensure adequate provision of cycle parking to meet demand.

Yours sincerely,

Eoin Gillard
Assistant Director - Transport Investment

cc. Hugh Creegan, Mary Darcy - NTA