Submission No.	010
Organisation Name or Name of Submitter	Andrew Whelan (14 Stonepark Abbey, Rathfarnam)

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Observation: Railway (Metrolink - Estuary to Charlemont via Dublin Airport) Order 0222				
1	Letter - introduction	1	To ensure a proper planning and sustainable Dublin transport solution for the next 50 years, ultimately TII's goal should be a LOA4 (Level of Automation 4) Metrolink spine running North/South. This TII railway order is but half that solution.	As described in EIAR Chapter 6 MetroLink Operations and Maintenance, section 6.4, it is proposed that MetroLink will operate at Grade of Automation GoA4 (referred to in the submission as L0A4) which means that the trains will be fully automated.
2	Introduction	1	With the utmost of respect I have concerns that the incumbents in TII have unfortunately hamstrung the next generation of designers in two key areas: 1) The inappropriate selection of Charlemont as the Southern Metrolink Terminus. 2) Insufficient airport stakeholder engagement to determine future Capacity enhancements requirements at Dublin Airport.	TII's role is to deliver the MetroLink project as provided for in the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and as supported by the Dublin City Development Plan 2022 - 2028. The Board is required to have regard to the likely consequences for proper planning and sustainable development in the area in which it is proposed to carry out railway works (section 43(1) of the 2001 Act). The connection from St Stephen's Green to Charlemont / Ranelagh is provided for by the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and further the location of the interchange is supported by the Dublin City Development Plan 2022 - 2028. All the observations made by this submission have been responded to, including the rationale for the proposed MetroLink / Luas Green Line interchange at Charlemont and the concern that the proposed Airport Station does not have sufficient capacity.
3	1.0 Executive Summary	1	1) A Luas terminus spur to the St Stephen Green East station (SSE), incorporating a turn back, should be designated the southern Metrolink terminus.	A Luas spur to St Stephen's Green East Station (MetroLink SSG station) incorporating a turnback does not form part of the MetroLink project. Whilst such a spur might be considered if MetroLink were to terminate at St Stephen's Green East, it is unlikely that such a spur could be justified, in particular due to the significant additional interventions that would be required within St Stephen's Green Park to accommodate the additional Luas tracks; and it would unlikely be merited from an economic perspective given that the distance between the two stations would be an approximately 480m or 7 to 8 minute walk via the north side of St Stephen's Green Park.
4	1.0 Executive Summary	1	2) The Metrolink design should incorporate future Airport capacity enhancements without disturbing the operational line.	TII can confirm MetroLink has been designed and future proofed for the Airport capacity forecast for c.2060 of between 50 to 55 million passengers using Dublin Airport, with MetroLink designed to be capable of carrying up to 20,000 passengers per hour in each direction. Furthermore a detailed microsimulation analysis has been undertaken in order to confirm that the proposed station at Dublin airport has sufficient capacity. This analysis includes taking account of the capacity of platforms, escalators and lifts for predicted passenger demand during the AM and PM peaks. The forecast demand for passengers at the Airport has been developed with reference to the DTTAS report "Review of Future Capacity Needs at Ireland's State Airports" with the demand at 55 million passengers per annum in the 2057 forecast year. The Airport station design includes for six escalators that will connect ground level with the concourse level and the concourse with the mezzanine, and four escalators that will link the mezzanine and platforms. Six high capacity escalators will connect the street with the platforms, and another six lifts will connect the concourse and the platforms. The proposed station layout including platforms is shown to offer acceptable performance levels for both AM and PM peak hours, and even when 2057+25% is considered, any congestion is within acceptable levels.
5	1.1 Background	2	Therefore of note, is the fact that this RO does not give any long term detail to the southern portion of the Metrolink spine.	TII's role is to deliver the MetroLink project as provided for in the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and as supported by the Dublin City Development Plan 2022 - 2028. The scope of the MetroLink Project does not include for a line beyond Charlemont, however, the location of the interchange at Charlemont does not preclude onward extension south. An interchange at Charlemont is supported by policy including the Dublin City Development Plan 2022 - 2028 and the Transport Strategy for the Greater Dublin Area. Further, as noted by the GDA Transport Strategy 2022-2042, section 12.3.2, "Charlemont offers the optimal location for the primary interchange with the Green Line in response to growing demand in the longer term and is an appropriate location to facilitate any potential future metro extensions to serve the south west, south or south east of the city region should sufficient demand arise."

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6	1.2 Metrolink Terminus: Charlemont V's St Stephen Green east.	2	Southern Terminus: A Luas Terminus spur to the St Stephen's Green station (SSE), incorporating a turn back, should be designated the southern MetroLink terminus.	Please refer to Response (3) above.
7	1.2 Metrolink Terminus: Charlemont V's St Stephen Green east.	2	In relation to TII choice of Charlemont over St Stephan Green East (SSE) as outlined in EIAR Volume 2 Chapter 7 Consideration of the Alternatives P63 Section 7.7.8 and Table 7-16. I am sceptical that this future proofing of Metrolink can be achieved at Charlemont.	Your observation " I am sceptical that this future proofing of Metrolink can be achieved at Charlemont." is noted. However, TII can confirm MetroLink has been designed and future proofed to accommodate a future extension southward if required. TII's role is to deliver the MetroLink project as provided for in the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and as supported by the Dublin City Development Plan 2022 - 2028. The terminus at Charlemont is provided for by the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and further the location of the interchange is supported by the Dublin City Development Plan 2022 - 2028.
8	1.2.1 Is TII transfixed on Charlemont?	2	New Metro North (NMN) has morphed within a revised "draft" GDA strategy - from a light rail tram system to an automated high floor Metro carriage system. From operating power supply, to platforms, to segregation issues and carriages, neither transport modes are compatible.	It is not intended to run Luas light rail trams on the Metro system or vise versa. At the time of the Fingal/North Dublin Study (2013) forecasted peak hour demand for the preferred scheme (LR7) was a design capacity of 9,900pphpd (passengers per hour per direction), operated at maximum two minute headways. Subsequent transport modelling carried out on the route between the publication of the Emerging Preferred Route and Preferred Route forecast AM southbound line flows in excess of 18,000 pphpd and forecast PM northbound line flows of 13,500pphpd. This increased transport demand is attributed to the fact that demographic, housing density, employment patterns have all changed since the modelling work to support the earlier scheme. Based on the updated transport demand figures, NTA/TII agreed that the MetroLink baseline design capacity should be increased to 20,000pphpd. The capacity of a rail system is the result of the unit capacity delivered by a single vehicle multiplied by the service frequency measured in Trains Per Hour (TPH). Unsegregated rail-based systems have an ability to carry a maximum capacity of 7,000 pphpd, increasing to 11,000 pphpd where a high level of segregation can be achieved. This was the operational concept that was used for LR7. Where demand exceeds this level, metro/light metro systems, which have a capability of carrying up to 20,000 pphpd or more, are the most appropriate system and on this basis NTA/TII defined the appropriate type and level of service for MetroLink to be a fully segregated, high floor GoA4 metro, facilitating a high frequency service with shorter trains and stations than would otherwise be required. More information is available in the Preliminary Business Case, Appendix O, Evolution of MetroLink Alignment, System Capacity and Design. It is correct to say that Luas and MetroLink are not technically compatible in so far as it is not intended that Luas rolling stock will run on MetroLink tracks or vice versa, both systems are currently independent of one another. They are however complementary modes forming part of the overall integrated transport strategy for Dublin as described in the current Transport Strategy for Greater Dublin Area (2022-2042) and as supported by the Dublin City Development Plan 2022 - 2028. The compatibility of the systems is derived from their inter-connectivity. As outlined in EIAR Chapter 3, the proposed Project is part of an integrated transport network that also includes for BusConnects and DART+ which are all included under Project Ireland 2040. Together, these projects will result in a reliable, sustainable, affordable, integrated public transport network that will support the economy, help Ireland meet its climate change targets in line with Climate Action Plan 2021 and make Dublin a more liveable and sustainable city. Whilst MetroLink is a standalone project that is not dependent on any other projects for its delivery or effective operation, it is nonetheless a critical part of the proposed integrated transport network for the Greater Dublin Area.
9	1.2.1 Is TII transfixed on Charlemont?	3	1) A L0A4 autonomous Metrolink system joining a manually operated Luas green line is quite evidently portrayed by TII as problematic.	Whilst connecting and extending the MetroLink service to the Luas Green line is challenging, it is however possible and could be implemented over time. As described in the EIAR Chapter 7, Section 7.7.7, Luas Green Line Deferral, significant works would be required to the existing infrastructure to accommodate the new MetroLink rolling stock and enable full segregation of the route. Notwithstanding the current postponement of this element of works, the option of extending MetroLink services onto the Green Line is retained in the current Transport Strategy for Greater Dublin Area (2022-2042).

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10	1.2.1 Is TII transfixed on Charlemont?	3	2) The Board Inspector must be acquainted with the LGLTI (Luas Green Line Tie in) appraisal study. TII chose Option 4B tie in, however they overlooked the Grand Canal Sewer obstacle - hence option 4B tie in was subsequently shelved. Consequently, NMN and now Metrolink is therefore being left underground with literally nowhere to go or resurface. 3) Why therefore does TII still profess the long term option of a future Green line - Sandyford tie in?	The proposed MetroLink alignment has not been extended south of Charlemont for the reasons set out by the GDA strategy , section 12.3.10, "The challenges associated with the upgrading of the Luas Green Line to a metro standard of service have led to the emergence of an alternative proposal which seeks to meet travel demand from south of Sandyford along a new light rail corridor which serves UCD post-2042. As such, the upgrading of the Green Line to metro standard is not being pursued as part of this strategy. Instead, for this strategy period, the capacity and frequency on the current Green Line from Sandyford northwards to the city centre will be incrementally increased through the provision of additional tram fleet and services and associated turnback arrangements to meet forecast passenger demand." As noted by Response (5) above, the location of the interchange at Charlemont does not preclude onward extension south.
11	Is Tl I transfixed on Charlemont?	3	4) Why bury the TBM head at Option 6 instead of Option 9B (Vol 2 Chapter 7 P 118 Diagram 7.41)? 5) Why isn't TII retrieving the TBM from a portal at Option 6?	In addition to the summary information provided in the EIAR Chapter 7, further information on the consideration of tunnel termination options is provided in the EIAR Appendix A7.4, Charlemont Shafts Options Report. 4) Option 9B has an intervention shaft provided at the south end of its alignment, therefore the TBM could be driven in to the shaft and lifted out. However, Option 9, as noted in Appendix A7.4, Section 5.1, and Table 5.3, would not meet the project objectives and is significantly more expensive, and as such this option was not progressed. 5) Option 6 does not have a shaft at the south end of its alignment, but instead a side ventilation shaft closer to Charlemont Station, therefore it is more economical to leave the skin of the machine and the cutter head (the metal tube within which the workings of the TBM are contained and the 'head' at the front of the machine that rotates with cutter tools to excavate the tunnel) in the ground at the end of the tunnel and simply remove the inner workings of the TBM. This approach is common on tunnelling projects. The EIAR Appendix A7.4, Section 3.1, provides information on disposal or recovery options for the TBM.
12	1.2.3 Why Charlemont Is not a suitable Metrolink Terminus.	3	At the outset I sought to guide ABP to areas that for some unknown reason are lacking in the TII RO documentation. I propose a LUAS Green line terminus spur at St Stephen Green SSE Metrolink and shall now counter TII justification for a Charlemont St Metrolink Terminus. TII Position: "A shorter interchange walking distance at Charlemont with almost 5 minutes shorter interchange time when compared to St Stephen's Green (Refer to Diagram 7.11 and Diagram 7.12); Response: A Luas Green line terminus (opposite the Shelbourne Hotel) trumps the interchange distance at Charlemont (Diagram 7.11.). A safe comfortable surface transfer and assured interconnection (with luggage) is a strategic Metrolink bonus for revenue generation from Southside residents.	TII's role is to deliver the MetroLink project as provided for in the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and as supported by the Dublin City Development Plan 2022 - 2028. The connection from St Stephens Green to Charlemont / Ranelagh is supported provided for by the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and further the location of the interchange is supported by the Dublin City Development Plan 2022 - 2028. The reasons why an interchange with the Luas Green Line is preferred at Charlemont is set out by Response (5) above, and described in EIAR Appendix A7.9. This notes that there is a limit to the potential of the Luas to provide additional capacity in the on-street non-segregated section of the Luas Green Line from Charlemont northwards through the city centre. The nature of this route and the fact that it currently crosses several road junctions (Adelaide Road, Harcourt Street / Hatch Street upper and Harcourt Street / St Stephen's Green south) limit the service to a maximum of 24 trams per hour per direction. The projected demand for this section would require a higher frequency of up to 30 trams per hour and this demand cannot be met with on-street systems (Luas / bus). The interchange between Luas and MetroLink proposed at Charlemont will provide the necessary capacity to address the demand on this corridor and reduce overall travel time for passengers.

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13	1.2.3 Why Charlemont Is not a suitable Metrolink Terminus.	4	**TII Position:** - Charlemont allows for future proofing of the extension of Metro further south, either by way of a connection to the Luas Green Line or an alternative metro route alignment to the south of the city; **Response** Of particular note is the fact that TII chose not to complete tunnel boring to a position directly underneath the Luas line (Option 9B Vol 2 Chapter 7 P 118 Diagram 7.41). TII declared position on the "Luas Green Line Deferral" outlined at Vol2 Chapter7 Section 7.7.7. P60- 61 cast's doubt on any future connect to Sandyford. An oral hearing would give TII an opportunity to update ABP on a revision to the flawed Option 4B LGLTI (Luas Green Line Tie in) "Appraisal study". IMHO a Metrolink terminus at SSE gives better future catchment/alignment options to south city suburbs.	The EIAR Appendix A7.9 Terminus Station at Charlemont compared to St. Stephen's Green, sets out the reasons why MetroLink incorporates a station at Charlemont rather than terminating at St Stephen's Green East. See also Response (5) for compliance with planning documents and Response (11) regarding tunnel termination options south of Charlemont. TII disagree that "a Metrolink terminus at SSE gives better future catchment/alignment options to south city suburbs" for the reasons provided in EIAR Appendix A7.9. The section of MetroLink route between St Stephen's Green and Charlemont Stations contributes significantly to the overall benefits of the scheme and the tunnel termination will facilitate a future connection southward. Regarding tunnel termination Option 9b, see Response (11) above. TII disagree that Option 4B as presented in the New Metro North Green Line Tie-in Study, Options Appraisal Report (March 2017) is flawed. This was an option considered at that time for a continuation of the metro onto the Luas Green Line. Whilst MetroLink proposals have been developed further since that time, the present MetroLink tunnel termination south of Charlemont included in the RO submission would continue to support an extension onto the Luas Green Line as previously envisaged, if required.
14	1.2.3 Why Charlemont Is not a suitable Metrolink Terminus.	4	TII **Position**: Charlemont bypasses capacity constraints on the Luas on-street running section between St Stephen's Green; **Response**: "...capacity constraints on the Luas on-street running section between St Stephens Green" are a function of road usage and have nothing to do with where a Metrolink underground Terminus is located. Luas Road usage limits are outlined at Table 7-15 Vol2 Chapter 7 P62-63. Prior to Luas reaching its notional absolute "on-street running" capacity, a decision on a Metrolink South extension would naturally have already been made. A Metrolink extension natural objective, is to relieve pressure on the Luas system. An additional new Luas Terminus at SSE absolutely ensures no capacity/constraints on the on street platforms "between St Stephen's Green". A co-located Luas/ Metrolink Terminus at SSE future proofs the uptake of Metrolink passengers to/from Dublin Airport.	TII do not agree that ""...capacity constraints on the Luas on-street running section between St Stephens Green" are a function of road usage and have nothing to do with where a Metrolink underground Terminus is located." This section cannot accommodate the same level of service increase as that south of Charlemont, where the line has limited interface with road traffic - It is limited to 7000 passengers/hr. The nature of this route and the fact that it currently crosses several road junctions (Adelaide Road, Harcourt Street / Hatch Street upper and Harcourt Street / St Stephen's Green south) limit the service to a maximum of 24 trams per hour per direction. The projected demand for this section would require a higher frequency of up to 30 trams per hour and this demand cannot be met with on-street systems (Luas / bus). The interchange between Luas and MetroLink proposed at Charlemont will provide the necessary capacity to address the demand on this corridor and reduce overall travel time for passengers. It is important to note that once the street running section of Luas reaches capacity, there is limited opportunity to improve that section of the alignment as explained by Response (18) below.
15	1.2.3 Why Charlemont Is not a suitable Metrolink Terminus.	4	**TII Position**: Charlemont provides additional public transport connectivity to key trip attractors south of St Stephens Green, with high demand for services in this area predicted. **Response**: Charlemont will continue to "provide additional....." with “high demand for services" from an enhanced Luas System from SSE Metrolink Terminus. **TII Position:** Charlemont provides additional fare/revenues collected with a favourable Cost Benefit ratio likely; **Response:** A comfortable connection between Luas and Metrolink for Airport Passengers (with luggage) will seal additional revenue success. Both are naturally achieved with a new SSE Luas Terminus.	In addition to Luas street running being constrained (see Response (14) above), and as outlined by Response (13) above, the section of MetroLink route between St Stephen's Green and Charlemont Stations contributes significantly to the overall benefits of the scheme. There is also high passenger demand forecast for a Metrolink station at Charlemont, including from the Ranelagh area, which would be lost if St. Stephen's Green was the MetroLink southern interchange station. The additional fare revenues collected by the Charlemont Station interchange increase the benefits delivered by the Project, reflected by an improved Project Benefit Cost Ration (BCR). It is also important to note that MetroLink is not just an Airport link, it serves a number of destinations along the route, provides much needed transport improvements to areas north of the Airport including Swords and wider afield via the provision of the Park and Ride at Estuary, provides key interchanges with DART at Tara Street and Glasnevin, as well forming part of the wider integrated transport network that also includes for BusConnects and DART+ which are all included under Project Ireland 2040.

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16	1.2.3 Why Charlemont Is not a suitable Metrolink Terminus.	5	**TII Position**: Charlemont avoids more significant environmental impacts on St Stephens Green. **Response**: Neither St Stephen Green East (SSE) Metrolink location nor its internal design are changing. An underground "turn back" shall obviously be required so TII could elaborate on the “more significant environmental impacts" comment at an ABP hearing?	TII note that St. Stephen’s Green is designated as a national monument. EIAR Appendix A7.9 provides information on the comparison between Charlemont and SSG East as the MetroLink southern-most interchange station. Further, if the scheme were to terminate at St Stephen’s Green, it would be important to determine where the next station south of St Stephen’s Green would be located for a future extension as required in the Transport Strategy for Greater Dublin Area (2022-2042). With single bore tunnel configuration, the maximum distance between stations is 1,000m. If the distance between stations extends beyond 1,000m there is a need for an intervention shaft or separate escape tunnel. Selecting a different station location other than Charlemont within a 1,000m arc south of St Stephen’s Green Station will be challenging given the limited space available for a station within this area and it is reasonable to assume that the Station may be located outside the 1000m arc, thus requiring the construction of an intervention shaft similar to that currently proposed at Albert College Park between St Stephen’s Green and the proposed station location.
17	1.2.4 Why St Stephens Green SSE Metrolink Terminus is suitable.	5	It's obvious why Dartmouth Square residents don't want Metrolink. Charlemont has the propensity to become the Southside's one stop drop off / pick up point for Airport Bound passengers. Southside Airport Passengers will naturally seek to avoid DAA Long term Car park fees or exorbitant round trip Taxi Fares. Therefore the true success of Metrolink is dependent on an assured airport passenger connection particularly with a southbound LUAS. So how does TII overcome future capacity issues with on street Luas platforms whilst endeavouring not to be overwhelmed by a naturally expanding Green Luas line coupled with additional projected DAA enhanced airport capacity demand? Answer: ABP to condition TII to create a new Luas Green Line terminus at the SSE Metrolink terminus.	MetroLink forms part of an integrated public transport network. The system is designed in an integrated manner so that people travelling from the area south of Dublin to access locations north of Charlemont, such as Dublin Airport, Mater, Swords etc. will utilise public transport to interchange with the MetroLink, or will walk or cycle to access their local station. The system is not designed to encourage people to drive to stations within the City and TII actively discourage people from doing so other than the Park & Ride station at Estuary. TII therefore do not agree with the observation that “Charlemont has the propensity to become the Southside's one stop drop off / pick up point for Airport Bound passengers" as this is not borne out by our transport analysis. Furthermore, TII have deliberately designed the Station with minimum set down space (with the exception of a drop-off on Grand Parade for persons of restricted mobility only) or room for taxi ranks so that it does not encourage the Station to be used as a terminus. When the Project is operational, car mode share will decrease, with a reduction of up to approximately 830 car tips to and from the zones surrounding Charlemont Station over the 12hr period in 2065. In overall terms, Charlemont Station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usages and will facilitate walking and cycling to the station, without significantly impacting on the operation of the road network in the area. In terms of passengers from the south of the city using Metrolink, the section of MetroLink route between St Stephen's Green and Charlemont Stations contributes significantly to the overall benefits of the scheme. It serves a significant area of the south city of Dublin and offers enhanced access from the local area to the city centre and a direct connection to Dublin Airport. It serves key trip attractors including residential areas and offices / workplace locations, with high passenger boarding and alighting figures in the peak hours. During the morning peak, at Charlemont station the flows include 1,800 passengers alighting, 2,300 boarding and 1,229 passengers alighting, 2,276 boarding during the evening peak. The passenger numbers contribute significantly to the overall benefits of the scheme and the effect of 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. By extending MetroLink to Charlemont it provides for future proofing of the Green Line, bypassing the capacity constrained Luas on-street running section, and ensures potential future connectivity options are enabled, either to the Green Line or for extensions of the metro. (Response (18) below addresses the suggestion of increasing this section of the line to twin track running). The Charlemont Station interchange provides for increased passenger utilisation of the MetroLink system, thereby increasing the benefits delivered by the Project, reflected by an improved Project Benefit Cost Ration (BCR). Response (5) and (12) above further explains the reasons why Charlemont is the preferred interchange with the Luas Green Line.

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18	Why St Stephens Green SSE Metrolink Terminus Issuitable.	5	If the ABP inspector walks the ground on the Northern side of St Stephens Green one can see the original Luas Green line turn back. What if this Northern stretch was upgraded to twin tracks, extended and designated a Luas (Southbound only spur). The benefits of this spur are as follows; • The Transfer time from Luas to Metrolink shall reduce the minimal connectivity distance extolled by TII at Charlemont. • The Luas/SSE transfer is at surface level making luggage transport safer and more comfortable. • All Southbound Metrolink passengers are assured of near empty trams at the new SSE Luas terminus opposite the Shelbourne Hotel. • Southbound Metrolink Airport passengers (seeking assured Luas seats) won't now have to transfer from O'Connell St Metro to Luas Parnell, therefore freeing up Green Line commuter space exiting the city centre. • Dedicated Northbound Green Line "SSE Metro Terminus" trams dovetailing with peak airport hours, will deter City Centre bound passengers from boarding. • An Express Metrolink service SSE-Airport with limited stops during Airport peak hours shall allow greater Luas Metro uptake connection along the Sandyford line, thus easing pressure on the M50 to the Airport. Were the ABP inspector to delete the Charlemont Metrolink terminus from this RO then all is not lost. TII still have the option to extend the SSE line by 390m, extract the TBM and incorporate a ventilation shaft / emergency stairwell for turn back tunnel staff. The ideal location for these works are adjacent to the Iveagh Gardens or outhouses at the Southern end of the NCH. Future Metrolink stops options are Portobello thereafter Central Rathmines whilst Line Curvature from Charlemont may restrict / necessitate having to bypass central Rathmines?	Please refer back to Response (5) that explains the reasoning for why an interchange with the Luas Green Line is proposed and preferred at Charlemont. This includes that by extending MetroLink to Charlemont it provides for future proofing of the Green Line, bypassing the capacity constrained Luas on-street running section, and ensures potential future connectivity options are enabled, either to the Green Line or for extensions of the metro. If a new Green Line terminus was provided at St Stephen's Green as suggested, it would still be constrained by the capacity limited on-street running section between St Stephen's Green and Charlemont, thereby necessitating additional tracks as noted by the observation. The provision of additional tracks will further impact the existing road network, and that assumes that additional tracks can be accommodated within the existing space constraints, as well as requiring significant, and challenging modification and expansion to the Charlemont Green Line Stop and beyond, noting that it is located on an elevated section and embankment, if Charlemont Stop is not to be come a bottleneck for the service. As a result, additional Luas lines between St Stephen's Green and Charlemont is not preferred over the proposed MetroLink solution. As noted previously, if the scheme were to terminate at St Stephen's Green, it would be important to determine where the next station south of St Stephen's Green would be located for a future extension as required in the Draft Transport Strategy for Greater Dublin Area (2022-2042). With single bore tunnel configuration, the maximum distance between stations is 1,000m. If the distance between stations extends beyond 1,000m there is a need for an intervention shaft or separate escape tunnel. Selecting a different station location other than Charlemont within a 1,000m arc south of St Stephen's Green Station will be challenging given the limited space available for a station within this area and it is reasonable to assume that the Station may be located outside the 1000m arc, thus requiring the construction of an intervention shaft (similar to that currently proposed at Albert College Park) between St Stephen's Green and the proposed station location.
				If a decision was taken to terminate MetroLink at St Stephen's Green, significant changes would be required to the scheme. These would include design changes at St Stephen's Green station and provision of alternative turnback facilities immediately south of the station. Future metro services to Terenure/Rathmines or Portobello do not form part of the Metrolink scheme. TII's role is to deliver Metrolink as supported by the Transport Strategy for Greater Dublin Area (2022-2042) and Dublin City Development Plan 2022-2028. The connection from St Stephens Green to Charlemont / Ranelagh is supported by the current Transport Strategy. The Transport Strategies were prepared by the National Transport Authority, scrutinised by the Joint Oireachtas Committee on Transport, and approved by the Minister for Transport. It notes in section 12.3.2, "Charlemont offers the optimal location for the primary interchange with the Green Line in response to growing demand in the longer term and is an appropriate location to facilitate any potential future metro extensions to serve the southwest, south or southeast of the city region should sufficient demand arise."
19	1.2.5 The Customer votes with their feet?	6	TII engineers make no reference to the passengers experience when interfacing with Metrolink. Airport passengers with suitcases are expected to interchange with the Luas Green Line at Charlemont. Its strange that no mention is apparently made within the RO to a Luas Red line interchange point? A TII appraisal team looked at the various options on how passengers shall transfer at Charlemont. Four Options are outlined at EIAR Vol 2 Chapter7 P113. "Option 1 was the preferred option as it reduced the potential for a setting impact on the Carroll's Building (when compared to option 2)". No doubt this is of little comfort to passengers who in perpetuity shall haul suitcases up a flight of stairs to the Charlemont Luas Southbound Platform. A connecting link for Southside residents is critical to the success of Metrolink- A minimal stairwell just doesn't do it. Given TII projected capacity expansion of the Luas Green Line, pressure will continuously mount on the southbound uplift carrying capacity/ capability of Metrolink passengers at Charlemont. So is Charlemont interchange really suitable for southbound airport passengers to 2042? Will there be even space then on a Southbound Luas exiting the city?	TII have carefully considered the interchange between the Luas Green Line and MetroLink at Charlemont. A microsimulation VisWalk model for the immediate area surrounding Charlemont Station during the operational phase has been developed. The model covers the full extent of the publicly accessible station area, including the immediate vicinity of the station entrance at street level, the Luas stop and nearby junctions at Charlemont Bridge. In order to accommodate the forecast demand from the proposed Charlemont Station, a new staircase with 2.4m stair width is proposed at the south east corner of Charlemont Luas stop. A lift will also be provided at this location for passengers with luggage or of restricted mobility. Both the stairs and lift are sized for MetroLink to Luas, and Luas to MetroLink passenger numbers. TII would note that they have provided an interchange that has been designed to provide the capacity required to meet the Project requirements to carry up to 20,000 Passengers Per Hour Per Direction (pphpd) at peak hours. Interchange with the Luas Red Line is provided via the Green Line.

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20	1.2.5 The Customer votes with their feet?	6	**Finite Tram floor space capacity.** A Luas tram has a maximum capacity of 408 passengers. Conservatively, assuming the Luas exclusively had airport passengers, then the usable floor area reduces to 408 + 2 (as each passenger would invariably hold a pull along suitcase). This finite Luas minimum capacity (204) may determine where passengers will actually strive to connect from Metrolink to LUAS.	The transport network capacity and interchange locations have been defined for the Project based on complex and detailed modelling of the transport network as a whole using the NTA Eastern Regional Model. The model incorporates a wide range of data sources, including demographic data, land use data, transportation network data, and travel survey data, including those travelling to and from the airport. The system is designed to model a variety of transportation modes, including private vehicles, public transit, walking, and cycling, and to simulate the interactions between these modes. The ERM model has been validated and calibrated using a range of localised data sources to ensure that the model can accurately represent the transport network, these include public transport and vehicle counts. The scenarios modelled also include for the implementation of other committed schemes, such as the Luas Green Line Capacity Enhancement scheme, and therefore does not utilise the current Luas capacities. Appendix A9.2-B Traffic and Transport Assessment - Charlemont Station section 5.1.1.4 presents the volume of passengers interchanging with other public transport modes at Charlemont Station for the AM and PM peak hours in 2035, 2050 and 2065. It is noted that the Luas Green Line at Charlemont runs every 15 inutes or better, representing a minimum headway of 4 services per hour. As detailed, interchange at Charlemont is characterised by high flows to and from the adjacent Luas stop, as well as to and from the Bus network. Modelling indicates approximately 900 passengers transferring either to or from Luas in the opening year during the AM and PM peak hours, and up to approximately 1,200 passengers transferring both to and from Luas in 2065 in the AM and PM peak hours. As a result, with the proposed capacity enhancements in place, it is anticpated that the Luas will be able to provide for these interchange passengers.
21	1.2.5 The Customer votes with their feet?	7	**ABP field study.** Prior to a possible Oral hearing I would encourage the ABP inspector to view the premier transfer route for South Dublin residents who seek to connect with Metrolink at Charlemont. Senior citizens (bound for Dublin Airport with luggage in tow) will have difficulty navigating the confines of this minimalist stairwell. In essence the stairwell and new (replacement?) single lift facility at Charlemont is neither adequate nor suitable for the projected peak flow transfer passenger volumes to 2042. Having studied the Luas and Metrolink network, astute southbound airport passengers may decide that the best option to connect with suitcase is where Southbound Luas Green line passengers disembark. • The first logical assured link is Metrolink O'Connell St - Luas Parnell St. • Metrolink SSE- Dawson St is second in order to overcome any station street congestion issues predicted at the St Stephen Green Luas Stop. • The Last option is for passengers to remain on Metrolink to the Charlemont terminus. (Assuming one wants to haul a suitcase up a flight of stairs, take one's chances alongside fellow airport passengers in boarding a southbound Luas tram that's projected to increase its passenger volumes existing the city). • Airport Passengers travelling southbound may also have boarding restrictions and no doubt shall invariably remain adjacent to tram doors (with suitcase) thus making for an awkward journey for all customers If there is a slight truth to this portrayal of the Charlemont Southbound Luas platform experience then ABP must reflect on the exact reasons why TII are adamant that Charlemont beats SSE as the preferred terminus. Is it because the NTA have invested large funds in carrying out enabling works at Charlemont before submitting a Railway order? Is it face saving for TII executives? How realistic is Metrolink ever really going to connect with Luas?	Please refer to Response (19) above that explains that a lift is provided at the Charlemont Luas Green Line Stop for persons with luggage or of restricted mobility. Please also refer to Responses (5) and (12) above that explains the considerations and reasons for why an interchange with the Luas Green Line is preferred at Charlemont. Finally TII would note that the station box location was not fixed by the Charlemont Development. The preferred route for MetroLink was published in March 2019 following a comprehensive route options study. The preferred route was based on the emerging preferred route for the scheme which included a station at Charlemont. The Charlemont Metro Enabling Works were constructed to enable the Charlemont Development to proceed whilst simultaneously ensuring there was an option available to construct a station at Charlemont that avoided unnecessary demolition, took advantage of an available site, provided infrastructure that is integrated with planned development rather than necessitating later changes and retrospective adjustments to a new development or even possible demolition of the new development, whilst providing protected provision for the future extension of the scheme south, if required. As such it was consistent with proper planning and sustainable development at this location. It is also important to recognise that the station location at Charlemont is influenced by available vacant land and thus avoids unnecessary demolition.

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22	1.3 TII Metrolink RO	7	**A) Future Expansion of the line when in full operational mode:** The TII RO submission fulfils its own self brief and that of a "DRAFT" GDA transport strategy plan. Future expansion of the Metrolink line is conveniently outside the "scope of this project". Therefore one asks ABP to ascertain by way of an oral hearing how further extension of the North/ South Spine shall tie in with the operational line that terminates 350m south of Charlemont. For instance: • If future expansion is professed by TII, then why isn't the TBM head retrieved via a portal? • Are there any environmental effects to ground water resulting from a buried TBM? • It's obvious that spoil from future boring must be extracted in a southerly direction, therefore how shall the future tunnel be mined/joined when an advancing TBM head meets a sealed buried TBM head? • The RO outlines various curvature radii options between TARA St and SSE. A new station located south of Charlemont must therefore lie within a tolerance arc e.g. (The minimum permissible 80km/hr track curvature radii line commencing 350m South of Charlemont). Would this defined Arc eliminate a future connection to a major suburb, eg Central Rathmines? • Would a SSE terminus not give Metrolink South better catchment potential whilst diverging from Luas heading south?	TII's role is to deliver the MetroLink project as provided for in the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and as supported by the Dublin City Development Plan 2022 - 2028. The GDA Transport Strategy is clear regards the future possible extension of the metro. The connection from St Stephens Green to Charlemont / Ranelagh is provided for by the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042). No onward extension is planned at this time, however the need for future extension will be addressed with reference to prevailing circumstances at each Strategy/Development Plan review. Such policy is not within TII's remit. The GDA Transport Strategy considers a range of options for the onward extension of MetroLink to meet the demand for travel over the period of the strategy. This includes consideration of the need for the upgrade of the Luas Green Line to metro with a metro extension to Dublin south west, south or south east. Whilst the strategy envisages that further extensions will be delivered after 2042, MetroLink which terminates at Charlemont allows for the possible extension of the metro in all the above directions.- • Response (11) explains why the TBM is left in the ground, noting that this approach is common to tunnelling projects and the location of the TBM is clear of a future tunnel extension. • There are no environmental effects on the ground water. Noting the TBM will be used to construct the running tunnel from Northwood to Charlemont, there will be no materials that will have an environmental impact on groundwater. Whilst also noting that the inner workings of the TBM will be dismantled and removed on completion of the tunnel drive. • There are a number of options available for making the connection, as noted by Response (11) there is nothing unusual with such an approach, or the requirement to make a future connection. It is actually very common for underground metros to be progressively extended. Should planning permission be sought and granted for further extension in the future, it may be likely that sprayed concrete would be used to make the connection between what will be the existing MetroLink tunnel and any future metro tunnel, and depending on the precise connection, if required, parts or all of the cutter can be cut out if required. • Response (18) explains why provision for an extension immediately to the west of Charlemont is not deemed to be necessary. • Response (17) above explains why the section of the MetroLink route between St Stephen's Green and Charlemont Stations contributes significantly to the overall benefits of the scheme.
23	1.3 TII Metrolink RO	8	B) Passenger Integration Option 1 between Luas and Metrolink at Charlemont. Option 1 was chosen as the preferred route citing minimum transfer times. This begs the following question; Who is minded to disembark from a Northbound Luas at Charlemont when one is so close to the City Centre? Inevitably the answer would predominately be local employees or Airport bound travellers, certainly not city centre shoppers / workers or commuters. Therefore it's vital that the connection with Luas must primarily suit Airport Bound passengers with suitcases. Charlemont doesn't do it!	TII's role is to deliver the MetroLink project as provided for in the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and as supported by the Dublin City Development Plan 2022 - 2028. The connection from St Stephens Green to Charlemont / Ranelagh is provided for by the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and further the location of the interchange is supported by the Dublin City Development Plan 2022 - 2028. Clearly any passenger travelling northbound on the Green Line who is able to stay on the Luas to reach their desired destination will not change to MetroLink. The modelling referred to by Response (20) above takes account of this. It is also important to note that MetroLink is not just an Airport link, it serves a number of destinations along the route, provides much needed transport improvements to areas north of the Airport including Swords and wider afield via the provision of the Park and Ride at Estuary, provides key interchanges with DART at Tara Street and Glasnevin, as well forming part of the wider integrated transport network that also includes for BusConnects and DART+ which are all included under Project Ireland 2040. Finally as noted by response (19) the interchange at Charlemont has been designed to take account of predicted passenger numbers, including the provision of a lift to assist persons with luggage or of restricted mobility. It is therefore not correct to infer that MetroLink is simply an Airport Link, the purpose of the Project and its legacy will have far more reaching benefits than this.
24	1.3 TII Metrolink RO	8	C) Where will Metrolink go? The million euro question. One wonders how many worldwide Metro systems terminate underground with no strategic decision on where the line eventually resurfaces. "Fail to prepare...prepare to fail", In my humble opinion, a flawed weak decision to terminate at Charlemont does not bode well for a future Southern Metrolink spine	TII's role is to deliver the MetroLink project as provided for in the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and as supported by the Dublin City Development Plan 2022 - 2028, and including flexible options for extending the line. TII have designed Metrolink to comply with this policy, which has been fully adopted and to which An Bord Pleanála must have regard. Please also refer to Response (5) above.

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25	1.4 Ideal Integration between Metrolink the Luas Green Line and future Metrolink potential.	8	As the notion of ever linking Metrolink to the Luas Green Line fades, attention will no doubt gather pace as to where Metrolink Southern spine shall terminate. Were ABP to designate SSE as the Metrolink Terminus then the next future Metrolink stop could be Portobello, thereafter central Rathmines, before Metrolink continues routing to areas outside of the current Luas Green and Red lines catchment areas. The important thing is to future proof Metrolink. Charlemont doesn't do it and if TII were honest they would probably say the same in private. ABP are respectfully asked to consider southbound airport passengers with luggage when deciding on a suitable Metrolink / LUAS connection point. Dedicated Luas trams modified with overhead luggage compartments would add additional appeal to the SSE- Sandyford line. My proposal for a Luas Green line Terminus spur at SSE ticks all the boxes and opens up the South Central Suburbs for future line extension/connection to Metrolink. A future northbound bore can terminate and connect with Metrolink at the temporally sealed Iveagh Gardens Portal.	TII's role is to deliver the MetroLink project as provided for in the previous Transport Strategy for Greater Dublin Area (2016-2035) and the current Transport Strategy for Greater Dublin Area (2022-2042) and as supported by the Dublin City Development Plan 2022 - 2028, and including flexible options for extending the line. TII have designed Metrolink to comply with this policy, which has been fully adopted and to which An Bord Pleanála must have regard. Response (18) explains why provision for an extension immediately to the west of Charlemont is not deemed to be necessary. TII do not agree that MetroLink is not part of wider future integrated strategic planning as explained by response (24) above. Response (23) explains that MetroLink is more than just a link to the Airport, whilst Response (19) outlines the transport modelling that has been undertaken to inform the design of the interchange with the Luas Green Line, noting the provision of a lift for passengers of restricted mobility, including those with luggage. Finally, and importantly, responses (5) and (12) explains the reasoning for why an interchange with the Luas Green Line is proposed and preferred at Charlemont, whilst noting the constrained on-street running capacity between St Stephen's Green and Charlemont means there is a limit to the capacity that can be provided by the existing Luas Green Line, or space to provide additional surface Luas lines and increase the size of Luas stops, noting Charlemont Stop is elevated and on an embankment (also see Response 18).
26	2.0 Insufficient airport stakeholder engagement to determine the future Capacity	10	1) Dublin Airport Metrolink platform size The Metrolink RO treats Dublin Airport as a normal in-line station. Every Metrolink passenger embarking or disembarking Metrolink at Dublin Airport shall invariably have luggage in tow. Therefore this station is without question the most critical on the network in respect of platform space. DAA, with the undoubted approval from FCC plan to expand the Airport from 32 to 40mppa (by 2030) thereafter to 55mppa, will guarantee that Dublin Airport Station platforms will be the first stress test Metrolink constraint. What is the theoretical safety limit for passengers entering the Station, - to cover simultaneous transit movement from both 65m length platforms? Is it the maximum carrying capacity of inbound and outbound MetroLInk carriages, 1000 or the equivalent 500 passengers with suitcases? I believe that the proposed 65m platform (with only single sided entry/exit points) may not suffice for peak aircraft wave returns to Dublin Airport. For passenger comfort the station box should either be extended into two segregated 65m sections for separate in line arrival and departure platforms OR this unique pinch point station should incorporate an additional central island platform thus segregating the proposed 65m platforms for a more comfortable uninterrupted arriving and departing passengers flow experience.	As noted by Response (4) above, the Airport Station has been modelled and designed taking account of the predicted passenger numbers, (see EIAR Appendix A9.2-D Traffic and Transportation Assessment – Dublin Airport Station). The preliminary design is based on the predicted passenger numbers with modelling showing that 65m long platforms are sufficient. There is no requirement for additional platforms to be provided.

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27	2.0 Insufficient airport stakeholder engagement to determine the future Capacity	10	2) The lack of RO capacity enhancements to meet DAA expected passenger volumes to 5Omppa. The DAA airfield Masterplan and FCC local area plan extends the Airport into the "Western Campus". Therefore as Airport passenger Volumes increase to 55mppa when does Til see the 65m platforms becoming a constraint? How will Metrolink passengers link up with a western Campus Terminal? Will Metrolink link only the Eastern Campus? Future proofing a link spur (South of the Dublin Airport south portal) either stand alone or via Dardistown would ensure that any future Western Campus Airport Terminal development can link up with Metrolink.	Section 9.4.3.3. of Chapter 9 (Traffic and Transport) details the Specific Developments which have been incorporated into the passenger modelling. As detailed, in addition to the forecast growth associated with the typical land use patterns, Dublin Airport is a key growth driver in the corridor and has a different growth associated with flight travel demand. WIthin the model, growth in landside demand is determined for passengers, staff and freight, applied to hte Dublin Airport Special Zone. Freight and staff numbers are forecasted on a scaling factor, which are aligned with passenger growth forecasts. The passenger growth forecases are based on the central growth forecast from the Department of Transport, Tourism and Sport (DTTAS) report 'Review of Capacity Needs at Ireland's State Airports - August 2018', and the Central Statistics Office (CSO) 2016-2019 Aviation Stats' TAM05. The CSO statistics are used to cauclate the growth rate up to 2019 and the growth rate from 2020 to 2050 is determined by interpolation from the 2019 passenger foreacst to the 2050 passenger forecast contained within the DTTAS report. We have assumed that the growth rate from 2050 will continue until the 2065 forecast year. The MetroLink station location is consistent with the Metro stop identified in the Dublin Airport Masterplan, prepared by daa for the growth and expansion of its facilities into the future, which specifically identifies the station location at the Ground Transportation Hub. Development at the western side of the airport is considered within the Dublin Airport Masterplan as part of the long term expansion proposals and the Proposed Project would not inhibit the ability to connect to this area of the airport. As noted by Response (4) above, the Airport Station has been modelled and designed taking account of the predicted passenger numbers, which includes the modelling showing that 65m long platforms provided are sufficient. Further, the Station has been designed in accordance with daa requirements. The wider development of the Airport is a matter for daa, the scope of the MetroLink project is to provide a Station that meets the requirements of daa, which it does. No future expansion of the metro system at the Airport is currently envisaged to be required.
28	3.0 Summary:	11	I trust that I have highlighted the flaws with Charlemont as the designated Southern Terminus. I am dubious whether TH have any future plans to ever connect Metrolink with Luas. If ABP approves this RO, then Metrolink passengers shall interface with Luas via a substandard passenger link unsuitable for airport bound passengers. The expected increase in Luas passengers could ultimately be detrimental to the success of Metrolink for Southside passengers (outside of DART connection) that seek to route to Dublin Airport. To ensure uptake and future proofing of Metrolink - the St Stephens Green East (SSE) Metrolink station, combined with a Green Line terminus Spur, is my preferred ideal transfer location. In relation to Dublin Airport, the 65m platform is the limiting factor. DAA expansion plans may be curtailed to this limit as is the M50/M1 constraint today. Traditionally as a nation we don't future proof major infrastructure projects, Metrolink is no different. Expect soul searching when the DAA wish to expand terminals as the Metrolink thwarts line construction options. Finally ABP should query why some select station platforms aren't capable of being future proofed (via locally mined extensions) - if even to ensure a rapid airport service from select stations. (The Current RO predicts- acceleration and deceleration every IKm, to every station!) An M50 lift may still be quicker for Southside residents.	TII's role is to deliver the MetroLink project as provided for in the previous Transport Strategy for Greater Dublin Area (2016-2035), the current Transport Strategy for Greater Dublin Area (2022-2042) and as supported by the Dublin City Development Plan 2022 - 2028, including flexible options for extending the line. TII have designed Metrolink to comply with this policy, which has been fully adopted and to which An Bord Pleanála must have regard. TII have responded to each of the individual observations made by this submission. TII would note that while there is some merit in considering individual aspects of the proposed project, with any complex urban infrastructure project that involves numerous environmental considerations, a physically constrained existing environment, and future uncertainty on how the World and Dublin may operate, it is important to balance all these considerations and consider the proposed project holistically as explained by Response (5) and (12) above that outlines TII's reasoning for a proposed station at Charlemont, whilst also noting that any extension further south is not precluded should the demand for it arise. TII have explained that MetroLink is more than just a railway to / from the Airport. It serves a number of destinations along the route, provides much needed transport improvements to areas north of the Airport including Swords and wider afield via the provision of the Park and Ride at Estuary, provides key interchanges with DART at Tara Street and Glasnevin, as well forming part of wider integrated transport network that also includes for BusConnects and DART+ which are all included under Project Ireland 2040. TII have also explained that the interchange with the Luas Green Line at Charlemont, including the provision of stairs and lift, has been designed to meet the modelled and predicted passenger demand, and in accordance with daa requirements. Similarly, the Airport Station has been modelled and designed taking account of the predicted passenger numbers, which includes modelling showing that 65m long platforms provided are sufficient. Finally, it is not correct to infer there is no strategic plan and vision, the GDA Transport Strategy presents precisely that whilst recognising that planning for the future presents a degree of uncertainty that needs to be accepted and taken account of. It is not unusual, as illustrated by many existing metro systems around the World, for systems to be progressively expanded when it becomes evident there is a demand and economic benefit. No onward extension is planned at this time, however the need for future extension will be addressed with reference to prevailing circumstances at each Policy/Planning document review. Such policy is not within TII's remit.