Submission No.	190
Organisation Name or Name of Submitter	Michael A Doyle and Carmel Smith Doyle

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Re: Metrolink Railway Order 2022, Estuary to Charlemont, Reference Number NA29N.314724				
1	Letter	1	I live at 34 Dartmouth Road……. Firstly, in general, I am in favour of the broad aim of the Metrolink project to connect Dublin's city centre to our national airport. However, as a resident living in the Dartmouth/Charlemont area, I wish to set out a number of observations, for the Board's consideration, regarding the proposal to locate the Terminus station at Charlemont-Dartmouth. My family home is in the midst of the community where the Terminus station at Charlemont is proposed to be located, and is dangerously close to the proposed very deep pile insertions and deep station box excavations. I would request that An Bord Pleanála give very serious considerations to the important issues raised in this submission, and, in consequence, mandate Planning Conditions appropriate to the nuisance value inherent in this application for a major transport hub located in a heretofore quiet Victorian residential location.	Thank you for taking the time to make a submission and your overall endorsement of the MetroLink Project generally. We have reviewed your submission and responded to the observations made below. TII would like to assure you that at no time will the safety of this property and its occupants be placed at risk, noting that the construction of the station and tunnels will be monitored, including surrounding ground and building movements, with predetermined trigger levels aligned with action plans to ensure movements do not exceed acceptable levels.
2	SETTLEMENT ZONE	4	SETTLEMENT ZONE The calculated size of the Settlement Zone is based on the centre line of the tunnel, or the secant wall, and extends for a distance of 1 to 2.5 times the depth of excavation, that is 30 to 75 meters, either side of the tunnel centre line. Projected settlement will be at maximum values close adjacent to the tunnel/secant wall centre line, and will taper away to zero at the edges of the Settlement Zone, forming a Settlement Slump Trough. Houses spanning the edge of the settlement zone, (which might appear to be at lesser risk) are apparently at increased risk, due to differential settlement, producing a hinge effect, and consequently, more serious cracking.	TII would like to provide assurance that the impacts of construction generated ground movements on 34 Dartmouth Road have been assessed. The approach taken by TII for assessing the impact of construction generated ground movements reflects the industry standard three-phased ground movement impact assessment process that is undertaken on tunnelling and underground projects around the world, that includes Channel Tunnel Rail Link (CTRL), Dublin Port Tunnel, Crossrail and High Speed 2. EIAR Appendix A 5.17 Building Damage Report, covers; how the zone of influence for ground movements has been determined for both tunnel and cut and cover construction (illustrated by the 1mm contour shown on the drawings in Appendix C, with further detail provided by response (3) below), the assessment methodology and parameters used, and the assessed impacts of construction generated ground movements and settlement (that includes account being taken of differential movement), that includes for the assessed impact on 34 Dartmouth Road. EIAR Appendix 5.17 refers. Despite this property being in close proximity to the station box excavation, the Phase 2 assessment of the assessed impact on this building is "slight" (an explanation for which can be found in Table 4-4), please refer to building B151 (32 Dartmouth Road) in table 5-2 of that appendix. As your property is in close proximity to the station box excavation, the assessment work undertaken for the EIAR has determined that your property along with other similar neighbouring properties have been designated as "special" (please refer to section 4 Subsidence Damage Assessment Methodology of Appendix A5.17). Consequently, the property will be subject to a further Phase 3 refined assessment (despite the impact only being assessed as 'slight') to take account of final design and construction methodology details. The Phase 3 assessment will most likely utilising advanced numerical modelling techniques and further surveys of the building. The results of this refined assessment typically show that earlier assessments are conservative and overestimate the likely impact of construction generated ground movements. Monitoring instrumentation will also be installed in the area to monitor the performance of the works and potential environmental impacts, including ground movements to ensure that acceptable limits, determined as part of the Phase 3 assessment, are not breached. TII would also draw attention to the fact that private properties within 50m of the station excavation, or 30m of the tunnel are eligible to subscribe to the Property Owners Protection Scheme (POPs). The Property Owners' Protection Scheme is in addition to the existing legal rights of property owners and is in place to provide a simple and prompt way of rectifying any damage caused under the project up to the ceiling of €45,000. If the sum should exceed this amount the normal claims process would be used with the insurance companies for TII and/or the contractor.

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3	EXTENT OF SETTLEMENT	5	EXTENT OF SETTLEMENT The maximum settlement to be expected is extremely difficult to predict accurately, and will be influenced by, amongst other things, construction methods adapted, secant wall deflection, ground conditions, soil composition, and inevitable changes to the existing water table. Some engineering research would suggest that, even with the employment of modern best practice, settlement of 7mm to 15mm could be expected. Research by Moormann and Moormann, 2002, suggests little improvement has been made in the amount of settlement behind the wall, and that displacements in the range of 1% of the excavated depth should be expected. Other research (Peck, 1969) suggests settlement behind secant walls averaged at 0.2% to 0.4% of excavated depth, which in this instance is 90mm! Compounding the alarming settlement projections caused by the deep secant wall, and subsequent excavations, wall deformations, and disturber water table, the whole of the residential stock within the established slump zone will be subjected to further compounding settlement disruptions with the arrival, and departure, of the TBM tunnelling process, some two years later. Engineering research experience has shown that projection of accurate expected settlement is usually unreliable, and results usually fall within certain ranges above or below the expected. Expect the unexpected.	EIAR Appendix 5.17, section 4.2 explains the methodology, empirically based and industry recognised approach to estimate the predicted ground movements generated by tunnel, and cut and cover construction, taking account of the design, construction methods and ground conditions. TII agree with the observation that ground movements can be challenging to predict and hence the parameters used by TII to predict ground movements are intentionally conservative, and are based on documented empirical data. Settlement and horizontal movements for retaining wall construction and bulk excavation associated with the station box and retaining walls have been undertaken based on the case history data documented in CIRIA Report C760 "Embedded retaining walls – guidance for economic design", taking account of the ground conditions, proposed design and construction methodology. Further details for which can be found in EIAR Appendix 5.17, section 4.2.5. The TBM will be of the type that maintains positive pressure to the face and surrounding ground while the segmental tunnel lining is installed, thereby allowing ground movements to be closely controlled and minimised. TII would also note that TBM entry and exit from the station box will be sealed, with possible ground treatment to further stabilise the ground if required, to manage ground movements within acceptable limits. The prediction of tunnelling generated ground movements has been undertaken in accordance with the volume loss methodology outlined in CIRIA PR 30. This is an empirical method based on the percentage of tunnel volume excavated that is over and above that required for the tunnel itself. The calculation of the resultant settlement trough requires the derivation of a number of ground factors, these are explained in EIAR Appendix 5.17, sections 4.2.2. to 4.2.4. Similar to the cut and cover ground movement predictions, conservative volume and trough width parameters have been selected to ensure the ground movements predictions at this stage are robust.
4	EFFECT OF SETTLEMENT ON VICTORIAN HOUSES	5	EFFECT OF SETTLEMENT ON VICTORIAN HOUSES The compounding effects from very deep pile boring, very deep excavations, driving a TBM tunnel, and changing water tables, all in immediate proximity to Victorian houses without proper foundations, are likely to present enormous problems in accurately predicting settlement. All of the buildings under consideration are dangerously close to the projected centre line of the Settlement Slump Zone, some no more than 7 meters away from the bored piles. Settlement of 10mm, probably the minimum disturbance to be expected, will have profound effects on old buildings, built without proper foundations. Greater displacements than 10mm are to be expected. This will result in cracks to internal walls, to brickwork in facades, over window openings, door openings, and structurally weak building fabric links. The effects of settlement, following the driving of a TBM below residential property, have been well observed. The following periods of displacements have been documented. Ahead of approaching TBM face, Slight upward rise/deformation. At TBM cutter face, 6% of expected settlement, At TBM cutter shield, 30% of expected settlement, At TBM ring build, slurry fill to gap, 46% of expected settlement. Major settlement should be established by 10 days, to 8 weeks, but could be longer lasting, subject to local conditions. As old, more flexible, brick-built housing respond to imparted stress and strain, deformation of building fabric could take years to manifest.	Responses (2) and (3) above explain the conservative approach and methodology that has been taken by TII to estimate construction generated ground movements, and therefore why TII consider this ground movement impact assessment to be robust. The concern around foundations is noted, however TII would note that the ground movement impact assessment assumes the building flexes and follows the greenfield settlement profile. This is conservative since the building will have some inherent stiffness, but it provides a worst case for assessing the risk of damage to the property. EIAR Appendix 5.17, section 4.3 provides further detail on the approach taken to assess the impact of ground movements on buildings, noting as observed, that differential settlement and the point of inflection of the tunnel generated settlement trough are key points of note when assessing the impact of ground movements on buildings. As noted by response (2) above, movement monitoring will be undertaken. This will cover the pre-construction phase to establish a movement baseline, construction phase movement monitoring, and close-out movement monitoring. During the construction phase this will be linked to pre-determined trigger values and response plans to ensure movements do not exceed unacceptable levels. Condition surveys will also be undertaken pre and post construction, and will be linked to movement monitoring to establish when construction generated ground movements have ceased to cause potential impact.

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5	SETTLEMENT, SUMMARY	6	SETTLEMENT, SUMMARY Tunnel engineering and secant wall design is a sophisticated and vastly complex endeavour, demanding the services of teams of greatly skilled and experienced professional engineers, across many fields of specialty. It is something we, as a community, know nothing about. What is obvious, however, is that this project will have an enormous impact on our lives, our properties, and our community. It has the potential to greatly disrupt and destroy our lives and our community, and cause great and permanent damage to our homes. Information on the effects of all of the above, insofar as they are included at all, were presented only in The Railway Order Submission, which was lodged far too late to enable us, or our advisers, to carry out any suitable or comprehensive analysis, or draw any satisfactory conclusions. We would request of An Bord Pleanála to insist of full clarification of engineering data, in the form of a formal written response, including all drawings, graphs, calculations, and clear and precise explanations of the following;	Responses (2), (3) and (4) above explain the robust and conservative construction ground movement impact assessment that has been undertaken, and how this will be supported by pre and post construction condition surveys and a monitoring programme to ensure ground movements do not exceed acceptable limits, so that "great and permanent damage" is not caused to your home. TII acknowledge that MetroLink is a significant project, and your particular and understandable concerns regards the proximity of 34 Dartmouth Road to the construction of the proposed Charlemont Station, and while TII are of the view that the construction environmental impacts can be mitigated, relocation is an available option during peak construction. TII are available to discuss this option if that is something the property owner would like to explore and consider. TII understand the complexity and voluminous nature of the material submitted under the Railway Order Application. However TII would note that the statutory time limit in relation to public consultation have been adhered to.
6	SETTLEMENT, SUMMARY	6	1.1 ACCURACY OF DEPICTION OF BORED PILES ON DARTMOUTH ROAD, Drawings do not accurately reflect actual position of bored piles.	The drawings do depicted the location of the station structure in relation to Dartmouth Road. Please refer to the submitted Railway Order drawings, Structures Details, Book 2 of 3, drawing ML1-JAI-SRD-ROUT_XX-DR-Z-02090, which indicates the outline of the station external walls (Diaphragm Wall piles) in relation to the properties along Dartmouth Road.. The EIAR Chapter 5, MetroLink Construction Phase, Section 5.10.13 and Appendix A5.3 Section 8.14, also indicates the position of the station wall and explains the proposed construction of Charlemont Station. Further information of the depth of the proposed station structure is provided on station floor level structural plan drawings ML1-JAI-SRD-ROUT_XX-DR-Z-02092 to 02095 together with associated longitudinal section Drawings ML1-JAI-SRD-ROUT_XX-DR-Z-02096.
7	SETTLEMENT, SUMMARY	6	1.2 SOIL CONDITIONS, Soil analysis of complete zone of excavation. Soil analysis of zone of tunnel boring. Soil analysis of proposed zone of ventilation tunnel.	Soil baseline conditions and soil analysis are described in EIAR Chapter 20 (Soil and Geology). Please also refer to Appendix A20.2 where a summary of the relevant exploratory boreholes are included, Appendix A20.4 which includes geological models for each station and Appendix A20.8 which presents a land contamination report. Further data in relation to Charlemont is also available within appendices A20.1 to A20.9. Specific data for Charlemont, refer to: *Appendix A20.2 - Table 20.2.4: List of Exploratory Hole Locations in AZ4, 'Charlemont' ('Within Works Area' and within '250m of Works Area'). and Table 20.2.5: Summary of Groundwater Monitoring Locations 'AZ4 - Charlemont'. *Appendix A20.4 - Page 18 of 18 refers to Charlemont Station, including areas of main and proposed ventilation tunnels.
8	SETTLEMENT, SUMMARY	6	1 .3 PROJECTED SOIL SUBSIDENCE, Engineering review of projected subsidence, Review of proposed remediation.	These matters are refer to in responses (2), (3) and (4) above.

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9	SETTLEMENT, SUMMARY	6	1.4 WATER TABLES, Review of existing established water table, water courses. Projection of future water table, changes, and consequences.	Baseline assessments were undertaken for surface water and groundwater along the proposed project alignment from Estuary Station to Charlemont Station. Details of watercourses along the route of the proposed project can be found in EIAR Chapter 18 (Hydrology). The proposed alignment will cross beneath the Grand Canal at Grand Parade, with baseline conditions presented in section 18.4.3.4.6. The River Dodder was used as a monitoring point for surface water near Charlemont. Baseline conditions for the River Dodder can be found in Section 18.4.3.4.7. Other water features identified near Charlemont are Ranelagh Gardens and Swan River, which is mostly culverted (Table 18.10). The alignment will be tunnelled beneath these watercourses. The potential impacts on hydrology (surface water) during both the construction phase are presented in Section 18.8, with mitigation measures presented in Section 18.6, and residual impacts once mitigation measures have been implemented in Section 18.7. With mitigation included as part of the design, the magnitude of impact on Charlemont is temporary and not significant. There are no negative residual impacts on surface water near Charlemont. There is no increased flood risk and no significant impacts to canal / river / stream morphology. Full data supporting Chapter 18 is provided with Appendices A18.1 to A18.5. A review of the baseline groundwater quality is presented in Section 19.4 of EIAR Chapter 19, Hydrogeology. An assessment of potential impacts on groundwater, mitigation measures and residual impacts following the implementation of measures are also presented in EIAR Chapter 19. Further detailed information on groundwater quality, flow, and "barrier effect" assessments are presented in the appendices to Chapter 19. Results and summery text are presented in EIAR Appendix A19.1. Following the implementation of mitigation measures there are no negative residual impacts predicted on groundwater at Charlemont. Full data supporting Chapter 19 is provided with Appendices A19.1 to A19.11.
10	SETTLEMENT, SUMMARY	6	1.5 PRECISE TUNNELLING SYSTEMS PROPOSED, TBM proposed. Shield procedure, Ring erection, Gap grouting and time scale. Remediation procedures and face pressures.	Further to response (3), the EIAR Chapter 5: MetroLink Construction Phase, Section 5.5.3 Tunnelling describes the tunnelling requirements proposed to deliver the Project. Further details of the Tunnelling Systems and Operation for MetroLink is contained within EIAR Appendix A5.13, TBM Tunnels Construction Report. This document sets out the strategy and outline methodology for the construction of the TBM tunnels on MetroLink providing the details necessary for the completion of the assessments for the EIAR. The precise tunnelling systems deployed on the project will be subject to further detailed tunnel design, including the selection of the TBM and the development of final tunnelling plans by the MetroLink appointed Contractor. The methods and control of the TBM operation will be set out to meet the requirements of the Construction Environment Management Plan (CEMP), as referred to in Chapter 5, Appendix A5.1 Outline CEMP. The Contractor CEMP is subject to DCC review and approval in advance of construction commencement.
11	SETTLEMENT, SUMMARY	6	1.6 PROJECTED SECANT WALL DEFORMATIONS. Projected secant wall deformation at east boundary. Projected wall deformation at south boundary. Projected soil settlement in consequence thereof. Remediation proposals.	Please refer to responses (2), (3) and (4) above that explains the approach taken by TII to assess the impact of construction ground movements, and the assessed impact. Ground movement as a consequence of piling has been accounted for in the assessments. Please refer to A5.17, section 4.2.5 Ground Movement Due to Station Boxes and Retaining Walls, including reference to top down construction method chosen, minimising local settlement as excavation progressed.
12	SETTLEMENT, SUMMARY	7	1.7 ZONE OF SETTLEMENT. Precise maps of projected zone of settlement. Settlement slump trough graphs. Precise indication of properties to be effected. Scale of projected settlements.	All of these items are contained within EIAR Chapter 5, Appendix A5.17.
13	SETTLEMENT, SUMMARY	7	1 .8 RANGE OF PROJECTED SETTLEMENT. Range of projected settlement for individual houses in slump zone. Projected settlement of 45mm is alarming for Victorian houses.	The predicted settlement is shown on the settlement contours in Appendix 5.17, Appendix C. Please also refer to responses (2), (3) and (4) above that explains the approach taken by TII to assess the impact of construction ground movements, and the assessed impact. Whilst the concerns of property owners is recognised, the impact on overlying properties has been assessed based on the predicted settlement and the results have concluded that no structural impacts will occur. It is further of note that the assessment to date is moderately conservative and over estimates the impact.

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14	SETTLEMENT, SUMMARY	7	1 .9 CHARACTER OF ADJACENT BUILT ENVIRONMENT. The existence of foundations. Analysis of foundations for all effected properties. Projections for settlement for all effected properties. Remediation proposals for all effected properties.	Please refer to response (2), (3) and (4) above.
15	SETTLEMENT, SUMMARY	7	1.10 PROJECTED DURATION OF SETTLEMENT, Precise projections for duration of TBM pass. Projections for settlement at shield pass, Projections for settlement at ring erection. Projections for duration of damage and settlement in future years.	TII will be able confirm the schedule for the TBM upon award of the main works construction contracts and finalisation of the construction programme, noting that the TBM will only take a day or two to pass your property. TII and their contractor will consult with residents to ensure they are aware of the time the TBM will pass. As noted by the above responses, in particular (2) and (3), a ground movement impact assessment has been undertaken in accordance with recognised industry best practice. It is expected that ground movements will occur almost immediately as the tunnel is excavated. When the TBM is approaching, typically the construction monitoring period will commence 100m ahead of the TBM face, and will continue until it is clear that the immediate ground movement is complete. Typically, this is once the tunnel has progressed 50m beyond that asset. Thus, for TBM tunnelling the construction period relating to any monitoring point is unlikely to exceed 4 weeks for each tunnel drive, but noting that follow-on 'close out' monitoring will continue until MetroLink generated ground movements can be demonstrated to have reached a level that will have no impact on the surrounding environment. For the construction of the station (cut and cover construction), construction movements will be considered to have ceased sufficiently when the wall together with any permanent props or diaphragms are complete, and immediate construction movements have ceased, at which point construction period monitoring will cease. Upon which follow-on 'close out' monitoring will continue in the same manner as described for tunnelling above. As noted above, condition surveys will also be undertaken pre and post construction, and will be linked to movement monitoring to establish when construction generated ground movements have ceased to cause potential impact.
16	SETTLEMENT, SUMMARY	7	1.11 EVALUATION OF DAMAGE, COMPENSATION DISTURBANCE, AND DEVALUATION OF PROPERTY. Precise details for evaluation of damage to property. Precise details of evaluation of compensation. Precise details for evaluation of permanent devaluation of property Implications for house insurance/damage. Caretaking of abandoned houses during re-locations. Security of houses during re-locations.	Responses (2), (3) and (4) above have outlined the assessed impacts of construction generated ground movements on your property. As noted by response (2), private properties within 50m of the station excavation, or 30m of the tunnel are eligible to subscribe to the Property Owners Protection Scheme (POPs) which includes for pre and post-construction condition surveys and repair of damage.- TII would also draw attention to the Transport Infrastructure Ireland (TII) Airborne and Groundborne Noise Mitigation Policy (Appendix A14.6) where there is a process in place whereby further mitigation measures can be implemented at individual properties should this be merited. TII also confirm that while of the view that the construction environmental impacts can be mitigated, relocation is an available option in certain circumstances during peak construction. TII are available to discuss this option if that is something the property owner would like to explore and consider. TII would also confirm that in the event of relocation, TII would be responsible for caretaking and securing of any property from which persons have vacated as a result of choosing to relocate. TII do not agree that the development will have a long term and permanent negative affect on the value of your property. In fact there is evidence to suggest that property values will in fact increase in close proximity to public transport infrastructure and that local residents will greatly benefit from having a world class metro system providing access to the city centre, airport and north city at their door step. The benefits of the project for all communities along the MetroLink route are described in Chapter 3: Background to the MetroLink Project, section 3.4 MetroLink Response to Challenges.

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17	2. CONSTRUCTION STAGE, DUST, NOISE, AND VIBRATION.	8	2. CONSTRUCTION STAGE, DUST, NOISE, AND VIBRATION. Severe disruption from construction traffic, pile boring, excavation, tunnelling and on-going construction activities are a given, quite probably lasting for up to 9 years. This is an intolerable proposal, for us personally, and all the residents of Dartmouth Road.	TII acknowledge that the Project will cause disruption to residents, particularly during the partial and full closure of Dartmouth Road. While the duration of the Project will take 9 years to complete at Charlemont, the main activities contributing to the most significant impacts are anticipated to be completed in the first 5 to 6 years. The EIAR and associated appendices present the proposed mitigation measures for the Project. Chapter 13 and Chapter 14 of the EIAR identifies the required mitigation measures for noise and vibration associated with the Project, Chapter 16 provides mitigation measures associated with dust, and EIAR Appendix A9.5 Scheme Traffic Management Plan provides details of the proposed traffic management during the construction phase. Further detail on mitigation measures are provided in Appendix A5.1 Construction Environmental Management Plan (CEMP) and Appendix A16.4 Dust Management Plan. In summary: **Dust / Air Quality Construction Phase** EIAR Chapter 16, Air Quality, section 16.6 Mitigation Measures. The potential risk from dust emissions has been reviewed for the most important activities and each of the construction areas. Before commencing relevant works, an Air Quality Management Plan (referred to in section 16.6.1 Construction Phase) will be prepared and submitted for approval to the planning authority. The plan will take account of all relevant dust and emissions applicable to the circumstances of the relevant site, based on the local authority requirements and industry best practices. The plan will be developed by the contractor and for each worksite shall include: - An inventory and timetable of activities which may give rise to emissions or dust; - Alert levels; - Alert system to be used (including notification process); - Details of control measures; - Details of dust monitoring arrangements, including the location of sensitive receptors, monitoring locations, and monitoring equipment to be used; and - Details of the air quality reporting requirements. In order to ensure that no dust nuisance occurs, a series of measures will be implemented, as detailed in Appendix A16.4. In summary, the measures will include: - Material handling systems and site stockpiling of materials designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods; - Any blasting will be completed by specialised contractors with a specific blasting dust management plan; and - Hoarding will be provided around the construction compounds.

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			Response (17) continued.	Strict dust prevention will be in place at all times to minimise any potential emissions and these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations. Consistent implementation of good dust minimisation practices will ensure that the impact from construction dust is long-term, localised, reversible and not significant when considered with respect to the Environmental Protection Agency (EPA) description of effects (EPA 2022). **Construction Noise and Vibration** Potential impacts identified due to airborne noise and vibration are presented in EIAR Chapter 13. Noise mitigation proposed for works at Charlemont Station are summarised in Section 13.6.1 of the EIAR and include for boundary hoarding around the working area, including a 4m high hoarding at the southern boundary. In addition, the above ground support works for below ground sprayed concrete tunnelling works will be enclosed within an acoustically clad steel framed building to control noise breakout to surrounding receptors. On the implementation of these measures the residual impacts at 34 Dartmouth Road, are predicted to be Moderate to Significant. EIAR Appendix A14.5, Groundborne Noise and Vibration and Blasting Modelling Results, 14.4 Section AZ4 Northwood to Charlemont presents the predicted vibration levels during TBM passage for various sensitive receptors and outlines the predicted VDV (Vibration Dose Value is a parameter that combines the magnitude of vibration and the time for which it occurs) for TBM Passage during the day and night at 34 Dartmouth Road are 0.251ms-1.75 (VDV day) and 0.211ms-1.75 (VDV night) respectively. Both of these values are lower than the VDV Threshold Levels of 1.0ms-1.75 (VDV day) and 0.5ms-1.75 (VDV night). Levels of vibration during mechanical excavation of Charlemont Station are predicted to be 0.003ms-1.75 and 0.003ms-1.75 for day and night-time respectively. The threshold levels have been set in relation to human response to vibration, and thresholds for building damage are much higher. As the predicted levels of vibration from TBM passage and mechanical excavation are below these thresholds, no impact is predicted for either the building or for residents of this address. Predictions of vibration during blasting at Charlemont Station have also been made. For 34 Dartmouth Road an exceedance vibration level of 9.3mm/s PPV (Peak Particle Velocity) is predicted compared to the threshold level for this building of 8mm/s resulting in a potential significant impact. As a result, mitigation measures will be implemented to reduce the risk to buildings as outlined in EIAR Chapter 14, Section 14.5.1.2, including measures to reduce the impact of blasting through the preparation of specific blast design at each location, minimisation of the maximum instantaneous charge weight or alternatives to blasting. With the implementation of appropriate mitigation to reduce vibration from blasting the residual impact is predicted to be reduced to not-significant. The predicted level of groundborne noise during TBM passage is 48 dB LASmax at 34 Dartmouth Road, which is above the 45 dB LASmax threshold, resulting in a significant impact on the occupants of this address for the relatively short 2-week duration of the TBM passage. Unfortunately there are no effective methods available to reduce groundborne noise from TBMs at source and therefore the principal mitigation measure is advance consultation and engagement to inform residents of the timing of the TBM passing to allow building occupants to prepare for the temporary elevated noise levels. As outlined in Transport Infrastructure Ireland (TII) Airborne and Groundborne Noise Mitigation Policy (EIAR Chapter 14, Appendix A14.6) there is a process in place whereby further mitigation measures, including temporary relocation, can be implemented at individual properties should this be merited. **Traffic Construction Phase** (please see response (18) below regards particular access to 34 Dartmouth Road) EIAR Appendix A9.5 Scheme Traffic Management Plan presents the analysis undertaken to assess the impact of the traffic management measures on the local road network surrounding the proposed Charlemont Station during the construction phase. At the local level the following parameters have been used to assess impacts on general traffic and on pedestrians: • Increase in walking distance/quality of service for pedestrians (through removal of footpath, reduction of quality of service, removal of a pedestrian crossing or relocation of crossing by more than 100m); • Increase in driver delays at junctions; • Changes in traffic flows on surrounding streets; and, • Additional distance travelled due to diversions.

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			Response (17) continued.	The analysis undertaken at this location indicates that the increased volume of traffic on Grand Parade and Northbrook Road does not translate into any significant increase in driver delay. The largest increase in driver delay of 12 seconds is registered on the westbound approach on Grand Parade to the Ranelagh Road signalised junction. During the construction phase, pedestrians will experience a reduction in quality of pedestrian infrastructure and space. The construction site boundary will encroach upon footways in the local area, including the northern side of Dartmouth Road, and the southern side of Grand Parade. However, a temporary signalised crossing will be provided west of the Luas to maintain pedestrian access to and from the Stop. Whilst there are partial closures on Dartmouth Road and Grand Parade, pedestrian movements will be maintained on appropriately sized footways through the area. **Overall Assessment** TII understand your particular concerns regards the proximity of 34 Dartmouth Road to the construction of the proposed Charlemont Station, and while TII are of the view that the construction environmental impacts can be mitigated, relocation is an available option during peak construction. TII are available to discuss this option if that is something the property owner would like to explore and consider. Transport Infrastructure Ireland (TII) Airborne and Groundborne Noise Mitigation Policy (EIAR Chapter 14, Appendix A14.6) there is a process in place whereby further mitigation measures, including temporary relocation, can be implemented at individual properties should this be merited.
			2.1 SCALE AND TIME-FRAME FOR CONSTRUCTION COMPOUND. The scale and scope of the proposed construction compound is totally unacceptable, and will result in intolerable living conditions for us as residents of 34 Dartmouth Road. It is proposed to close off the road, and erect a large high hoarding on the footpath outside our front door. Access to Dartmouth Road will be completely restricted, with no possibility parking anywhere near our houses, no facilities for delivery, collections, emergency services, and bin collection. Access will be extinguished, possibly for up to 9 years. Loss of daylight, light pollution and unbearable noise levels are proposed.	Response (17) above explains how during construction, dust, noise, vibration and traffic impacts will be mitigated. With regards to the following: **Construction compound:** The size of the main construction compound at Charlemont (4,200m3) is required to construct the Station. Please see section 5.3.1 of Chapter 5 for further information on construction compounds. The construction compound will be fully secured with fencing and hoarding surrounding all works areas to ensure there are no health and safety risks for local residents, and environmental impacts are managed to acceptable levels. **Hoarding:** This is necessary to secure the construction site, mitigate impacts on the landscape by concealing the construction site and activities, and as noted above, as a mitigation measure for noise.

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18	2.1 SCALE AND TIME-FRAME FOR CONSTRUCTION COMPOUND.	8	Response (18) continued.	In some locations, TII accept that the hoarding may cause annoyance due to disruption of sunlight but this is a necessary mitigation for noise and providing a secure and safe site. **Road closure:** It is correct that Dartmouth Road will be closed between Dartmouth Place and Dartmouth Square West during enabling works and construction works but diversions will be put in place for local access, including deliveries, emergency services, bin collection, and pedestrian access maintained to your property. The impacts on parking will be monitored during construction to reinstate any disrupted areas as soon as practicable. The impact on traffic around Charlement has been assessed within Chapter 9: Traffic & Transport, Appendix A9.5 STMP, with Figure 7.57 describing the closure of Dartmouth Road and diversions proposed. **Lighting:** This will be designed to ensure that artificial light emitted from the construction compound does not cause a nuisance to residents. Lighting will be positioned and directed so as not to intrude unnecessarily on adjacent properties. For further information on site lighting, see section 5.12.9 of Chapter 5 and EIAR Appendix A5.18 (Site Lighting Plan).
19	2.1 MANAGEMENT OF INTERACTIONS WITH IMPACTED PROPERTIES.	8	We would request of An Bord Pleanála to insist of full clarification, in particular, of the following issues; 2.1 MANAGEMENT OF INTERACTIONS WITH IMPACTED PROPERTIES. How will this issue be addressed? Who is responsible? When will process be initiated? Who will be appointed to mediate between parties? Can RINA provide reference information, including international precedence, in this regard?	Please refer to Section 5.12.4.5 of the EIAR which outlines that a Stakeholder and Community Engagement Plan will be used to guide community and stakeholder engagement during the construction phase. Both TII and their contractors will be responsible for ensuring that local residents are informed with regard to works on an ongoing basis. The reference to RINA providing reference information, including international precedence is not understood, however TII can confrm that the services of an independent engineer will be made available during the construction stage to provide independent advise to affected stakeholders. The services of the Independent Engineering Expert (RINA) are due to be concluded on completion of the Railway Order process (expected in 2024). The continuation of provision of independent engineering advice for residential stakeholder groups throughout the enabling works and main construction stages of the MetroLink project is currently being considered as part of an overall comprehensive community engagement plan, which will include amongst other initiatives, the appointment of dedicated MetroLink liaison representatives and local community forums which will provide detailed updates on construction activities in their areas.
20	Impact on properties	8	2.2 MONITORING AND SURVEYING OF IMPACTED PROPERTIES. What is precedence in other countries for impacted properties? What monitoring and surveying of properties will take place during construction - frequency etc and mitigation, if issues arise, particularly secant/boring implications?	As described in the outline Construction Management Plan (Outline CEMP) (Appendix A5.1), the appointed contractor(s) will be required to develop and implement an Environmental Management System (EMS) that follows the principles of ISO 14001. The EMS will include an environmental policy, operational, monitoring and auditing procedures to ensure compliance with all environmental requirements and to monitor compliance with environmental legislation and the environmental management provisions outlined in the relevant documentation. Mitigation and monitoring will be carried out in accordance with the requirements of the EIAR and NIS so that construction activities are undertaken in a manner that does not give rise to significant negative effects. Suitable monitoring programmes will be developed, implemented, documented and assessed in accordance with the specification outline in the detailed CEMP(s). The results of all environmental monitoring activities will be reviewed by the Environmental Manager on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented as necessary. The contractor(s) will be required to inform TII of any continuous exceedances of criteria, noting that trigger levels will be set with pre-determined action plans to ensure acceptable limits are not breached. It will be possible to contact the site 24 hours a day to report an incident occurring. TII and its appointed contractor(s) will ensure that local residents, occupiers, businesses, local authorities and all other stakeholders affected by the proposed construction works, as outlined in this EIAR, will be informed in advance of work taking place. The notifications will detail the estimated duration of the works, the working hours and the nature of the works. In the case of works required in response to an emergency, local residents will be advised as soon as reasonably practicable. A local helpline number will also be provided and will be available to call 24 hours a day. Please also refer to response (2) and (4) above that outlines the approach to ground and building movement monitoring and condition surveys.

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21	2.3 RELOCATION - SECURITY OF ABANDONED PROPERTIES.	8	2.3 RELOCATION - SECURITY OF ABANDONED PROPERTIES. If impacted residents need to be relocated what is the proposal regarding security, insurance, maintenance, and upkeep of existing properties.	Please refer to response (16) above. In the event that it agreed that resident moves out of their property during the construction, reasonable costs incurred in relation to the vacated property will be borne by TII and the MetroLink project.
22	3. OPERATIONAL STAGE, NOISE, AND VIBRATION.	9	3. OPERATIONAL STAGE, NOISE, AND VIBRATION. Noise and vibration from operational activities are a far more serious concern, in that this disruption will be permanent, and persistent. Once established, it will be impossible to have remedied - for instance, noise from Luas, of which we all have bitter experience. In this light, the following issues have some major relevance.	Operational Noise and Vibration EIAR Chapters 13 and 14 present a comprehensive and detailed assessment of operational airborne and groundborne noise and vibration. No residual noise impacts are identified at this location during operation. The calculated rail noise levels across the proposed Project are not significant in terms of any widespread community disturbance and result in a not significant to slight impact when added to the prevailing noise environment. EIAR Chapter 13, sections 13.2.3.2 and 13.5.3.2.3 recognise that ventilation systems if not designed and mitigated effectively are potential noise sources. Section 13.6.2.3 outlines the detailed considerations that will be included in the design to ensure that the ventilation systems do not exceed limits as per BS 4142, including: • Reduction of induct flow rates; • Reduction of elements in the airflow; • In duct attenuators; • Orientation of grilles and louvres away from sensitive receptors; • Acoustic louvres; and • Anti-vibration mountings and couplings will be incorporated into the design to control vibration. Measures to mitigate noise from the use of public address systems is also detailed in Chapter 13 (sections 13.5.3.2.4 and 13.6.2.4). Best practice design principles will be employed to minimise noise breakout at the surface from these systems via escalators, lift shafts and stairwells. There are no significant impacts associated with this source.
23	NOISE AND VIBRATION FROM TRAIN MOVEMENTS.	9	NOISE AND VIBRATION FROM TRAIN MOVEMENTS. The problem of transmission of vibration and noise from passing trains in direct proximity to the Gate Theatre, and the Rotunda Maternity Hospital, is accepted as an issue in the Preferred Route Development Report 2019. It is noted (Appendix L. O'Connell Street Station, Page 12) that 'with appropriate mitigation this is not envisaged to introduce significant impacts' This would suggest that, under normal circumstance, significant impact could be expected. It is acknowledged that the type of track support, amongst other things, chosen for the metro system can have a significant impact on the level of vibration transmitted to receptors - for example, High Density Floating Track Systems offer best practice and best protection. This system is, however, more expensive to install. It is noted that High Density Floating Track Technology measures would be implemented at the Gate Theatre and Rotunda Hospital, as mitigating measures, suggests that the remainder of the track, and ordinary receptors, would be afforded no such luxury. <u>Attending at the Gate Theatre in an optional leisure activity.</u> <u>Trying to sleep in your own house is not.</u> It is anticipated trains will operate at up to 45 second intervals.	Airborne noise from trains within the tunnel and station will not be audible at ground level. The principal noise source associated with operational trains is groundborne noise which has been fully assessed in Chapter 14. No significant impacts are determined. Noise and vibration mitigation measures for trains are only proposed at locations where very sensitive equipment would be vulnerable from interference arising from the passage of the trains. The predicted levels of noise and vibration at Charlemont are well below limits that will effect residents and therefore the installation of floating track slab is not proposed at this location. Further information on the how these requirements were set is available in Chapter 14: Groundborne Noise and Vibration, section 14.5.2 Operational Phase, with proposed locations set out in Table 14.47. Further details on setting the requirements is provided in Appendix A14.3 Track Support Systems Assumptions.

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24	NOISE FROM VENTILATION SHAFTS, EXTRACT FANS, AND FIXED PLANT.	9	NOISE FROM VENTILATION SHAFTS, EXTRACT FANS, AND FIXED PLANT. No proper assessment of the potential for permanent noise pollution from massive shaft excavation fans and fixed plant, located just below ventilation grills, at ground level, at Dartmouth Road and Dartmouth Square West, is presented. These fans will presumably run continually day and night. This is an intolerable proposal, for a quiet residential area, and we would request of An Bord Pleanála to insist on alternative methodology.	Please refer to response 22) above that outlines the approach that will be taken to ensure fans do not cause disturbance and nuisance.
25	NOISE AND NUISANCE FROM ESCALATORS.	10	NOISE AND NUISANCE FROM ESCALATORS. Escalators are noisy - they rattle and groan continually, and grow noisier with age, as parts naturally age with usage. The escalator proposed for the Dartmouth Road exit/entry is exceptionally long, by any standard. These escalators will run continuously from early morning, probably 0530hr, to midnight, or later. The operation of roller shutter enclosures at escalator entrances is also a cause of concern, as such operations will always, by their nature, be very early in the morning, or very late at night. They are proposed to be located in direct proximity, in front of our house at Dartmouth Road. Again, we consider this to be an intolerable proposal, for a quiet residential area, and we would request of An Bord Pleanála to insist the removal of the second entrance to the station proposed for Dartmouth Road.	Escalators located within the stations will be modern equipment and will therefore not rattle or groan, or generate unacceptable noise levels. MetroLink assets such as escalators will also be subject to a maintenance regime detailed in a Maintenance Plan that will be developed by the operator as noted in Chapter 6, Table 6.5. Mechanical elements associated with escalators are housed below ground and are fully enclosed. The station entrance to the south of Charlemont station is located approximately 30m from the properties along Dartmouth Road. The operation of escalators do not generate any notable noise sources during operation and will not be audible above the prevailing noise environment to the adjacent residential properties across Dartmouth Road which is dominated by road traffic. The station entrances are enclosed with gates, there are no roller shutter doors proposed at the station entrances. Finally, noise levels arising from the station during the operational phase will be required to adhere to limits to ensure that there are no significant effects and a BS 4142 (BSI 2014 +A1 2019) assessment will be carried out to compare the external background sound level in the absence of plant items (such as an escalator) to the background sound level with the plant items when operational as noted in Chapter 13, Section 13.2.6.2.4.
26	4. NOISE, AND ACOUSTIC CALCULATIONS.	10	4. NOISE, AND ACOUSTIC CALCULATIONS. No proper analysis of the effects of noise pollution has been carried out for the houses at Dartmouth Road. This is an alarming omission, as these houses are the closest located adjacent the station entrance, permanently running escalators, late night traffic and travellers, and general anti-social behaviour generally associated with metro stations. (International evidence for same in general circulation).	It is not correct to say that "No proper analysis of the effects of noise pollution have been carried out". Assessments of airborne and groundborne noise during both the construction and operational phases have been undertaken for houses on Dartmouth Road, as presented within chapters 13 and 14 of the EIAR, and summarised by responses (22) to (25) above. The predicted noise from escalators is addressed by response (25) above. With regards to stations entrances, these are transient areas for passengers entering and exiting the station. These activities are not the source of significant noise generation and form part of the existing soundscape in the existing prevailing environment. It is acknowledged footfall numbers will increase in the vicinity of the station entrance, however this activity does not translate to significant noise impacts. 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 and pick-up point. With regards to the management of anti-social behaviour please refer to response (29) below.
27	LUAS EXPERIENCE.	10	LUAS EXPERIENCE. Many people in this area have suffered permanent disruption to their lives by the introduction of the Luas. Much legal wrangling ensued, but the experts could produce calculations in court, proving their figures averaged out to non- disturbance levels, over selective timeframes. The residents continue to live with the results.	TII believe the opening of the Luas line has benifited the local community. Previous proceeding in respect of its environmental impact are not a matter for this Railway Order Application.

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28	5. TRAFFIC PROJECTIONS.	10	5. TRAFFIC PROJECTIONS. A look at the map of South Dublin will reveal only one probable scenario - everybody heading to the airport from South Dublin will descent on Dartmouth Road for passenger drop-off, private transport, taxis, and buses. Foot passengers, with their rattling suitcases, will descent on the area, both day and night. Taxis will loiter. It is hard to image a more lucrative set-down area for a taxi to linger, day and night, than that proposed for Dartmouth Road. (There is ample space for a set down taxi bay, inset into the wide footpath at the office building entrance on Grand Parade, yet this location was not chosen for a set down bay!)	Transport modelling undertaken by TII does not show that "everybody heading to the airport from South Dublin will descend on Dartmouth Road for passenger drop-off, private transport, taxis and buses.", for the reasons explained below. The 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. As noted in Appendix A9.2-B Charlemont Traffic and Transportation Assessment, when the Project is operational, car mode share will decrease, with a reduction of up to approximately 830 car trips to and from the zones surrounding Charlemont Station over the 12hr period in 2065. In overall terms, the Charlemont Station will provide for improvements to the public transport network resulting in decreases in private car usage/trips, increases in public transport usage/trips and will facilitate walking and cycling to the station, without significantly impacting on the operations of the road network in the area. As a result, significant increases in traffic flow to or on Dartmouth Road are not anticipated. The number of active modes trips (walking and cycling) to and from the station is shown to increase when the Project is in place, demonstrating a shift towards sustainable modes at this location. This also reinforces that a proportion of passengers at this station will originate from, or have destinations, within the walking catchment of the station, as opposed to originating from South Dublin. Appendix A9.2 B Charlemont Traffic and Transportation Assessment section 5.1.1.4 indicates that Charlemont Station is served by the Luas Green Line which runs every 15 minutes or better, with bus services located within a 5-minute walking distance. As a result, Charlemont passengers are characterised by high levels of public transport interchange, rather than 'foot passengers'. A microsimulation VisWalk model has been developed for the immediate area surrounding Charlemont Station during the operational phase to assess the impact of the increased number of pedestrians at this location. 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 Project station, a new staircase with 2.4m stair width is proposed at the south east corner of Charlemont Luas stop. An elevator would also be provided at this location. In addition, it is proposed that the pedestrian crossing on R111 Grand Parade would be repositioned to the front of the Hines Building. With this infrastructure in place, the model indicates that the R111 Grand Parade will have an acceptable level of service overall, with some reductions in service seen at the pedestrian crossing where pedestrians are required to wait for a green phase at the signals. Overall, it is considered that the model displays an acceptable level of network performance. As noted in Chapter 06 (MetroLink Operations and Maintenance), the Project has been designed to ensure maximum interchange with other modes of transport, specifically with sustainable modes such as public transport, walking and cycling, over cars. 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. As noted above, there will be reductions in the number of car trips to and from the surrounding zones when the Project is operational. An area for drop off for limited mobility passengers is provided on Grand Parade.
29	6. ANTI SOCIAL BEHAVOUR.	11	6. ANTI SOCIAL BEHAVOUR. The likely scenario of noisy inebriated passengers disgorging from the MetroLink station on Dartmouth Road, at midnight, is not hard to imagine. Combined with taxis waiting for fares, this all paints a disquieting picture.	The interchange will certainly increase the number of people passing through the area, however it is important to note that people will be using MetroLink, similar to Luas as a transport hub, moving quickly in and out of the area. The station will not be a destination attracting people to remain in the area. As noted above, 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.

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30	7. REMOVAL OF CHARLEMONT STATION FROM RAILWAY ORDER.	11	7. REMOVAL OF CHARLEMONT STATION FROM RAILWAY ORDER. It is our contention that the proposed Metrolink should be terminated at St Stephen's Green West, and should not be at Charlemont location. St Stephen's Green west is a perfect opportunity to make proper interconnectivity with Luas, and proposals for the Dart underground system. Charlemont is a totally unsuited location, being a quiet residential area.	Arising from the decision to postpone the future upgrade of the Green Line to metro services, it is being argued that Charlemont station effectively becomes a terminus station in the short to medium term. In this regard, it is true to say that the Metrolink trains will terminate and turn back at Charlemont station, however the public transport service offering for passengers does not terminate, it transfers from Metrolink to LUAS as part of the integrated transport network. The terminus station for MetroLink is located at Estuary where all of the activities normally associated with a terminus (train sideways, car parking etc) take place. At this location the high capacity public transport offering terminates and the public transport offering transfers to a completely different mode, i.e. Bus or car. The environmental effect of the Metrolink terminus are accordingly assessed in the EIAR. Charlemont Station does not have the associated infrastructure and services associated with a terminus location and in fact has more in common with a "system turn back location". Charlemont Station is located within an area of high public transport accessibility, linking with the Luas Green Line which offers reasonably similar levels of services and frequency for journeys to and from the south of Dublin. As such, public transport service offering is not considered to terminate, but transfers onto the similar service offered by the Luas Green Line, forming part of a transport corridor running from Cherrywood to Estuary. The associated environmental impacts for the turnback and station at Charlemont have been fully assessed in the EIAR. Charlemont station itself was chosen on the basis of its interchange potential with Luas, as well as local bus services, as outlined above. The section of the line between St Stephen's Green and Charlemont generates considerable benefits for the scheme in terms of increased patronage. Operationally, the Station will see people moving quickly in and out of the area, noting that it will act as an interchange, and has been deliberately designed with minimum set down space or room for taxis so that it does not encourage the Station to be used as a terminus. All operational environmental impacts are mitigated so they are not significant, while the impact on amenity will be permanent and positive. TII do not agree that Charlemont is the incorrect location for an interchange with the Luas Green Line for the reasons set out below, noting that the above responses have addressed how the environmental impacts will be managed and mitigated where required, during both the construction and operational phases of the Project. A number of route options were considered in the process of identifying the Emerging Preferred Route (EPR). Route alignments from St. Stephen's Green West that would also provide an interchange with DART at Tara Street Station would require an intervention shaft between these locations and would also need an undesirable horizontal reverse curve and so are not favoured. As outlined by EIAR Chapter 3, Background to the MetroLink Project, one of the key objectives of the Project is the integration of it with the wider 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. 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) and as such the following matters are relevant.

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			Response (30) continued.	The connection from St Stephens Green to Charlemont / Ranelagh is supported by the current Transport Strategy for Greater Dublin Area (2022-2042). 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 south west, south or south east of the city region should sufficient demand arise." The Transport Strategy is "a consideration material to the proper planning and sustainable development of the area or areas in question." Development Plans are required to be consistent with the Transport Strategy. The Dublin City Development Plan 2022-2028 envisages this station at Charlemont in policy SMT22 "To support the expeditious delivery of key sustainable transport projects so as to provide an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city and region and to support the integration of existing public transport infrastructure with other transport modes. In particular the following projects subject to environmental requirements and appropriate planning consents being obtained: … MetroLink from Charlemont to Swords". Accordingly, the location of the Charlemont station was a strategic decision made at the highest levels of transport and land use planning and such is fully consistent with the proper planning and sustainable development of the area. The current 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 any of the above directions.
				The proximity of the metro to the Luas line at Charlemont provides for a positive customer experience for all users with short interchange distance and due to the proximity, clear wayfinding and high visibility of the interchange. The interchange arrangements at Charlemont provide for significantly better interchange arrangements compared to an alternative interchange at St Stephen's Green Station. Passengers wishing to interchange between Luas and metro at the St Stephen's Green terminus 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. This passenger experience would be reduced further for those with mobility or visual impairments as well as those travelling to/from the airport with luggage. The detailed analysis done for the Railway Order application further confirms that 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. Further information is available in Chapter 7: Consideration of the Alternatives, section 7.7.8 MetroLink Southern Terminus Location.

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			Response (30) continued.	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. 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." 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. 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). As stated above, it is important to note that the proposed route alignment from Estuary to Charlemont is consistent and compliant with the GDA Transport Strategy 2022-2042 (published in January 2023) in which states that the south city terminus at Charlemont offers the optimal location for 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.