METROLINK

Integrated Transport. Integrated Life.

TII Response to Submissions of the Elected Representatives at Charlemont Station
04 March 2024

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Rialtas na hÉireann
Government of Ireland

Tionscadal Éireann
Project Ireland
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I. Introduction

This document provides the response of TII to the submissions of the Elected Representatives in relation to the Charlemont station.

It explains why the Charlemont station occupies a pivotal role for MetroLink and Dublin's transport network, not only from a passenger demand and interchange perspective, but also when regard is had to its strategic importance relative to Tara Street Station and St Stephen's Green Station. The success of MetroLink depends to a considerable degree on the high-quality interchange and interaction between Tara Station, St Stephen's Green Station and Charlemont Station in order to achieve an integrated public transport network.

The information provided in this note should also be read in light of the contents of Appendix A7.9 of the EIAR: Terminus Station at Charlemont compared to St. Stephen's Green.

II. Strategic Importance of Charlemont Station

MetroLink forms a key aspect of the vision for the future public transport which is contained in the National Transport Authority ("**NTA**") Transport Strategy for the Greater Dublin Area 2016 – 2035 and the Strategy for 2022 – 2042. The development of MetroLink has been a key objective of overall transport planning for Dublin since 2016. It is a central principle of those transport strategies that projects are developed in a manner which allows for integration between different forms of public transport in the City. The vision of DART, LUAS and MetroLink at 2042 which is contained in the GDA is shown on Figure 1.

Figure 1: Dublin Area Transport Map

The ability of MetroLink to integrate with other forms of public transport, in particular allowing for interchange with DART and LUAS, is essential to the delivery of the Transport Strategy for the Greater Dublin Area and was an important differentiator in the route option assessment. Some of the core parts of the overall objective for Metrolink were the need to *"Support public transport network integration by providing high quality passenger interchange points, which facilitate convenient transfer between public transport modes at key locations"*, to *"Deliver a high quality service with journey time reliability"*, to *"Cater for existing and future public transport demand along the corridor"* and to *"integrate appropriately within the existing public realm .*[1]

[1] New Metro North Alignment Options Report, 2018

Tara Station plays a key role in this integration, providing the interchange with the DART, and was identified as the optimum location for this interchange. It will be the busiest station in the city centre with significant numbers interchanging and accessing the local catchment.

The options for an interchange with the Luas Green Line were identified as St Stephen's Green and Charlemont. An explanation is provided below as to why St Stephen's Green West is not an optimum location for an interchange and was identified as having additional environmental impacts over and above the station location proposed. We have also summarised the key environmental and engineering challenges with locating a station at St Stephen's Green West, and why this location was deemed not to satisfy the MetroLink project's core objectives. For all of the reasons explained below, Charlemont operates better as an interchange.

Charlemont is also the optimal location for a station in its own right, as it serves an existing and growing demand and sizable catchment just minutes away, as described in section 3 below. It also delivers a quick, co-located interchange with a section of the LUAS Green line which has the capability to increase capacity to respond to rising future demand.

A station at Charlemont meets the NTA's transport strategy policy of providing metro extension possibilities in the future. It also delivers on the policy of contributing a key transport interchange, within an integrated transport system where MetroLink provides a high capacity north-south interconnection with public transport routes across the GDA.

III. Charlemont as a Station

The section of MetroLink route between St Stephen's Green and Charlemont Stations serves a significant area of the south city of Dublin and offers enhanced access to/from the local area from the city centre, Glasnevin, DCU, Dublin Airport and Swords, with direct connections to the DART and Irish Rail services at Tara and Glasnevin.

There is strong travel demand from this area, which forms part of Dublin's central business district with a significant number of jobs, businesses and economic activity at Charlemont Street, Harcourt Road and along Grand Canal. That travel demand is driven by both existing communities and the major developments which are either recently constructed or currently underway, including mixed use sustainable neighbourhood developments, such as Charlemont Square, Park Place and the former Garda headquarters and the site at the junction of Charlemont Street and Harcourt Road. The area is illustrated in Figure 2.

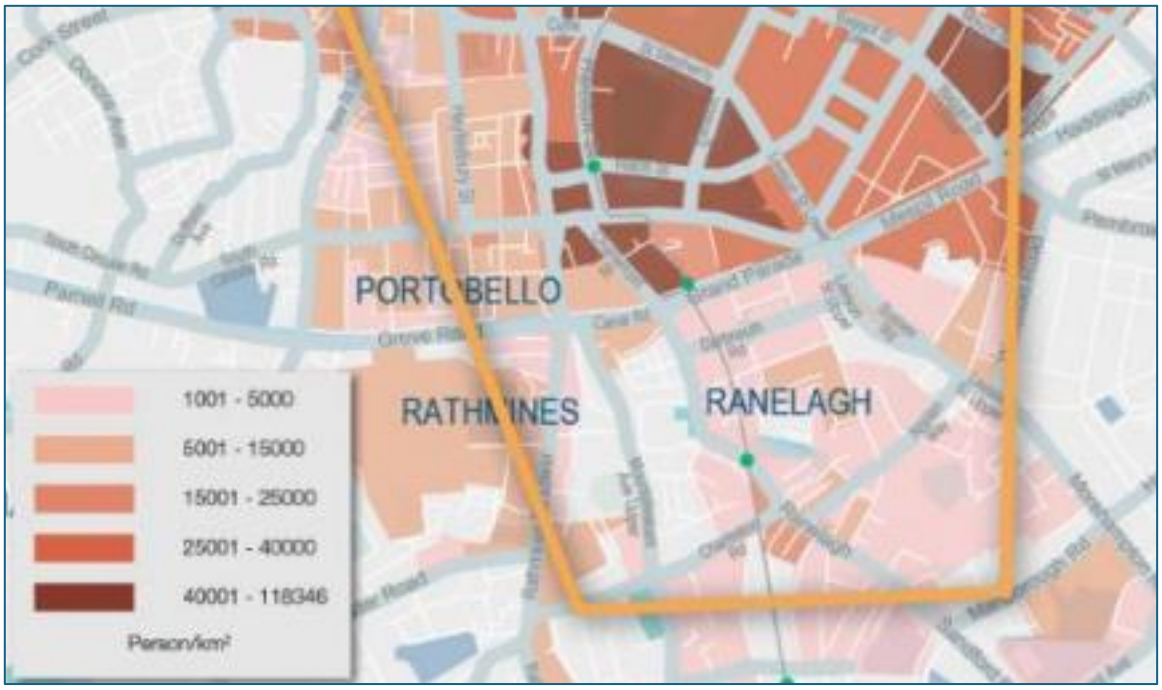

Figure 2: Person trip density surrounding MetroLink Charlemont Station (Arup EPR Study)

Figure 3 below provides estimated walking times to a number of key trip attractors within 5 minutes of the station and demonstrates the strong demand for travel to and from the area which will be serviced by the Charlemont Metro station.

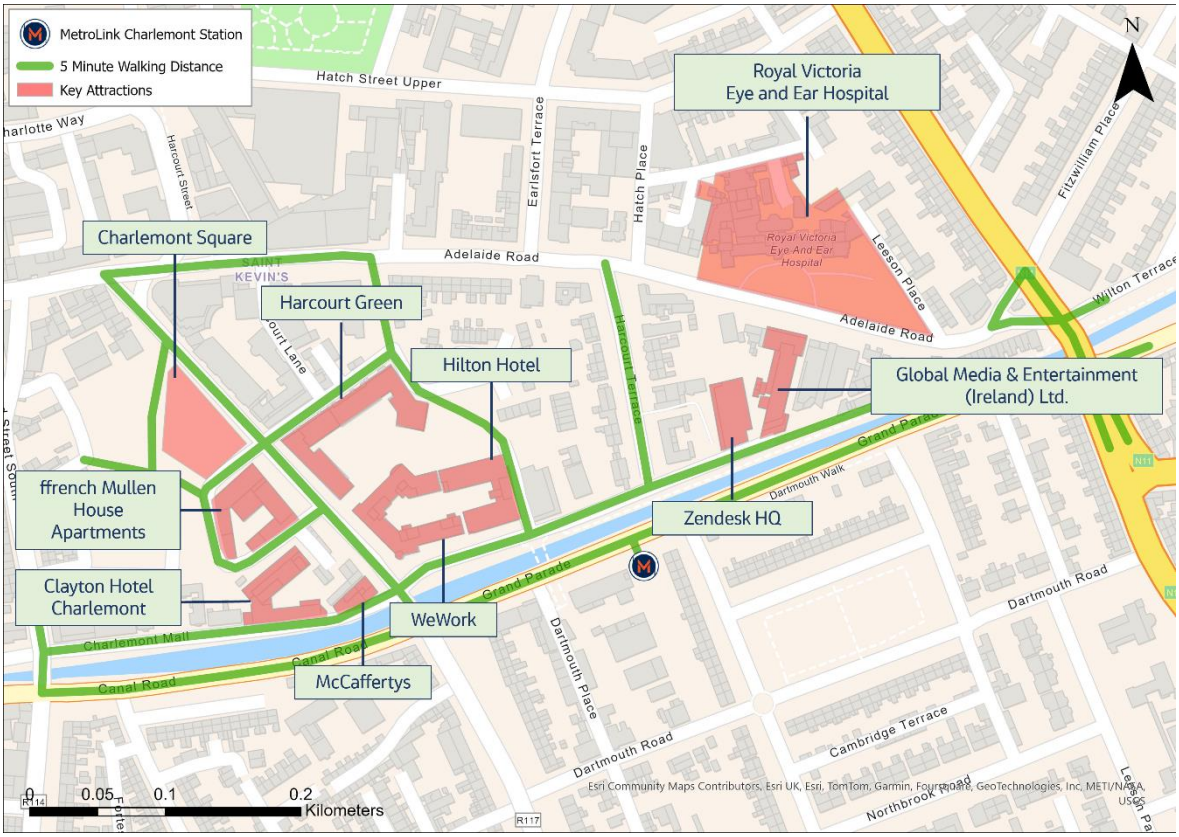

Figure 3: Trip attractors within 5 minute walk of North of Charlemont Station

Population and employment forecasts indicate that, in the opening year (2035), there will be close to 19,000 jobs within a 10-minute walking distance of the station, a figure which increases to 27,000 jobs in 2065. Further, it is projected that there will be a residential population of close to 9,600 people within a 10-minute walk of the station in 2025, a figure which increases to 10,900 in 2065.

These factors contribute towards high passenger boarding and alighting figures in the peak hours.

During the morning peak hour, at Charlemont station, the flows include 2,600 passengers alighting, 1,700 boarding, with 1,300 passengers alighting and 2,300 boarding during the evening peak (17:00-18:00). This amounts to over 30,000 trips daily during the opening year (2035), a figure which will increase to over 40,000 by 2065. The station is projected to be one of the busiest along the alignment.[2]

The vast majority of the local catchment demand is well within 10 mins walking distance of the station, an easy walk or cycle distance of the station. As a metro station it is integrated

[2] Scenario A of EIAR, 12hr provided for daily numbers.

within the fabric of the urban space and community and allows the surrounding catchment to travel by foot/cycle and public transport without the need to drive to the station.

The passenger numbers using the Charlemont station contribute significantly to the overall benefits of the scheme and these benefits outweigh the additional costs that are associated with the delivery and operation of the section from St Stephen's Green to Charlemont station.

The estimated cost for the section of the route between St Stephen's Green and Charlemont is approximately €575million (including indirect, risk and inflation costs but excluding VAT). With capital costs associated to tunnel, station and railway system works accounting for €264million of that amount with risk allowance, inflation and client costs accounting for remainder.

Termination of the route at Tara Street is estimated to reduce the overall benefits of the scheme by €1.5bn (Preliminary Business Case, page 68). Given St Stephen's Green Station is located midway between Tara/Charlemont those benefits would reduce by €750m, (40-50% of the €1.5bn estimated for Tara truncation).

IV. Charlemont in the context of the overall line

A consideration of Charlemont as an appropriate location as both a station on the MetroLink alignment and a terminus station for the alignment cannot occur in isolation. Instead, it is important to understand the choice of location in the context of the overall alignment and, in particular, the location of the three stops on the south side of the city.

South of the river, it is proposed that MetroLink will have stops at Tara, St. Stephen's Green East and Charlemont. This proposed alignment is the optimum overall choice which will allow MetroLink to serve a significant population while also providing for easy interchange with existing public transport.

The first stop south of the river is at Tara, a station which is already a critical interchange for the DART and is anticipated to be the second busiest station along the alignment after Dublin Airport. The placement of a MetroLink station at Tara allows for easy interchange between MetroLink and the northbound and southbound DART coastal lines, which is the busiest public transport corridor in Ireland. It will also allow for integration with bus services, including future

Bus Connects spine and city centre core routes, providing connections both within the city and its outskirts. This location is in a core part of the City Centre with high travel demand and the opportunity to integrate and interchange with the DART line at the Tara station. The Tara DART station accommodates movements of over 19,000 trips on a daily basis (2019 Rail Census), making it the 4th busiest station in the country, with numbers similar to Heuston station. It is anticipated that, by 2035, the Tara MetroLink station will accommodate close to 37,000 passenger trips per day with approximately 17% of those passengers (i.e. 6,400) interchanging between Metro and the Dart and a similar number interchanging to the bus services.

The second stop south of the river is St. Stephen's Green and it is proposed that the station will be located on the eastern side of the Green.

A station on the eastern side of St Stephen's Green has a critical role to play in providing a direct and short route through an area of high demand in the City Centre and serves key trip attractors such as the South City Retail Core, St. Stephen's Green, National Galley, National Museum and significant employment areas, with 57,000 jobs within 10 minutes of the station in the 2035 opening year.

St. Stephens Green East plays an important role in the city's transport network. It is designated as a secondary strategic pedestrian route, a primary cycle route in the Greater Dublin Area Cycle Network Plan (NTA, 2013), and provides interchange with the BusConnects Spine Routes E, F and potentially Spine Route A (following the planned closure of College Green).

As identified by the Emerging Preferred Route assessment, St Stephen's Green East is the preferred location for a station at St Stephen's Green due to the direct interchange required at Tara DART station. As a result, the location of the station on St. Stephen's Green East facilitates strong integration with all modes within the transport network.

The final proposed stop on the south side of the city is Charlemont itself. The location of a station in this part of the city will significantly enhance the availability of public transport on the south side of the city.

The station will provide north bound Luas passengers with the option of transferring at Charlemont to MetroLink services providing onward connection to Tara and Glasnevin Stations with connection to Irish Rail services, Dublin Airport Station, and Swords., whereas

southbound MetroLink passengers can opt to transfer to the Luas line at Charlemont for services to Ranelagh, Sandyford and Cherrywood.

The proximity of MetroLink to the Luas line at Charlemont will promote a positive customer experience for all users with short interchange distance, clear wayfinding and high visibility of interchange. In particular, the interchange between Luas and MetroLink will be a single level change and is a distance of approximately 60m based on the addition of the Luas platform stairs to the east of the Luas line.

It will take approximately 3 minutes to walk from the MetroLink platform to the Luas platform (or 2.5 minutes using lifts) when calculated in accordance with the methodology contained in Appendix 7.9 of the Consideration of Alternatives chapter of the EIAR (A7.9 Terminus Station at Charlemont compared to St. Stephen's Green).

The interchange arrangements at Charlemont provide for significantly better interchange arrangements, when compared to an interchange at St Stephen's Green East. Passengers wishing to interchange between Luas and metro at St Stephen's Green would face a 500m-walk along a route, either through St Stephen's Green park or along the footpath north of the park, which adds significantly to the time for interchange and therefore the overall journey time for passengers and a less positive customer experience for all interchange users.

As above, in accordance with the methodology set out in A7.9 (Terminus Station at Charlemont compared to St. Stephen's Green), it would take approximately 7.6 minutes to walk from the MetroLink platform to the Luas platform (or 7.4 minutes using the MetroLink lifts). This passenger experience would be reduced further for those with mobility or visual impairments, parents travelling with buggies and prams, and those travelling to/from the airport with luggage.

V. **The terminus of MetroLink**

The MetroLink alignment proposes to have three stations on the south side of the city, with the terminus point being at Charlemont. Whilst this is the terminus of MetroLink, it is not the terminus of the transport network; Charlemont is at the heart of the integrated transport network for Dublin. The combination of these three stations permits MetroLink to serve a significant population within the city and allow for careful integration of different public transport

networks, ensuring connectivity within the city and to the outskirts by way of the existing public transport schemes.

Once a decision was made not to upgrade the Luas Green Line to Metro standard as part of the proposed project, it was necessary to determine the most appropriate termination location for the MetroLink project. Charlemont was considered to be the most appropriate terminus location, as it provides a superior interchange with existing public transport when compared with that which would be available at St. Stephen's Green. In summary, Charlemont operates as a better terminus location for the following reasons:

- A shorter interchange walking distance at Charlemont, with almost 5 minutes shorter interchange time when compared to St Stephen's Green;
- Charlemont bypasses capacity constraints on the Luas on-street running section between St Stephen's Green;
- Charlemont avoids more significant environmental impacts on St Stephen's Green.

These points are elaborated upon below.

First, providing for a terminus at Charlemont allows for a superior interchange with existing public transport, including the LUAS than that which would be available at St. Stephen's Green East. As explained above, the interchange time between MetroLink and Luas at Charlemont is approx. 2.9 minutes, significantly shorter than the 7.6 minutes which is required to transfer between MetroLink and Luas at St. Stephen's Green. Further, the transfer which will occur at Charlemont is more straightforward and is evident from the time at which a person exits the MetroLink Station. By contrast, the MetroLink and Luas stations are not visible from each other and would require passengers to navigate either around or through the Green.

Second, there are significant capacity constraints on the Luas Green line between St. Stephen's Green and Charlemont because of the interaction between that line and on street traffic and the speed at which trams can travel beyond the Harcourt Street stop.

The section of the Luas Green Line from Charlemont to St. Stephen's Green is almost all on-street, with shared running with traffic and junctions with a key east-west city centre route at Cuffe Street/St. Stephen's Green South. This route forms part of key cross-city BusConnects spine routes which are intended to be developed. Given the importance of these bus corridors,

they will be given priority at the Harcourt Street / St. Stephen's Green South junction, and the number of tram movements in any given hour through this junction will remain limited to accommodate public transport flows though this key east-west connection.

In addition, there is a 10kph speed limit for trams north of Harcourt Street because of the design of the route and the interaction with the existing street network. That results in a maximum theoretical limit of 24 trams per hour through this section. However as stated earlier, it is difficult to achieve this maximum limit at peak hours because of the interaction with traffic on the roads and in practice, there is a limit of approximately 20 trams per hour on this section of the Luas Green line.

From Charlemont south to Sandyford, a greater level of future capacity increase to 30 trams per hour is achievable as this section of the Green Line is constructed predominantly within the original railway cutting of the old Harcourt railway line and is largely segregated from its surrounds within those sections. Given that the frequency of service determines the available capacity of the line, and each tram currently operating on the Green Line can carry 408 passengers, a service of 20 trams per hour can provide a passenger carrying capacity of 7,344, whereas 24 trams per hour and 30 trams per hour will carry 8,813 and 11,016 passengers respectively.

Consequently, locating a terminus at Charlemont provides a direct interchange to the Luas Green Line at a point where there is the possibility for increased capacity (following upgrade interventions as described in the TII report "Luas Green Line Peak hour capacity requirements south of Charlemont" published in March 2019), rather than at St. Stephen's Green where no practical interventions to further increase line capacity is feasible, and as such, providing for the terminus of MetroLink at St. Stephen's Green would place significant demand pressure on a fixed capacity section of the Green Line and would not deliver on the stated policy goals of an integrated transport system.

Third, the location of the terminus at St. Stephen's Green would cause additional environmental impacts on St. Stephen's Green, which is acknowledged to be a sensitive location.

In particular, the terminus station requires a 360-metre overrun tunnel to allow for the turnback and stabling of trains. As this tunnel is a cul-de-sac, a protected escape route from the end of

the turnback tunnel for the evacuation of MetroLink staff (no members of the public would be permitted within this tunnel section) and for the intervention of emergency services is required.

This would require the construction of either:

- A separate evacuation and ventilation tunnel running parallel to the turnback tunnel for the full length, with a connection back to the station to provide both a protected escape route from the end of the tunnel back to the safety of the station and a smoke extract tunnel when escaping via the main tunnel back toward the station, or
- A mined connection tunnel from the dead-end turnback tunnel to an independently located escape shaft, including ventilation and pressurised stair core.

Option 1: Separate Evacuation and Ventilation Tunnel

Assuming that the same solution which has been identified for Charlemont could be used at St. Stephen's Green, it would be necessary to construct an additional structure to the side of the station box to receive the escape tunnel, provide an escape route back into the main station for those using this route, and to provide ventilation equipment specifically for the tunnel (both to provide pressurisation for escape and to extract smoke depending on the incident). This additional space requirement at Charlemont introduces an additional 17.3 metres localised widening and is illustrated in Figure 4 below.

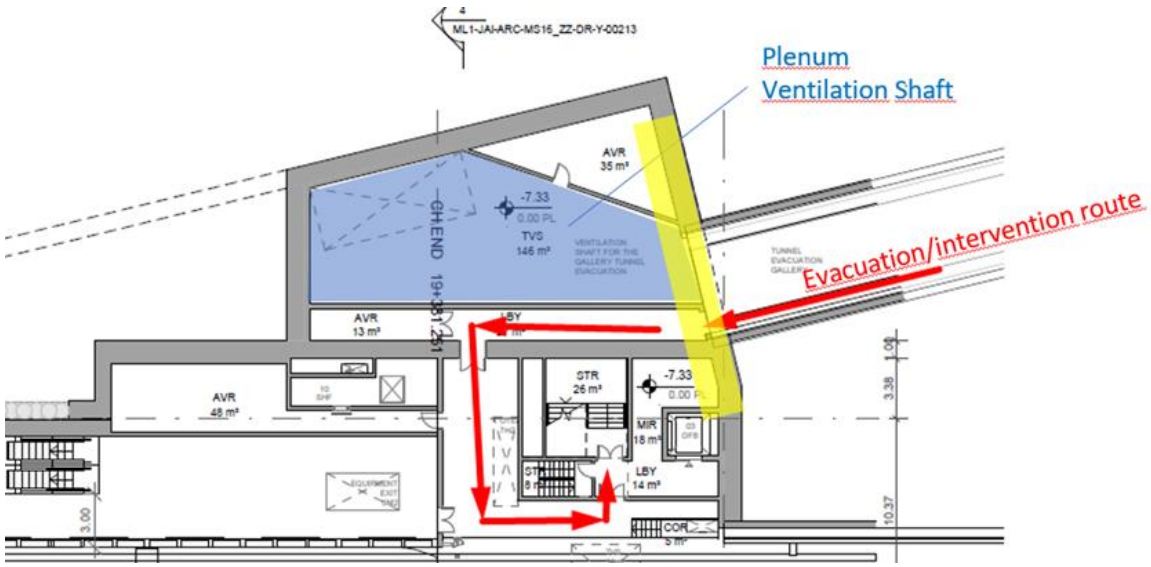

Figure 4: Parallel tunnel connection to ventilation shaft and evacuation/ventilation route through station

Applied to the current station design at St Stephen's Green East, two possible configurations of this arrangement are feasible:

Side tunnel towards St. Stephen's Green East

In this configuration, the evacuation/ventilation tunnel parallel to the main tunnel is running below the road and connected to the station structure as indicated in Figure 5 below.

The result of introducing this 17m width structural section on the side of the station box at St. Stephen's Green to connect to the evacuation/ventilation tunnel is significant environmental impacts to the St Stephen's Green East Road, common to the impacts associated with the construction of the full station within the carriageway as described in Appendix 7.7 of the Consideration of Alternatives chapter of the EIAR (A7.7 St Stephen's Green Station Study - Alternative Station Location within St Stephens Green East Carriageway), including:

- Temporary diversion of existing large Victorian ovoid sewers (1.8 x 0.9m and 1.7 x 1.1m) to facilitate construction. It is estimated that any diversion of these sewers would add between 12 and 15 months to the construction programme, and result in significant disruption to the Irish Water sewer network.
- 1.2km diversion of an existing high voltage ESB cable away from the construction area.
- A partial closure of St Stephen's Green East road during construction (potentially requiring a full closure at times to construct the piled walls of the protrusion) which would significantly impact this important transport corridor.
- Time delay and cost of constructing this structure within the carriageway; and
- The requirement for the construction area close to very sensitive properties to the east side of St Stephen's Green carriageway, such as the Loretto school with potential for significant environment impacts on these buildings if not mitigated.

Additional ventilation grilles, to allow for the extract of smoke from the side tunnel, would also be required, either within the footpath to the east or the west.

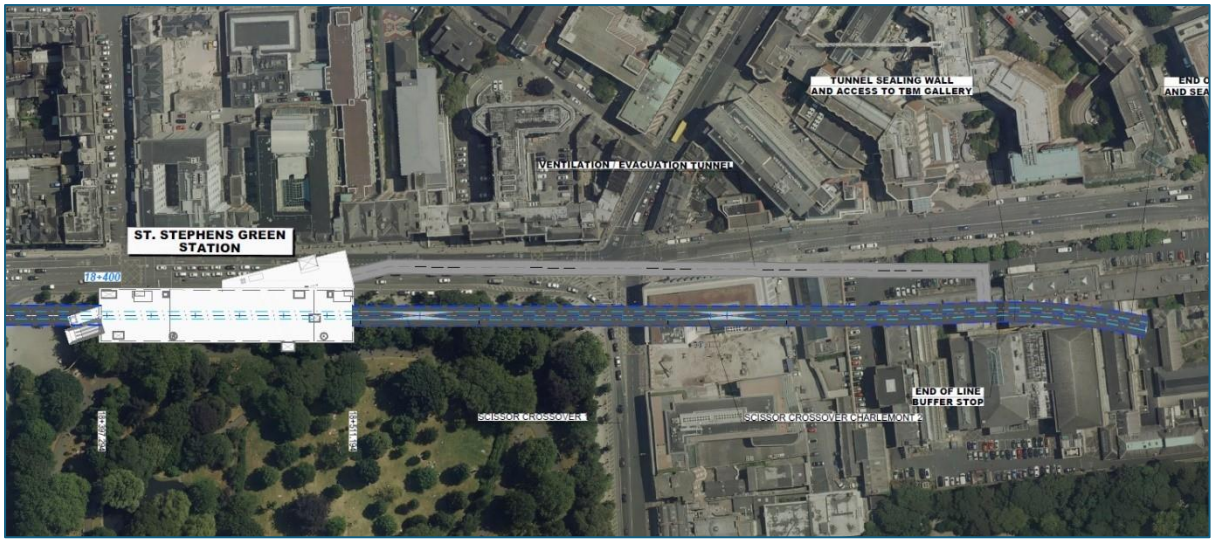

Figure 5: St Stephen's Green East as a terminus with evacuation/ventilation tunnel to the east

Side tunnel towards St Stephen's Green park

In this configuration, the evacuation/ventilation tunnel parallel to the main tunnel is running beneath St Stephen's Green park and connected to the station protrusion as indicated in Figure 6 below. As a result of constructing this additional section on the side of the station at St Stephen's Green, there would be a much more significant construction area required within the park. This would result in a more profound impact on the National Monument, beyond that arising due to the required construction of the station. These impacts are considered unacceptable as MetroLink aims to minimise impacts on the National Monument. Such additional impacts on St Stephen's Green would include:

- Additional temporary land take from SSG park, including the requirement for additional tree removal;
- More extensive impact on the amenity of the park as works would take a more significant footprint in closer proximity to heavily utilised areas of the park such as the playground and the lakes during the construction phase;
- A prolonged construction phase affecting the park for a longer duration; and
- The requirement for additional ventilation pop-ups potentially required within the park boundary.

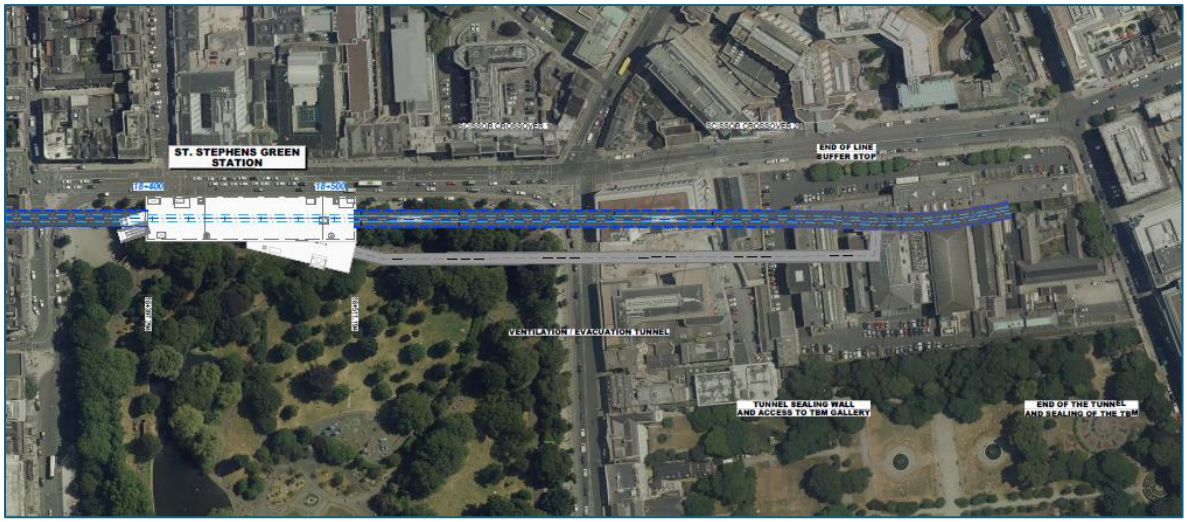

Figure 6: St Stephen's Green East Terminus with evacuation/intervention tunnel to the west

Option 2: Construction of Ventilation / Escape Shaft

The second option is the provision of a ventilation/escape shaft connected to the dead-end turnback tunnel via a mined tunnel connection. The size of shaft and dimensions of the mined tunnel connection assessed for this particular option at Charlemont (Appendix 7.4 "Charlemont Shafts Options Report") is based on Figure 7. However, the diameter of the shaft and mined tunnel connection to the turn-back tunnel is dependent on the distance between the turnback tunnel and the shaft, as the further away they are from each other, the greater the extent of ventilation equipment is required to extract smoke with the same performance as a shaft much closer to the turnback tunnel.

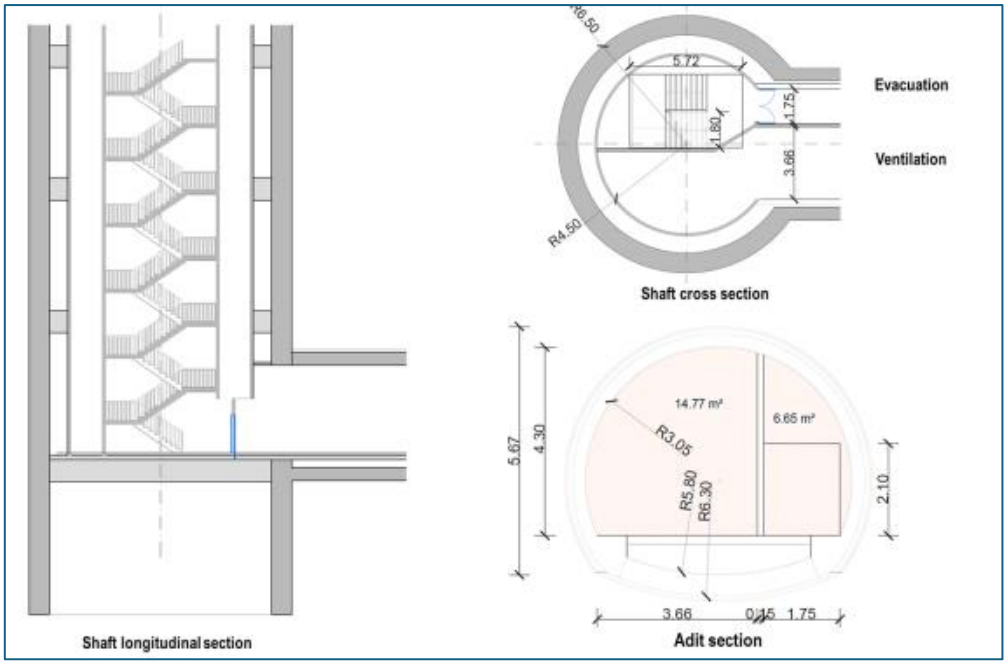

Figure 7: Ventilation and escape shaft (and mined connecting tunnel) dimensions.

Applied to St Stephen's Green East, a surface location in proximity to the turnback tunnel is required to facilitate a 13-metre diameter, 20 metres deep intervention shaft that can be constructed. In addition, the mining of a further shaft to meet this intervention shaft would be required. Undertaking the excavation of such a significant structure in this part of the city would be very challenging due to the built-up nature of this area with no available unused brown field sites available. The construction of an intervention shaft here would mean that the works required would have potential to have significant impacts on adjacent properties arising particularly from noise and vibration.

As can be seen from the foregoing, regardless of the option and configuration selected, the selection of the MetroLink station at St Stephen's Green as the terminus would result in significant additional environmental impacts above those identified in the Environmental Impact Assessment Report arising from the construction of the proposed station.

Separately, as discussed above, making provision for a station at Charlemont allows MetroLink to serve a significant population at a key transport interchange location. The removal of this station would mean that, overall, MetroLink would serve a smaller population and would result in poorer interchange between existing public networks on the south side of the city. This would reduce the benefits which will be generated by the project.

Finally, the location of the terminus of MetroLink at Charlemont allows for future proofing of the extension of MetroLink further south, either by way of a connection to the Luas Green Line or an alternative metro route alignment to the southeast or southwest of the city. To assess these potential future routes, NTA commissioned two studies into the potential for a future extension of metro services to Rathmines, Terenure and Knocklyon to the southwest, and UCD and Sandyford to the southeast. In both reports, feasible alignments originating from the Charlemont MetroLink station servicing these areas were derived, demonstrating the potential of Charlemont as an origin point for future potential southern extensions of MetroLink services.

VI. The option of terminating at St. Stephen's Green West

The New Metro North Alignment Options Report identified no feasible route alignment that provided both a station at Tara Street (see section 4.7.1) and a station at St Stephen's Green West, meaning the alignment of the metro would not have an interchange with the northern or southeastern line of the DART, and significantly reduce the interchange benefits of the scheme.

Separate to the question of whether it is feasible to have an alignment between Tara and St. Stephen's Green West, there are significant disadvantages to locating a MetroLink station at St. Stephen's Green West.

While having a terminus at St. Stephen's Green West would improve the interchange experience between MetroLink and the Luas Green Line, the significant issues relating to the capacity of the Luas Green Line between St. Stephen's Green and Charlemont remain. Locating the terminus of MetroLink at St. Stephen's Green would result in a significant volume of demand being introduced to a section of the Luas line with no resilience to increase capacity to match. This would have consequential negative impacts to Luas operations and the ability to quickly move passengers southbound through this section. This would not "*Cater for*

existing and future public transport demand" and would reduce the "*quality of service and journey time reliability"* on Luas, directly opposite to the objectives of the Metrolink.

The location of a terminus station at St. Stephen's Green West would not prejudice the future development of MetroLink to the south or southwest of the city. Neither, however, does the location of the terminus at Charlemont. Moreover, given the serious limitations which exist in respect of the capacity of the Luas Green Line at this location, it is a poor location for an interchange between different public transport schemes.

Compounding this is the fact that the area around the Luas Green Line stop at St. Stephen's Green West is a destination in its own right, with the main entrance to St. Stephen's Green Park through Fusilier's Arch combined with pedestrian movements to Grafton Street and other key retail areas close by. With the addition of passengers changing between Luas and MetroLink services, pedestrians availing of the surrounding streets will experience poor comfort levels from crowding. This would have a negative impact on the surrounding public realm and be contrary to the objective of Metrolink to "*be designed to integrate appropriately into the existing public realm".*

Further, locating a station in St. Stephen's Green West would result in additional significant environmental impacts. In addition to the impacts from providing the turnback tunnel and evacuation facilities as described above for St. Stephen's Green East, the alignment between the proposed Tara Station and a station on St Stephen's Green West is less direct than between Tara and St. Stephen's Green East. As a result, the length of the alignment between Tara Street and St. Stephen's Green West would be greater than 1000m long and, thus, would necessitate an intermediate intervention shaft located somewhere between these stations to comply with the MetroLink fire strategy. Additional construction would be required to provide such a facility, similar in size to the proposed Albert College Park Intervention shaft. This could feasibly be situated in the Trinity College Dublin sports grounds but would have additional significant environmental impacts and cost.

Maintaining Luas operations during station construction would also be complex and challenging with significant disruption to the Luas Green Line expected, whilst the impacts on St Stephen's Green Park would be greater for a station in this location compared to St. Stephen's Green East. This would be the result of the likely need to place more of the station

in the park, as compared to the proposed station on St Stephen's Green East, due to the limited available area to the west of the park.

As a result, there is potential for a more significant impact on an area of the park that is more heavily utilised by the public with greater amenity value than St Stephen's Green East. This side of the park provides the main entrance points to the park, including the Fusiliers Arch entrance and is the most used part of the park by visitors. Attractions here include the lakes, the bandstand and a number of monuments such as the Lord Ardilaun monument

VII. Conclusion

Charlemont is an optimal location for a MetroLink station to allow for the future extension of metro services "*…southwards towards UCD, or along the existing Luas Green Line, or towards southwest Dublin*" as set out in the NTAs GDA Transport Strategy 2022-2042. Even in the absence of this requirement to make provision for a future tie-in to, and the conversion of the Green Line to MetroLink standard, Charlemont remains an optimal location for a MetroLink station for the reasons outlined in detail above.

Charlemont has sufficient catchment and demand to justify a station in this location, with major mixed-use developments, multinational main offices, hotels, pubs and restaurants and residential use all within a five to ten-minute walk from the station.

Charlemont also provides an optimal interchange point with the Luas Green Line, providing connection to passengers to a segment of the line that can be upgraded in capacity far closer to the capacity of MetroLink than any section of the Green Line north from Charlemont station, including the section to St. Stephen's Green, with tight bends reducing speed, and junctions with major east-west traffic corridors south of the park.

As discussed above, making provision for a station at Charlemont allows MetroLink to serve a significant population at a key transport interchange location. The removal of this station would mean that, overall, MetroLink would serve a smaller population and would result in

poorer interchange between existing public networks on the south side of the city. This would have a consequent impact on the benefits which will be generated by the project.

While the interchange with Luas at Charlemont will relieve some demand pressure on the Green Line north, the opposite can be said in a scenario where MetroLink terminated at St. Stephen's Green, as an interchange at this location with Luas would generate sizable demand on a section of the line that cannot practically increase capacity to compensate. In addition, the requirement to provide a safe means of escape from the turnback tunnel, which is implemented in Charlemont and would need to be replicated at a terminus St. Stephen's Green station, would result in significant additional impacts over what has currently been assessed in the proposed scheme either to the key traffic routes on St. Stephen's Green East, or to the park itself.

Finally, the location of the terminus of MetroLink at Charlemont allows for future proofing of the extension of the metro further south, either by way of a connection to the Luas Green Line or an alternative metro route alignment serving the southeast or southwest of the city.

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