**Our Case Number:** ABP-314724-22

**Planning Authority Reference Number:**

**Your Reference:** OPW St. Stephens Green Park

An Bord Pleanála

Downey Planning
29 Merrion Square
Dublin 2
D02 RW64

**Date:** 24 January 2023

**Re:** Railway (Metrolink - Estuary to Charlemont via Dublin Airport) Order [2022]
Metrolink. Estuary through Swords, Dublin Airport, Ballymun, Glasnevin and City Centre to Charlemont, Co. Dublin

Dear Sir / Madam,

An Bord Pleanála has received your recent submission and oral hearing request in relation to the above-mentioned proposed Railway Order and will take it into consideration in its determination of the matter.

The Board will revert to you in due course with regard to the matter.

The Board has absolute discretion to hold an oral hearing in respect of any application before it, in accordance with section 218 of the Planning and Development Act 2000, as amended. Accordingly, the Board will inform you on this matter in due course.

Please be advised that copies of all submissions/observations received in relation to the application will be made available for public inspection at the offices of the relevant County Council(s) and at the offices of An Bord Pleanála when they have been processed by the Board.

More detailed information in relation to strategic infrastructure development can be viewed on the Board's website: www.pleanala.ie.

If you have any queries in the meantime, please contact the undersigned. Please quote the above mentioned An Bord Pleanála reference number in any correspondence or telephone contact with the Board.


| | | |
|---|---|---|
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64 Marlborough Street
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Yours faithfully,

pp. EM

Niamh Thornton
Executive Officer
Direct Line: 01-8737247


| | | |
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OPW Oifig na nOibreacha Poiblí Office of Public Works

16th January 2023

An Bord Pleanála
64 Marlborough Street
Dublin 1
D01 V902

**Re: Railway (Metrolink–Estuary to Charlemont via Dublin Airport) Order 2022 – Submissions by the Commissioners of Public Works in Ireland**

To whom it may concern,

The Commissioners of Public Works in Ireland (hereinafter, The Office of Public Works (OPW)), wish to express their overall support for the Metrolink project and welcome the economic, social and tourism benefits of this major transport infrastructure to the city of Dublin.

The OPW is presenting individual submissions for consideration by An Bord Pleanála, as part of the Railway (Metrolink–Estuary to Charlemont via Dublin Airport) Order 2022 process. This cover letter forms part of the overall submission(s) and introduces observations relating to properties owned, controlled, or for which the OPW has a responsibility, along the proposed railway route.

Any issues raised in these submissions stem from the statutory role and responsibility of the Commissioners of Public Works to ensure the protection and preservation of critical State properties, historic/national monuments and the continuity of State business throughout the project.

The OPW wishes to acknowledge the positive engagement between officials from TII and the OPW over the past number of years. However, we note that there are a number of outstanding matters relating to the construction and operation phases of Metrolink which they would wish to have addressed as part of the confirmation process. While specific issues have been identified in the submissions prepared by Downey Planning,

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who have been retained as consultants advising the OPW, this covering letter sets out some, more general comments for consideration by An Bord Pleanála.

It should be noted that the submissions now made are based on the information provided at this consultation phase. Critical aspects of this project relating to physical construction methodologies have not yet been determined and, therefore, a full analysis of any impacts on properties is not possible. In that regard, submissions are only possible and limited to the information that has been made available at this juncture.

**Legal Requirements**

As noted above, the OPW is supportive of the Metrolink project. However, this is subject to all statutory requirements being complied with, in light of the Commissioners' duties under the Commissioners of Public Works (Functions and Powers) Act 1996 and other Acts.

Apart from that broad statutory provision, there are two specific statutory provisions to draw to the Bord's attention.

First, s.15 of the St Stephen's Green (Dublin) Act 1877 (the "**1877 Act**") provides that the Commissioners of Public Works shall maintain St. Stephen's Green as an ornamental park or pleasure ground for the recreation or enjoyment of the public and may erect any lodges or ornamental buildings or indeed provide ornamental fountains or waterworks.

This is subject to s.116 of the Dublin Transport Act 2008 (the "**2008 Act**") which dis-applies s.15 of the 1877 Act

A. to anything done for the purposes of surveys and inspections under s.36 of the Transport (Railway Infrastructure) Act 2001 (the "**2001 Act**"),
B. to any railway works (within the meaning of s.2 of the 2001 Act) carried out on or under Saint Stephen's Green pursuant to a railway order under s.43 of the 2001 Act, or
C. to restrict the operation of a railway, light railway or metro (within the meaning of s.2 of the 2001 Act) on or under Saint Stephen's Green.

While the OPW is of the view that this section is broad enough to capture the elements of construction and operation of the Metrolink project, insofar as it potentially affects or impacts on St. Stephen's Green, it only dis-applies s.15 of the 1877 Act in those particular circumstances and does not repeal same. Therefore, the confirmation of the Railway Order should ensure that the proposed Metrolink project properly falls into one or more of the criteria in s.116 of the 2008 Act.

Secondly, the Commissioners of Public Works are of the view that the requirements in the National Monuments Act 1930, as amended, would have to be complied with, irrespective of the confirmation of the Railway Order and that a Ministerial consent or consents will have to be obtained by TII where there is potential demolition of a national monument.

There is a further consideration that s.14D of the 1930 Act was inserted by the European Union (Environmental Impact Assessment of Proposed Demolition of National Monuments) Regulations 2012 (S.I. No.249/2012) (the "**2012 Regulations**") to give effect to the Environmental Impact Assessment ("**EIA**") Directive. The 2012 Regulations require the carrying out of an EIA where a decision to grant consent under s.14(2)(a) of the 1930 Act, or to issue directions under s.14A(4)(d) of that Act, would result in the demolition of a national monument. Thus, where the Minister is considering whether or not to grant a consent or issue directions, as the case may be, and it appears to the Minister that the granting of the consent or the issuing of the directions, as the case may be, would result in the demolition of a national monument but the applicant has not submitted an environmental impact statement ("**EIS**") (now an environmental impact assessment report ("**EIAR**")) to the Minister, the Minister is obliged to call for an EIAR to be submitted.

In particular, given the scale of loss of foliage at Saint Stephen's Green Park (which is a designated national monument), the proposed project could be deemed to amount to the destruction of part of a national monument and therefore a Ministerial consent will be required under the National Monuments legislation. While this will be required in any event, it is recommended that an express condition be attached to the railway order and have proposed some suggested wording later in this submission.

**Staged Assessments**

In the Railway Order application, the EIAR refers to Stage 3 assessments for certain properties of historical significance, cultural or monument status or protected structures. This will be a critical factor for the OPW and a requirement for detailed consultation in relation to the design development phase of the project. It is not possible at this stage to assess or fully comprehend the extent of the impacts on sensitive and historic properties. Therefore, it is imperative that the OPW is afforded an opportunity to input into this critical stage in the process, to protect such significant structures and ensure the success of the project overall for the State. Accordingly, it is recommended that the Bord exercises its power under s.43 of the Transport (Railway Infrastructure Act 2001) and attach a condition to the confirmation of the railway order which requires TII to consult with, (and provide and agree method statements), the OPW in advance of works being carried out. The proposed wording is set out later in this submission.

The properties for which a Stage 3 assessment is critical are listed in Appendix A.

In addition, while Stages 4 and 5 are not included in the Railway Order application or EIAR, the OPW considers these stages as key to the success of the project overall. The OPW would welcome the inclusion of the Stages in the process, to facilitate a process of monitoring the necessary mitigations implemented, in advance of closing out the completion of the project. These stages are further described in Appendix D. Additionally, any issues arising in Stages 3 and beyond, that result in material changes to the scheme and/or impacts on properties not set out in this current Railway Order Application should necessitate a new, additional Railway Order application, as it is likely to be materially different to that submitted in this current application. Alternatively, the Railway Order should be amended and the OPW would draw the Bord's attention to s.146D of the Planning and Development Act 2000, as inserted by s.30 of the Planning and Development (Strategic Infrastructure) Act 2006, which allows for the amendment of railway orders.

On a related point, clarity from TII is required on apparent discrepancies between drawings submitted by TII in the Railway Order. In particular, the tunnel alignment on contour drawings appear incorrect in certain places and this is referenced in some of the individual property submissions.

**Property Submissions**

There are individual submissions accompanying this letter with detailed observations on each property. We respectfully request that these detailed observations are considered by An Bord Pleanála and that the OPW is afforded the opportunity to discuss those observations at an oral hearing in due course. The opportunity to present at an oral hearing would be considered an important part of the process, given the national significance of the State properties that may be impacted by the Metrolink development. These include St. Stephen's Green Park (a national monument), the Houses of the Oireachtas, Government Buildings, the Cultural Institutions such as the National Museum, the National Gallery, the National Concert Hall and the GPO, among others.

In summary, the individual submissions to An Bord Pleanála cover a number of matters relating to State properties, including:

- **Building type**: All of the historic properties in the Government business district in Dublin 2, in particular, will have varying levels of sensitivity to settlement, vibration, etc. A number of these also house equipment that is sensitive to vibration, noise, etc. and have lower ground operational areas or deep foundations. The OPW would respectfully request that an express condition be

attached to the railway order that acknowledges and mitigates any adverse impact on the subject properties.

- **Future developments**: The OPW would seek to ensure that the routing of any MetroLink tunnel would not limit the State's capacity to develop its property - vertically or horizontally - particularly around or below Leinster House, Government Buildings, the National Gallery, the National Museum, and the National Concert Hall complexes. By way of example - the future of the National Concert Hall (NCH) property includes a Master Plan, currently being developed, and envisages a new Children's Science Museum on the complex. Planning Permission is in place for some extensive developments, including lower levels of buildings that may impact the MetroLink tunnel.

  The OPW would respectfully request that an express condition be attached to the railway order that acknowledges and mitigates any restrictions on future development of the subject properties.

- **Security**: The Preferred Route runs beneath the Dáil, Seanad, and Committee Chambers, as well as Government Buildings. A thorough risk assessment from the perspectives of State security will be critical to understanding the implications during any construction and operating phases.

  The OPW would respectfully request that an express condition be attached to the railway order that acknowledges and mitigates any adverse impact on the security of the subject properties.

- **Vibration, Noise, Electromagnetic Radiation and Interference**: The Oireachtas Chambers have extremely low tolerance for any external noise, vibration, or electromagnetic interference during and post construction.

  The National Museum of Ireland holds the National Archaeological Collection on behalf of the State. The National Collection contains hundreds of thousands of objects including fragile artefacts such as prehistoric ceramic vessels, and Greek and Roman ceramic and glass vessels. The National Gallery of Ireland, in particular, has concerns about the effect of ongoing low-level vibrations on priceless paintings in the State collection.

  In terms of the National Concert Hall's activities, the impact of noise and vibration during the construction and operational phases of the MetroLink are matters that would require to be mitigated.

  The former Department of Arts, Heritage and the Gaeltacht had previously expressed to the OPW the significant concerns of the Boards of Governors of the Cultural Institutions (the National Gallery, the National Museum, the National Library and the National Concert Hall).

The OPW would respectfully request that an express condition be attached to the railway order that acknowledges and mitigates any adverse impact on the subject properties.

- **Potential impacts to National Monuments:**

    - **St. Stephen's Green Park:** The OPW acts on behalf of the relevant Minister in the operation, care and maintenance of St. Stephen's Green Park; and so shares the concerns of our colleagues in the Dept. of Housing, Local Government & Heritage that the proposed station location would have a direct, severe, negative, profound and permanent impact on the heritage value of the Green.

      As presented, the proposals would not seem sufficiently sympathetic to the history and environment of the spaces within and around the Green. The OPW would urge An Bord Pleanála, when considering any Railway Order Application, to also consider the unique, inherent importance of St Stephen's Green Park to the people of Dublin and in light of the specific legal protection which has been identified above.

    - **Moore Street/Moore Lane**: The impact on the national monument properties on Moore Street now appears to be very significant, in particular in relation to the 'cut and cover' works zone proposed for the Metrolink station box. The proposed development works are very close to the boundary of the monument and includes the public roadway, Moore Lane, behind the monument site. There are also likely to be serious and lengthy impacts and disruption to the operation of a new centre of commemoration planned for the site, with a substantial State investment due to be made over the coming years.

The OPW has discussed most of these concerns with TII as part of a consultation process between our organisations over the past number of years, but would like to ensure these points are formally included in the conditions attached to any Railway Order granted.

**Legal Agreements**

The Commissioners of Public Works would seek to enter into appropriate, property-specific legal agreements with TII, to ensure the protection of key State properties and of the State's activities undertaken within those and other properties. Given the importance of such properties and activities, the Commissioners of Public Works consider it appropriate that An Bord Pleanála would make the Railway Order conditional on such legal agreements being in place between TII and the OPW. Creating such legal agreements between TII and the OPW would be possible only after TII make available the more detailed design and risk-mitigation measures for the construction and operational phases of the MetroLink project, and before any development begins. Therefore, the OPW would request that this aspect be reflected in the conditions set out

by An Bord Pleanála to TII, as this would provide assurances to the Commissioners of Public Works relating to future legal agreements that protect and secure State property and activities from risks associated with the construction or operations of the MetroLink.

In that regard, the OPW would suggest wording for conditions as follows (or such equivalent wording as the Bord determines appropriate). In respect of the need to ensure compliance with the National Monuments Acts:

"Prior to commencement of development, TII must ascertain whether the proposed Metrolink project will potentially result in the total or partial destruction of any national monuments and, if so, must comply with the requirements of s.14 of the National Monuments Act 1930, as amended,"

In terms of the sensitivity of the uses within many of the properties referenced in the submissions, coupled with their historic importance, the OPW respectfully requests that An Bord Pleanála consider attaching conditions to the Railway Order that ensures continuous monitoring of those properties to prevent any negative impacts. This is referenced further in the individual submissions.

In that regard, the following wording is proposed:

"Prior to commencement of development, TII will prepare detailed method statements which shall be submitted to the relevant planning authority for agreement by the planning authority. Insofar as the proposed works affect any State properties, TII shall consult and agree with the Commissioners of Public Works, and other impacted State bodies, any method statements prior to submitting to the relevant planning authority for agreement".

The OPW would also welcome the following condition to ensure that there is appropriate monitoring of the effects of the proposed Metrolink project on State parties:

"TII will be required to monitor the physical impacts of the proposed Metrolink project and future operations, on State properties in terms of noise, vibration, business interruption, loss of ecological and amenity value and submit reports (of a nature and to a standard agreed with the Commissioners and, as necessary, their clients at intervals to be agreed), to both the OPW and the relevant planning authority".

**Flood Risk Management**

The OPW also wishes to highlight to the Bord the area of flood risk management. As the Bord may be aware, the Guidelines on the Planning System and Flood Risk Management (DHPLG/OPW, 2009) set out a transparent framework for the

consideration of flood risk in the planning processes, including planning applications and development management. The Guidelines stress the need for a proportionate assessment of the flood risk, taking into account the potential impacts of climate change, and the need for the management of flood risk for development in flood-prone areas.

The Climate Change Sectoral Adaptation Plan for Flood Risk Management (OPW, 2019), that was approved by Government in October 2019, further emphasises the need for the consideration of the potential impacts of climate change on flooding and flood risk in the planning and design of future assets. The Metrolink will be a highly valuable piece of critical infrastructure that may well be highly vulnerable in the event of inundation, and as such, taking account of the policies referred to above, a detailed flood risk assessment might be expected of fluvial, coastal and pluvial flood risks (in addition to sealing against groundwater), with any flood risks, such as via inflow from station entrances, ventilation systems, etc., managed to a suitably high standard of protection (e.g., the 0.1% annual exceedance flood event probability), taking account of the potential impacts of climate change.

As stated above, we would respectfully welcome the opportunity to present to An Bord Pleanála at an Oral Hearing, should the Bord deem it appropriate.

Yours sincerely,

Maurice Buckley

Chairman

**Appendix A:**

**List of properties that require Stage 3 and further Stage assessments:**

- Houses of the Oireachtas, Leinster House complex
- Government Buildings
- National Gallery
- National Museum
- National Library
- Natural History Museum
- National Concert Hall
- St. Stephen's Green Park
- 14-17 Moore Street and Moore Lane
- Garden of Remembrance
- General Post Office (GPO), O'Connell Street

**Appendix B: relevant correspondence between OPW and TII**

- **"Re: Metrolink - Emerging Preferred Route" –** Suzanne Angley (Metrolink Stakeholder Communications Coordinator) to Chairman's Office, 21st March 2018 (by registered post)
- **"Re: Metrolink"** - Aidan Foley (Project Director, Metrolink, Transport Infrastructure Ireland) to Caoimhe Allman (Assistant Principal Officer, Property Management – Owned Properties), 28th May 2018
- **"Re: Observations of the Commissioners of Public Works in Ireland regarding the proposed MetroLink route (Emerging Preferred Route)"** - Caoimhe Allman (Assistant Principal, Property Management, Office of Public Works) to Aidan Foley (Project Director, MetroLink, Transport Infrastructure Ireland), 9th July 2018
- **"Re: Metrolink (Emerging Preferred Route)"** - Aidan Foley (Project Director, Metrolink, Transport Infrastructure Ireland) to Caoimhe Allman (Assistant Principal Officer, Property Management – Owned Properties), 8th August 2018
- "**Re: Observations of the Commissioners of Public Works regarding the proposed MetroLink route**" – Catherine Eddery (Principal Officer, Property Management – Owned Properties) to Aidan Foley (Project Director, Metrolink, Transport Infrastructure Ireland), 20th December 2018
- **"FW: Metrolink - OPW high level obs from Paul Tighe"** – Catherine Eddery (Principal Officer, Property Management – Owned Properties) to Aidan Foley (Project Director, Metrolink, Transport Infrastructure Ireland), 17th January 2019
- "**Re: Observations of the Commissioners of Public Works regarding the proposed MetroLink station at St. Stephen's Green" -** Catherine Eddery (Principal Officer, Property Management – Owned Properties) to Aidan Foley (Project Director, Metrolink, Transport Infrastructure Ireland), 5th April 2019
- **"Re: Proposed Metrolink Station at St. Stephen's Green"** - Aidan Foley (Project Director, Metrolink, Transport Infrastructure Ireland) to Catherine Eddery (Principal Officer, Property Management – Owned Properties), 9th August 2019
- **"St. Stephen's Green"** – John McMahon (Commissioner, OPW) to Michael Nolan (CEO, Transport Infrastructure Ireland), 10th June 2020
- **"Re: Metrolink Proposals for St. Stephen's Green"** – John McMahon (Commissioner, OPW to Michael Nolan (CEO, Transport Infrastructure Ireland), 20th June 2020

**Appendix C: relevant meetings between OPW and TII**

- **"OPW Presentation"** – 3rd May 2018
- **"TII presentation"** – 14th December 2018 (attended by Chairman)
- **"TII presentation in response to OPW concerns"** – 18th January 2019
- **"OPW St Stephen's Green Meeting"** – 22nd May 2019
- **"St. Stephen's Green"** – 12th September 2019
- **"TII MetroLink project update to OPW"** – 5th June 2020
- **"Project Update to: Office of Public Works (OPW)"** – 31st May 2021
- **"Project Update to: Office of Public Works (OPW)"** – 15th September 2022

## Appendix D – Ground Movement Assessment

The following sets out the requirements for assessing the impact of ground movement resulting from underground construction, such as tunnelling, embedded wall installation, and excavation for station boxes, together with requirements for monitoring and the close out.

The Designer shall investigate the potential for ground movement associated with the design and possible construction:

a) to assess risk of building damage by identifying those zones where the implementation of the design is likely to cause ground movements which will result in risk of Damage Category 2 'Slight' being exceeded (see Table 1) or where damage exceeds the agreed tolerable limits. To assess the risks of such degrees of damage occurring and either investigate alternative designs or advise interfacing Designers that alternatives need to be considered and modify the design as necessary. To undertake an assessment of the potential consequences where there is a significant likelihood that Risk of Damage Category 2 'Slight' will be exceeded or where damage exceeds the agreed tolerable limits and identify specifically what the risks are. Design protective measures where necessary to mitigate against the risk of damage exceeding Risk of Damage Category 2 or where damage exceeds the agreed tolerable limits;
b) to demonstrate that the environmental effects of excavation induced ground movements have been considered and taken account of in the design;
c) to assess the risk of damage to utilities and to design mitigation measures in agreement with the utility owner;
d) to assess the effects of excavation to existing above-ground and underground infrastructure and to design suitable mitigation measures;
e) to indicate where property may require demolition or structural modification;
f) to enable the preparation of contingency plans to deal with residual risks.

### Stage 1 – Scoping

Schedules and plans shall be prepared to identify all assets assessed to experience ground movement exceeding 1mm using conservative parameters.

### Stage 2 – Initial Assessment

The designer shall carry out initial assessment calculations using simple empirically calibrated methods and moderately conservative parameters to classify the risk of damage to assets. For masonry building structures the risk should be classified in accordance with Table 1. For non-masonry buildings and infrastructure the level of risk should be determined by ensuring that deformations do not exceed tolerable values determined in consultation with the asset owner.

A schedule and plans of predicted damage shall be prepared, along with outline trigger levels.

The assessment calculations shall be based on record drawings, where available and an inspection for assessment. Assets estimated to be a risk of damage greater than Category 2 'Slight' or where damage exceeds the agreed tolerable limits require further detailed assessment at Stage 3.

Table 1 - Building damage classification

| Damage Category | Description of degree of damage+ | Description of typical and likely forms of repair for typical masonry buildings | Approx. crack width* (mm) | Max. tensile strain % |
|---|---|---|---|---|
| 0 | Negligible | Hairline cracks | | <0.05 |
| 1 | Very slight | Fine cracks easily treated during normal redecoration. Perhaps isolated slight fracture in building. Cracks in exterior visible upon close inspection | 0.1 to 1.0 | 0.05 to 0.075 |
| 2 | Slight | Cracks easily filled. Redecoration probably required. Several slight fractures inside building. Exterior cracks visible; some repainting may be required for weather tightness. Doors and windows may stick slightly | 1 to 5 | 0.075 to 0.15 |
| 3 | Moderate | Cracks may require cutting out and patching. Recurrent cracks can be masked by suitable linings. Tuck pointing and possible replacement of a small amount of exterior brickwork may be required. Doors and windows sticking. Utility services may be interrupted. Weather tightness often impaired | 5 to 15 or a number of cracks greater than 3 | 0.15 to 0.3 |
| 4 | Severe | Extensive repair involving removal and | 15 to 25 but also | > 0.3 |

| | | | | |
|---|---|---|---|---|
| | | replacement of walls especially over door and windows required. Window and door frames distorted. Floor slopes noticeably. Walls lean or bulge noticeably. Some loss of bearing in beams. Utility services disrupted | depends on number of cracks | |
| 5 | Very severe | Major repair required involving partial or complete reconstruction. Beams lose bearing, walls lean badly and required shoring. Windows broken by distortion. Danger of instability | Usually > 25 but depends on No. of cracks | |
| + In assessing the degree of damage, account must be taken of its location in the building or structure.<br>* Crack width is only one aspect of damage and should not be used on its own as a direct measure of it.<br>Burland, J.P. and Wroth, C.P., Settlement of Buildings and Associated Damage, Proceedings of a<br>Conference on the Settlement of Structures, Cambridge, 1974, pp 611 – 54 and 764 – 810; | | | | |

The heritage value of a Listed or Protected Building should be considered during the initial assessment by reviewing the sensitivity of the building structure and of any particular features together with the initial assessment calculations. The heritage assessment examines the following:

a) the sensitivity of the building / structure to ground movements and its ability to tolerate movement without significant distress. The potential for interaction with adjacent buildings / structures is also considered. A score within the range of 0-2 should be allocated to the building/structure in accordance with the criteria setout in Table 2;
b) the sensitivity to movement of particular features within the building / structure and how they might respond to ground movements. A score within the range of 0-2 should be allocated to the building in accordance with the criteria set out in Table 2.

The scores for each of the two categories (a) and (b) should be combined and added to the category determined in Stage 2 to inform the decision making process. In general,

Listed Buildings which score a total of 3 or higher should be subject to further assessment as part of the Stage 3 – Detailed Assessment. Buildings that score a total of 2 or less are predicted to suffer a degree of damage which may be easily repairable using standard conservation based techniques and hence no protective measures for the building's particular features should be required. However, ultimately the professional judgement of engineering and historic building specialists should be used to determine whether additional analysis is required.

Table 2: Scoring for Sensitivity Assessment of Listed Buildings

| Criteria | | |
|---|---|---|
| **Score** | **a) Sensitivity of the structure to ground movements and interaction with adjacent buildings** | **b) Sensitivity to movement of particular features within the building** |
| 0 | Masonry building with lime mortar not surrounded by other buildings. Uniform facades with no particular large openings. | No particular sensitive features |
| 1 | Buildings of delicate structural form or buildings sandwiched between modern framed buildings which are much stiffer, perhaps with one or more significant openings. | Brittle finishes, e.g. tight-jointed masonry, which are susceptible to small movements and difficult to repair. |
| 2 | Buildings which, by their structural form, will tend to concentrate all their movements in one location. | Finishes which if damaged will have a significant effect on the heritage of the building, e.g. cracks through frescos. |

## Stage 3 - Detailed Assessment, Mitigation Design and Monitoring Plans

The Designer shall carry out detailed assessments of structures that will be affected by the works so that any monitoring works and mitigation works can be designed and implemented.

For structures at risk of exceeding Damage Risk Category 2 'Slight' or where damage exceeds the agreed tolerable limits the designer shall undertake a detailed assessment (more rigorous) to determine:

a) the influence of the structure and its foundations on the predicted ground movements (soil/structure interaction).
b) the volume loss at which the risk of damage to the structure (or any sensitive finishes/features) is 'slight' or better;
c) whether this volume loss may be achieved by the proposed excavation design/control measures;
d) any special control measures required to reduce the predicted damage to acceptable levels (i.e. Risk Category 2 'slight' damage category and below or below the agreed tolerable limits) such as significantly higher face pressures with EPBM tunnelling and the practicality of these;
e) the amount of ground movement that the structure (and or any sensitive finishes/features) can accommodate without exceeding Damage Risk Category 2 or where damage exceeds the agreed tolerable limits;
f) the level of residual risk if intrusive mitigation measures are not implemented.

The detailed assessments should include a number of iterations to determine how the risk of damage to a building may be reduced. Asset-specific empirical models shall be prepared successively using moderately conservative and best estimate parameters. If after these iterations the use of empirical methods do not reduce the risk of building damage to acceptable levels (i.e. Damage Category 2 'slight' damage category and below or below the agreed tolerable limits), the damage assessment shall be refined by increasing the sophistication of the analysis with the aim of reducing the risk of asset damage to acceptable levels and to eliminate the asset from further assessment.

If the risk of damage cannot be shown to be reduced by detailed assessment to acceptable levels, then mitigation measures shall be designed. The primary means of settlement mitigation shall be practical measures to control ground movement by good design and construction practice. This could include staged excavation sequences within sprayed concrete lining (SCL) works, ground treatment, face stabilisation, spiling / face dowels, increasing face pressure when using a tunnel boring machine (TBM), adopting stiffer walls/propping for rectangular shafts etc.

In the event that physical mitigation measures are still required (i.e. to control building damage to Damage Category 2 'slight' and below or below the agreed tolerable limits), the Designer shall seek to obtain the Asset Owners approval.

The Designer shall also undertake a comparative risk assessment to demonstrate that the risks associated with installation/implementation of any intrusive mitigation measures (such as compensation grouting) are no worse than the risks associated with the base case.

The relevant Local Authority and the OPW shall be consulted on the results of the Protected Building assessment reports and the proposals for protective measures, if any are required. The OPW shall also be consulted in relation to Listed or Protected Buildings where they would normally be notified or consulted on planning applications or listed building consent applications.

When considering the need and type of protective measures for Listed or Protected Buildings, due regard should be given to the sensitivity of the particular features of the building which are of architectural or historic interest and the sensitivity of the structure of the building to ground movement. Where the assessment highlights potential damage to the features of the building which it will be difficult or impossible to repair and/or if that damage will have a significant effect on its heritage value, the assessment may recommend appropriate measures to safeguard those features either in-situ or by temporary removal and storage off-site if those with relevant interest(s) in the building consent.

The form of monitoring of Listed Buildings should be determined based on the results of the assessment process.

Where repair works are necessary they will require the consent of those with relevant interest(s) in the building.

For railway track and track support structures the designer shall:

a) review the track surveys (including specifying additional surveys if required) and establish that ground movement can be accommodated without exceeding track standard operational tolerance in conjunction with the relevant Infrastructure Manager;
b) identify locations where fettling of the track is required pre construction and /or during construction to ensure the track geometry and clearances are acceptable.

The designer shall prepare plans and sections showing the zone of influence of the works that is defined by ground movements exceeding 1mm.

The designer shall develop an instrumentation and monitoring plan to validate that ground movements within the zone of influence are in accordance with design assumptions and that the infrastructure remains within acceptable limits. The designer shall ensure that there is a clear distinction between parameters measured to confirm the change in any parameter is in accordance with the design and parameters measured to limit damage to the assets. This plan shall identify the minimum period of time required to obtain base line data for each monitoring point.

Note: *A competent engineer responsible for the works shall consider those factors which may influence the monitoring data and shall determine an appropriate period and frequency for baseline monitoring. This decision making process will include an element*

*of engineering judgement to account for the possible effects of any underlying environmental trends (seasonal, diurnal, tidal) in the assets under consideration.*

Note: *The designer shall demonstrate that the monitoring system complies with the British Tunnelling Society Monitoring Underground Construction best practice guide.*

*Note: A review of the monitoring system against the checklists provided in Appendix B of the BTS Monitoring Underground Construction best practice guide may be used as a tool to demonstrate compliance.*

The detailed assessments shall define the control limits that need to be imposed on the TBM/SCL excavation in the zone of influence. The designer shall state these control measures on drawings and specifications.

The designer shall identify the critical parameters to be monitored and define the Asset Control Limits based on:

a) the ability of the asset or structure to withstand ground movement investigated
a) during the assessments carried out in Stage 2 and 3.
b) the risk to third party operations

The designer shall link the Asset Control Limits to actions within an Emergency Preparedness Plan.

The Instrumentation and Monitoring Plan and Emergency preparedness Plan shall be agreed with the relevant Asset Owner.

### Stage 4 – Construction

Contingency plans shall be developed and agreed with the OPW to cover the risks posed to the OPW before commencement of the construction activity.

Contingency plans shall be implemented where the results of monitoring or inspection so indicate.

Ground movement and construction progress records shall be maintained and reported in regular reviews when construction processes are taking place within the zone of influence.

Predictions and assumptions made during design in respect of both ground movement and the effects which such ground movement will have on adjacent assets shall be verified by measurement during construction.

### Stage 5 – Completion and Close-out

After ground movement has stopped, as confirmed by instrumentation and montoring, the designer shall prepare a "Completion Report". This shall include the following:

a) details of any modifications/mitigation measures to the existing structure;
b) graphs that show the ground movement and construction progress over time

a) with at least 3 months duration of readings which show no change;
b) a schedule showing actual movement compared to predicted movement;
c) a schedule of defects recording only the exceptions (changes) identified during the post construction defects survey;
d) details of any remedial works undertaken;
e) as-built records (including any temporary works remaining in situ on completion of the works).

### Schedule of Defects

A schedule of defects shall be recorded prior to the start of construction for all buildings, structures, utilities and facilities and Outside Party assets predicted to experience ground movement exceeding 1mm.

OPW Oifig na nOibreacha Poiblí Office of Public Works

# Property: St. Stephen's Green Park

# Location: Lands at St. Stephen's Green Park, Dublin 2

# Submission to the Draft Railway Order 2022 (MetroLink - Estuary to Charlemont via Dublin Airport)

January 2023

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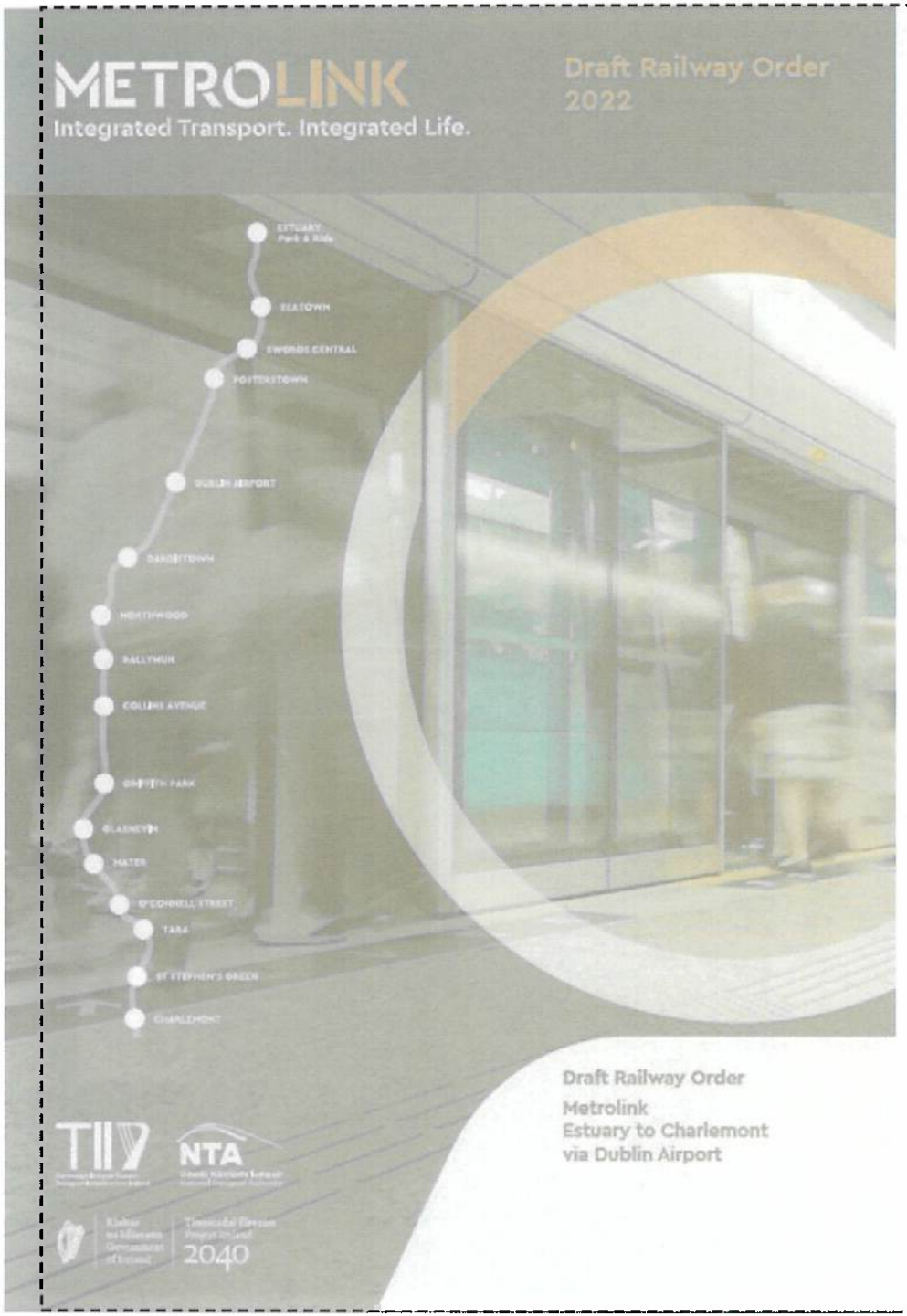



## EXECUTIVE SUMMARY

*With reference to the Draft Railway Order 2022 (MetroLink - Estuary to Charlemont via Dublin Airport), the Office of Public Works (the OPW), OPW Headquarters, Jonathan Swift Street, Trim, Co. Meath, welcomes this strategic project and recognises the significance of its delivery to provide for a sustainable, safe, efficient, integrated, and accessible public transport service between Swords, Dublin Airport and Dublin City Centre.*

*With respect to the proportion of the State's property portfolio managed by the OPW, we will endeavour to share knowledge and information with Transport Infrastructure Ireland (TII) to facilitate the successful delivery of the project through a collaborative approach.*

*This submission has been prepared by DOWNEY, Chartered Town Planners, 29 Merrion Square, D02 RW64 in conjunction with Gall Zeidler, International Consulting Engineers specialising in tunnel and underground schemes, on behalf of the Commissioners of Public Works in Ireland (hereinafter the Office of Public Works (OPW)), OPW Headquarters, Jonathan Swift St, Trim, Co Meath and on foot of extensive consultation(s) with the OPW's clients, which relates to the MetroLink route and its impact on St. Stephen's Green Park, a National Monument.*

*St. Stephen's Green ("the Green") is Ireland's best-known urban public park, attracting over 4.4 million visitors annually. It has been managed by the OPW since 1877 and is currently owned by the Minister for Housing, Local Government & Heritage.*

*This National Monument in the heart of Dublin is Ireland's oldest urban public park and is governed by the St. Stephen's Green (Dublin) Act 1877, "An Act to vest Saint Stephen's Green, Dublin, in the Commissioners of Public Works in Ireland; for maintaining and regulating the same as a Public Park". Thus, the Green has a special statutory status as a public park. Section 15 of the Act of 1877 provides that the Green shall be maintained as "an ornamental park or pleasure ground for the recreation or enjoyment of the public" and that the Green shall be allowed to be "used and enjoyed as a public park for the recreation and enjoyment of the public, and not for any other purpose".*

*The Green is one of three public parks in the state, specifically established under its own particular statute, the others being the Phoenix Park and the Bourn Vincent Memorial Park at Killarney. Because of its great heritage importance, the Green also falls into the definition of "National Monument" for the purposes of section 2 of the National Monuments Act 1930. The Green is a Protected Structure and Recorded Monument, as well as a National Monument.*

*It is acknowledged that a Station is required between Tara and Charlemont, as identified in the Emerging Preferred Route (EPR) and that an intervention/evacuation shaft will be required if the stations are more than 1,000m apart. It is noted that these key requirements have informed the chosen location at the Green.*

*It should be noted that the OPW wishes to work jointly with TII to develop a solution that satisfies the requirement for a station in the vicinity of the Green. The OPW has had ongoing engagement with TII regarding the MetroLink. However, the concerns expressed on the negative impact of these designs on the Green have not resulted in an option which the OPW believes will ensure the protection of this cultural and historic monument for current and future generations. The option studies have been reviewed by the OPW and its engineering consultants would question some of the key assumptions adopted to reach their conclusions.*

*The current proposal is to site a station within the Green and the EIAR identifies the significant effect that this will have on this National Monument:*

- *Chapter 25 Archaeology and Cultural Heritage characterises the effect as very significant direct negative (permanent) during the Construction Stage and very significant indirect negative during Operation Stage.*
- *Chapter 26 Architectural Heritage characterises the effect as profound direct negative during the Construction Stage and very significant indirect negative during Operation Stage.*
- *Chapter 27 The Landscape characterises the effect as very significant negative during the Construction Stage and very significant negative during Operation Stage.*

*Section 27.5.4.113 of the EIAR acknowledges that: "the proposed works can apply a level of mitigation which would go some way to reinstating the disturbed part of 'the Green', however, beyond any potential for reinstatement, replacement, or restoration, it would be difficult to offset impacts on the maturity and wholeness of this place." Further noting that: "Once the reinstatement works are completed the severe negative effects of construction will be partially moderated, however the edge of the park along the section of required works, will appear rather raw, small-scaled and immature, especially when directly compared with the remaining untouched sections. These contrasts will reduce over time, though it may take a significant period before they may be described as imperceptible." Review of the supplied photomontages (V22.1–V22.6) further reinforces this assessment of the long-term impact to the Green.*

*While certain mitigation measures are outlined within the EIAR, the residual effect, even taking account of these actions, remains very significant and permanent through both the Construction and Operation Stages. Construction of the station as currently proposed will result in permanent change to the architectural form of the Green, increased hard landscaping, introduction of upstanding structures into the footprint of the park and loss of mature trees and canopy.*

*This will result in long-term, permanent impact on the amenity and setting of this National Monument and urban park which plays a unique role in defining the city centre core and in supporting quality of city centre life for citizens of Dublin.*

*The OPW notes that in The St. Stephen's Green Station – Mined Options Report (EIAR Appendix A7.5), the current preliminary design performs worst with "regards to 'Property Impact on SSG Park', 'Biodiversity', 'Landscape and Visual', 'Archaeology/Cultural Heritage', and 'Architectural Heritage' criteria".*

*The OPW believes that as per the Consideration of Alternatives (EIAR Chapter 7 and Appendices A7.3–A7.5; A7.7–A7.8), the proposed location for the station at the Green is not the only viable option. The St. Stephen's Green Station Options Assessment Summary (EIAR Appendix A7.8) notes that: "Of the 16 alternatives considered [including Preferred Design], location 8 and mined options 1 and 3 were considered viable [in addition to the Preferred Design]."*

*The likely overall impact on the Green would be substantially reduced, if any of these three alternatives are adopted, with certain specific potential impacts eliminated or considerably reduced in scale and scope.*

*It also states that "[Mined] Option 3 performs the best in terms of minimising the impact on St. Stephen's Green Park both during the construction and operational phases, noting that during the construction phase the Park's railings would be removed temporarily to ensure they are protected. In contrast Option 0, the current Preliminary Design performs the worst by a considerable margin both during the construction and operational phases of the station compared to the other options, which includes for during construction a haul road and logistics being located within the Park, and five ventilation 'pop ups' in the permanent case (operational phase). [Mined] Option 1, construction and permanent land take is confined to the Plaza area of the Park and also necessitates the removal of a section of the Parks railings."*

*The OPW is of the view that in selecting the location and design for the station at the Green, as currently proposed, consideration of the overall effect to this National Monument (encompassing factors such as property impact, social, landscape, amenity, archaeology /cultural heritage, and architectural heritage) has not been given appropriate weighting.*

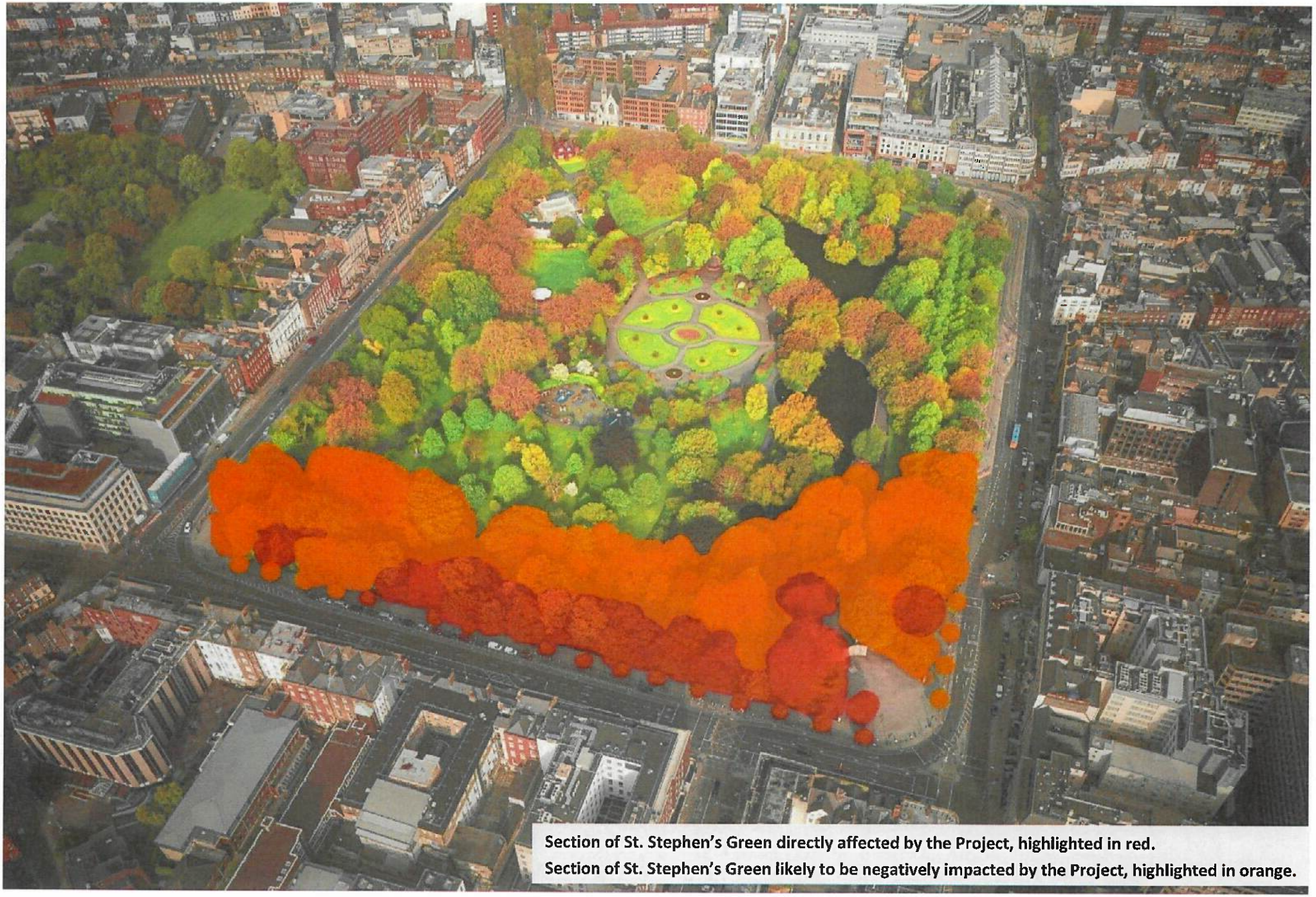
*The OPW is of the opinion that the proposed station option has prioritised construction requirements, uniformity of station design and construction methodology, programme, and cost considerations above a sufficiently weighted assessment of the long-term impacts on the Green.*

*The proposals as outlined have a significant impact on the longer-term biodiversity of the Green. Of the 800 trees growing within the Green, 225 will possibly be impacted by this Project. The proposal to fell 64 trees, along with the potential impact on numerous other trees within this National Monument will permanently damage one of Ireland's favourite Parks. Thus, the MetroLink, as proposed, risks fundamentally altering the special character of the Green and the changes will be visible for generations to come.*

*In conclusion, St. Stephen's Green Park is a significant tourist attraction, with in excess of 4 million visitors on an annual basis and fulfils a critical social and amenity function at the core of the city centre. It is a National Monument which has played a significant role in Ireland's history, including during the 1916 Easter Rising. While the OPW supports the objective of modern Metro infrastructure for Dublin and the State, delivery of this objective cannot be at the expense of Ireland's national heritage.*

*The OPW will continue to cooperate and work with TII to find a solution to meet the needs of MetroLink while protecting and conserving the Green. The proposed plans do not appear to strike the right balance between the transport needs of the modern state and the protection of national heritage for citizens.*

*The OPW therefore recommends that careful consideration be given to alternative station locations and/or alternative construction methodologies for the proposed station at St. Stephen's Green. Such consideration should encompass all of the issues raised above.*



Section of St. Stephen's Green directly affected by the Project, highlighted in red.
Section of St. Stephen's Green likely to be negatively impacted by the Project, highlighted in orange.

# TABLE OF CONTENTS

*This submission is made in response to the statutory review of the Draft Railway Order. Accordingly, this submission has been prepared in the context of "Draft Railway Order 2022; MetroLink - Estuary to Charlemont via Dublin Airport" which seeks to deliver the construction of a fully segregated and automated railway and metro mostly underground c. 18.8km in length with 16 stations running from north of Swords at Estuary through Swords, Dublin Airport, Ballymun, Glasnevin, and the City Centre to Charlemont. The Draft Order is currently on public display. We would respectfully request that An Bord Pleanála consider the content within this submission. DOWNEY would like to thank the Board for the opportunity to make this submission, on behalf of the Commissioners of Public Works in Ireland (hereinafter the Office of Public Works (OPW)), OPW Headquarters, Jonathan Swift St, Trim, Co Meath, a prescribed body for the project as advised by An Bord Pleanála.*



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## 1.0 INTRODUCTION

This submission has been prepared by DOWNEY, Chartered Town Planners, 29 Merrion Square, D02 RW64, in conjunction with Gall Zeidler, International Consulting Engineers specialising in tunnel and underground schemes, on behalf of the Commissioners of Public Works in Ireland (hereinafter the Office of Public Works (OPW)), OPW Headquarters, Jonathan Swift St, Trim, Co Meath and on foot of extensive consultation(s) with the OPW's clients, which relates to the MetroLink route and its impact on St. Stephen's Green Park, Dublin 2.

With reference to the Draft Railway Order 2022 (MetroLink - Estuary to Charlemont via Dublin Airport), the OPW welcomes this strategic project and recognises the significance of its delivery to provide for a sustainable, safe, efficient, integrated, and accessible public transport service between Swords, Dublin Airport and Dublin City Centre.

## 2.0 THE OFFICE OF PUBLIC WORKS MANDATE

The OPW was established in 1831, by an Act of Parliament: An Act for the Extension and Promotion of Public Works in Ireland. Since then, generations have enjoyed and benefited from the OPW's specialist work on state buildings, heritage sites, national parks, and flood relief measures. The primary function of the OPW continues as a key player in the implementation of Government policy and advisory to the Minister of State in the disciplines of property (including heritage properties) and flood risk management.[1] The OPW has a strong reputation for expert knowledge and is an important resource for Government and State Agencies on specialist and professional advice on architectural projects, estate management, historic properties, engineering services, and flood risk management. This expert knowledge is crucial in supporting decisions across Government and is vital within the MetroLink's plan making process. The OPW will endeavour to share its knowledge and provide advice to Transport Infrastructure Ireland (TII hereinafter) as part of this submission to An Bord Pleanála on the Draft Railway Order application.

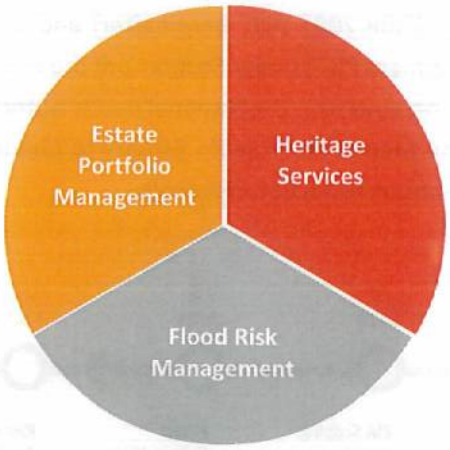


*Figure 1. The OPW's Main Areas of Work*

[1] *For more information, you can read the "Office of Public Works; Statement of Strategy 2021-2024" retrievable here: https://assets.gov.ie/134839/b52e1b97-bfe4-4948-9434-de0118f111bd.pdf*

The OPW provides a shared service in the area of property management and property maintenance incorporating architectural, engineering, valuation, quantity surveying, project management, art and facilities management and the conservation, preservation and presentation of heritage and cultural properties. The OPW is the lead agency for flood risk management in Ireland. This expertise will be maintained within the OPW's submission to support and engage with TII and the Draft Railway Order application.

The OPW manages a significant proportion of the State's property portfolio which stands at c.2,500 properties and which accommodate Government Departments and includes c.700 Garda properties. A key function of the OPW is the maintenance and operation of Ireland's most iconic heritage properties, including the State's two World Heritage Sites, c. 800 National Monuments and over 2,000 hectares of gardens and parklands.

Additionally, the OPW is a key player in infrastructure delivery for the State. In relation to flood risk management, the OPW has delivered some 150 flood relief schemes under the National Development Plan 2018-2027 as part of Project Ireland 2040 and maintains some 12,000km of river channels and 800km of embankments.

The OPW considers good governance to be central to the effectiveness of its operations, and recognises its importance in discharging its statutory, administrative and policy obligations.

It is the OPW's priority to maximise the efficient use and value of the State property portfolio, minimise the extent and impact of flooding, protect and promote our national built heritage, and excel in organisational performance and service. The OPW manages a significant number of properties along the route, including a number of historical and nationally important properties.

## 3.0 OVERVIEW OF THE DRAFT RAILWAY ORDER

On 30th September 2022, governed by Section 37 of the Transport (Railway Infrastructure) Act 2001 (as amended and substituted) ("the 2001 Act" hereinafter) and proposed within the definition of Strategic Infrastructure Development (SID) under Section 2 of the Planning and Development Act 2000 (as amended) ("the 2000 Act" hereinafter), the National Roads Authority (operating as TII) submitted the Draft Railway Order for the MetroLink Project - Estuary to Charlemont via Dublin Airport [2022] ("the proposed Project" hereinafter) to An Bord Pleanála.

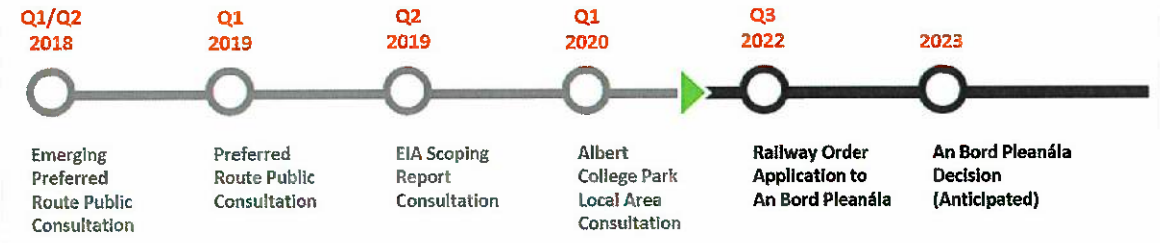


*Figure 2. The Proposed Project Roadmap (extracted from Chapter 8 of EIAR enclosed with the proposed Project application)*

With an objective to "*provide a sustainable, safe, efficient, integrated and accessible public transport service between Swords, Dublin Airport and Dublin City Centre*", the proposed Project seeks to deliver the construction of a fully segregated, high-capacity, and high-frequency automated railway and metro between Estuary Station and the Park and Ride facility, north of Swords via Dublin Airport to Charlemont Station, with approximately 18.8km length, which is mostly underground. The proposed Project comprises 16 new stations along the alignment, comprising of Estuary Station at surface level, four stations at Seatown, Swords Central, Fosterstown and Dardistown in retained cut, and Dublin Airport Station along with the remaining ten stations which will be underground.

Other principal project elements include a multi-storey 3,000-space Park & Ride facility at Estuary, two viaducts, one over the Broadmeadow and Ward Rivers, and one over the M50 Motorway, an Operational Control Centre, and Maintenance Depot at Dardistown, and intervention tunnels and shafts associated with Dublin Airport South Portal (DASP), located on the City Tunnel at Albert College Park, and south of Charlemont station.

The proposed Project has been designed to interchange with existing and future elements of the transport network. The key interchanges are as follows:

- Dublin Airport.
- The Western Commuter Line also known as the Maynooth Line (formerly the Midland Great Western Railway) and the South-Western Commuter Line also known as the Kildare Line (formerly Great Southern and Western Railway) at Glasnevin Station.
- The DART at Tara Station.
- Luas Lines (at O'Connell Street, St Stephen's Green and Charlemont Stations).
- The Dublin Bus network and the future BusConnects network.

Temporary elements to the proposed Project will comprise Construction Compounds, Logistics Sites, and Tunnel Boring Machine Launch Sites, which are essentially to facilitate the construction phase of the development. This encompasses 34 Construction Compounds, including 20 main Construction Compounds at each of the proposed station locations, the portal locations, and the Dardistown Depot location, as well as 14 Satellite Construction Compounds located at other locations along the alignment. Main logistics sites will be located at Estuary, near Pinnock Hill east of the R132 Swords Bypass and north of Saint Margaret's Road at the Northwood Compound. There will be two main tunnel boring machine (TBM) launch sites, with one located at DASP, which will serve the TBM boring the Airport Tunnel and the second located at the Northwood Construction Compound, which will serve the TBM boring the City Tunnel.

TII carried out numerous public consultations on the Preferred Route over an eight-week period from the 26th of March 2019 to the 21st of May 2019. Over 1,000 people attended the five public events, which were held at key locations along the route. While extensive pre-planning consultations also took place between TII and the OPW, a detailed assessment of the individual properties affected has not yet taken place. The Draft Railway Order application 2022 is a Draft Order, and should the route be approved by An Bord Pleanála, further detailed design will be submitted which will require further consideration and approval. Factors such as the internal uses of the properties, their construction methods, age and historical importance and the effect of construction on these sensitivities has not

been assessed as part of the Project thus far. Additional consideration needs to be given to the potential effects on the built environment before a route and construction method can be confirmed. The OPW reserves the right to make further commentary, pending more detailed design proposals.

The statutory consultation period commenced on the 7th of October 2022, with an initial 6-week timeframe for submissions, i.e., the closing date for submissions was the 25th of November 2022 at 5.30pm. Pursuant to Section 40(1)(b) of the Act and as stated in the public notice published on the 25th of November 2022, this consultation period was further extended to the 16th of January 2023.

# 4.0 ST. STEPHEN'S GREEN PARK

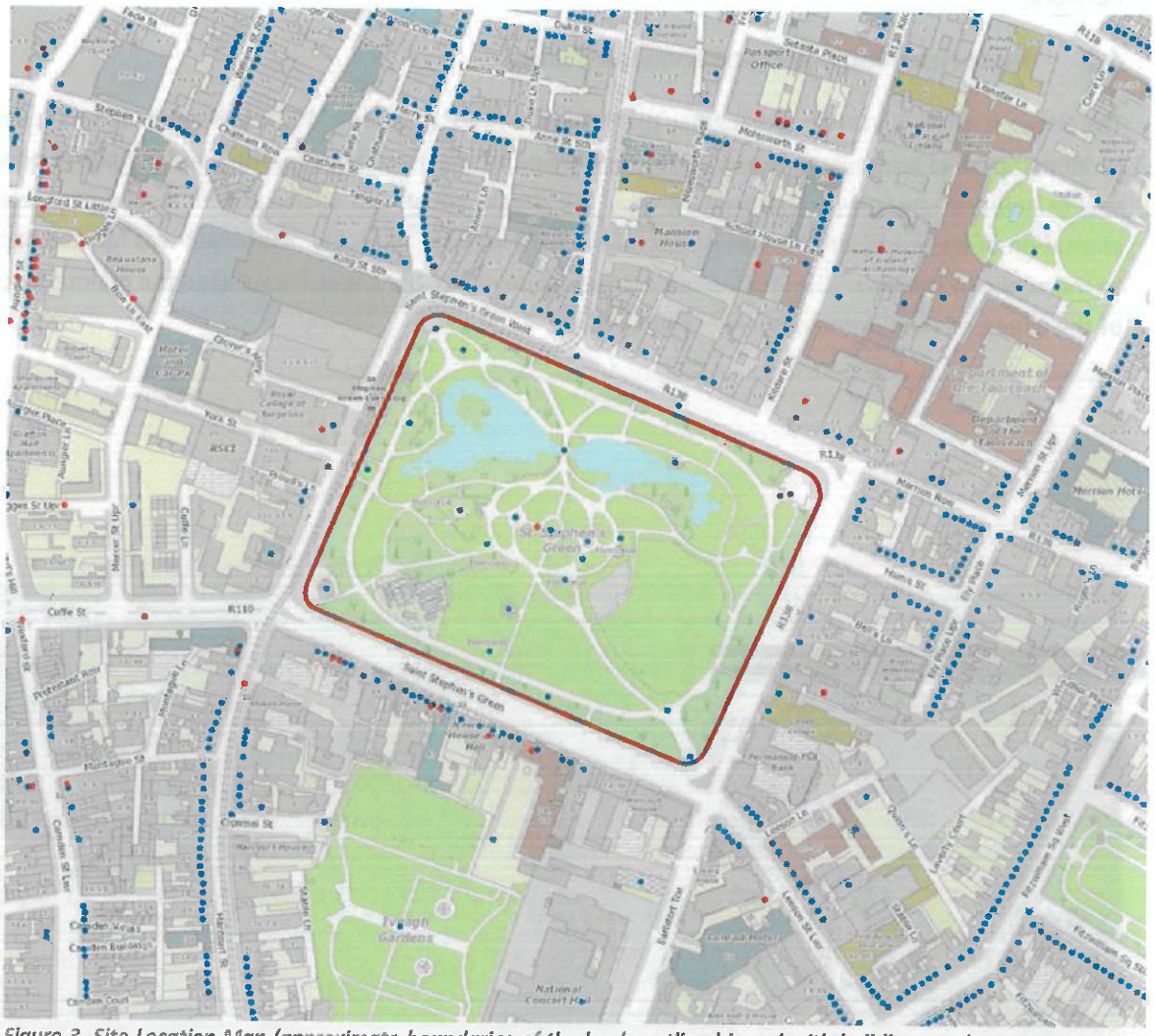


*Figure 3. Site Location Map (approximate boundaries of the lands outlined in red with buildings and structures on the National Inventory of Architectural Heritage (NIAH) marked in blue (Map extract from archaeology.ie with Ordnance Survey Base-map)*

## 4.1 Property Location & Description

**St. Stephen's Green** (Faiche Stiabhna) (the Green hereinafter) is a garden square and urban public park located in the city centre of Dublin, which pre-COVID, was attracting over 4.4 million visitors per annum. The Green has been managed by the OPW since 1877 and is currently owned by the Department of Housing, Local Government & Heritage.

This historic space is 9.9ha in size (including the exterior paths outside the railings) and has been associated with significant periods in Irish history such as the Easter Rising in 1916. Its cultural, social, horticultural, and historical significance are what make the Green unique in Ireland and further afield. This National Monument in the centre of Dublin, is Ireland's oldest urban public park governed by the St. Stephen's Green (Dublin) Act 1877, *"An Act to vest Saint Stephen's Green, Dublin, in the Commissioners of Public Works in Ireland; for maintaining and regulating the same as a Public Park".*

Under the Dublin City Development Plan 2022-2028, the Green is an Amenity /open space/green network.

## 4.2 Historical Context/Conservation Status

The Green is a late Victorian rectangular-plan urban park established c. 1664, laid out in 1814-18, and re-landscaped as a public park in c. 1877. By the end of the Victorian era, the need for public open spaces had become widely appreciated, thus, the Green, which was enclosed with a solid perimeter plantation of trees and shrubs, was re-opened in 1880 without formality. The Green was handed back to the public by means of the St. Stephen's Green (Dublin) Act 1877, which entrusted the maintenance of the Green to the Commissioners of the OPW.

*Figure 4. Photochrom Print Showing the Green at the End of the 19th Century*

The uniqueness of the Green is insufficiently appreciated today. There is hardly anything like it in any other European city, where most urban squares are open plazas, and none of the greener London residential squares approaches it in splendour and intricacy of foliage and bloom. When the Green was formed in the 1660's, it was the largest urban square in the world. It is now the ninth, as reported by Desmond McCabe in his Book - St. Stephen's Green, Dublin 1660-1875.

Some sites owe their special character to the fact that they are enclosed. This is certainly the case with the Green, where the sense of enclosure is the essence of the place, and it is often described as an oasis of peace and calmness within the urban hub. The attraction of the Green is therefore because of its enclosure and escape from the hectic city centre.

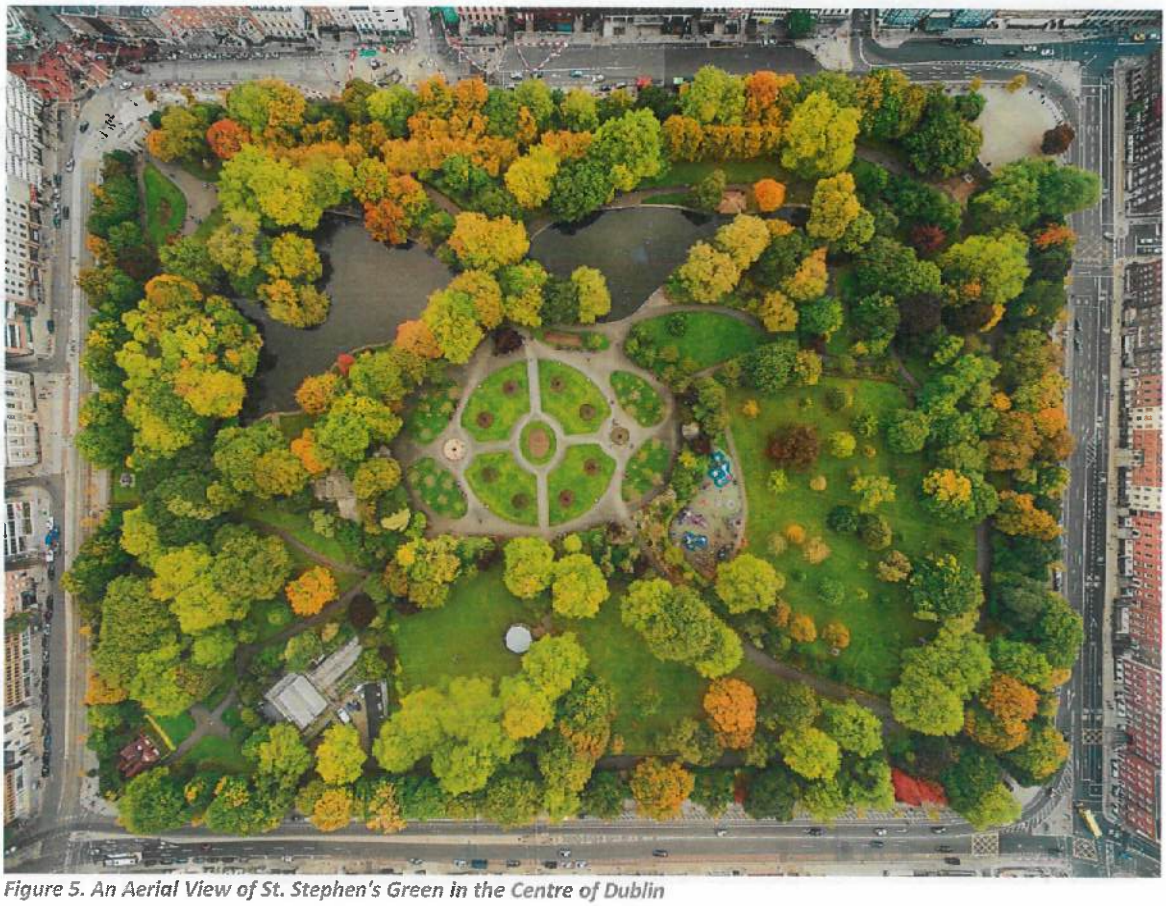

*Figure 5. An Aerial View of St. Stephen's Green in the Centre of Dublin*

The Green is classified as being of National Importance under the ICOMOS-IFLA (International Committee for Historic Gardens) in 1982. In 2006, the Green was a finalist, representing the best of Irish urban spaces, in the "Great Places" award set up by the International Academy of Urbanism. It has been awarded the International Green Flag Award every year since 2015 and is a designated National Monument. According to the Dublin City Council's Record of Protected Structures, there are several protected structures within the Green, which further highlights the historical significance of the park. These are as follows:

| Structure | RPS No. | NIAH Ref | Importance | NIAH Categories |
|---|---|---|---|---|
| **St. Stephen's Green** | N/A | 50100259 | National | Architectural, Artistic, Historical, Social |
| **Wolfe Tone Memorial** | N/A | 50100265 | Regional | Artistic, Historical, Technical |
| **Famine Memorial** | N/A | 50100264 | Regional | Artistic, Historical, Technical |
| **Gazebo** | 7756 | 50100263 | Regional | Architectural, Artistic, Social |
| **O'Connell Bridge** | N/A | 50100262 | Regional | |
| **O'Donovan Rossa Memorial** | N/A | 50100312 | Regional | Artistic, Historical |
| **Fusiliers' Arch** | N/A | 50100260 | Regional | Architectural, Artistic, Historical, Social |
| **Robert Emmet Memorial** | 7761 | 50100261 | Regional | Artistic, Historical |
| **Lord Ardilaun Memorial** | 7758 | 50100266 | Regional | Architectural, Artistic, Historical, Technical |

| Structure | RPS No. | NIAH Ref | Importance | NIAH Categories |
|---|---|---|---|---|
| W.B. Yeats Memorial | N/A | 50100531 | Regional | Artistic, Technical |
| Fountain* | 7757 | 50100267 | Regional | Architectural, Artistic, Social |
| Fountain* | 7757 | 50100268 | Regional | Architectural, Artistic, Social |
| Thomas Kettle Memorial | N/A | 50100269 | Regional | Artistic, Technical |
| Haslam Memorial Seat | N/A | 50100271 | Regional | Artistic, Historical |
| Constance Markievicz Memorial | 7759 | 50100272 | Regional | Artistic, Historical, Social |
| James Clarence Mangan Memorial | 7760 | 50100270 | Regional | Artistic, Historical |
| Bandstand | 7755 | 50100273 | Regional | Architectural, Artistic, Social |
| James Joyce Memorial | N/A | 50100275 | Regional | Artistic, Historical, Technical |
| Rabindranath Tagore Memorial | N/A | 50100690 | Regional | Artistic, Historical, Technical |
| The Three Fates Memorial | N/A | 50100276 | Regional | Artistic, Historical, Social |
| The Green Southeast Gates, Railings, Walls | 7751 | 50100148 | Regional | Architectural, Artistic |
| Surrounding Bollards & Traditional-style Lampposts | 7752 | N/A | N/A | N/A |
| Superintendent's Lodge | 7754 | 50100274 | Regional | Architectural, Artistic, Historical |
| Trough** | N/A | 50100258 | Regional | Historical, Social |
| Lady Grattan Fountain** | 7753 | 50100257 | Regional | Architectural, Artistic, Social |

** This is one of a pair of round granite fountains forming part of the central parterre in the Green.*

*** It is noted that both the Trough and the Fountain are beyond the Green railings, however, they are located to the north vicinity of the Park.*

### 4.2.1 The Wolfe Tone Monument

**Theobald Wolfe Tone**, posthumously known as **Wolfe Tone** (Bhulbh Teón; 20 June 1763-19 November 1798), was a leading Irish revolutionary figure and one of the founding members in Belfast and Dublin of the United Irishmen, a republican society determined to end British rule, and achieve accountable government, in Ireland. Throughout his political career, Tone was involved in several military engagements against the British navy. He was active in drawing Irish Catholics and Protestants together in the United cause, and in soliciting French assistance for a general insurrection. In November 1798, on his second attempt to land in Ireland with French troops and supplies, he was captured by British naval forces. The United Irish risings of the summer had already been crushed. Tone died in advance of his scheduled execution, probably, as modern scholars generally believe, by his own hand. Later generations were to regard Tone as the father of Irish Republicanism. His grave in Bodenstown, County Kildare, is the site of annual commemorations.

The Wolfe Tone monument is currently located in the north-eastern corner of the Green. Edward Delaney and Noel Keating's concept of the Wolfe Tone sculpture involved a re-landscaping of the north-east corner of the Green to create a plaza bounded by the external footpath. The sculpture is set to the centre of a concave wall that arches toward the road creating the boundary to the plaza. As quoted in Irish Press at the time, *"for once a major Irish sculpture will be neither shrouded in traffic nor locked up after sunset"*.

It has great significance to Irish Republicanism and became a target at the height of the troubles. In 1971 Loyalists detonated a bomb that destroyed all but the base of the sculpture. Delaney however, managed to repair and reinstate the work within months.

The purpose of the sculpture is commemorative, and it is linked the famine memorial that is sited behind Wolfe Tone. It expresses the ultimate failure of the 1798 Rebellion and Tone's attempt to liberate Ireland. Delaney said, *"This is not a victory monument"*, Tone *"wanted all Ireland independent and united... if Tone had succeeded, I doubt if the famine would have been allowed to happen"*.

## 4.3 Current Use/Uses

With an entire area of c. 9.9ha, including the exterior paths outside the railings and an interior area of 9ha, the Green is a substantial urban public park which was designated a National Historic Park in 1986 and is famous for its Victorian spring and summer bedding displays, herbaceous border, rockery, Braille Garden, and tree lined walks. The Green is home to over fifty species of trees and shrubs and has abundant wildlife including waterfowl.

Over sixteen commemorative statues and memorials, representing many strands of Irish history and culture are located within the Green. Circa 4 million people visit the Green annually and it also has an exceptionally popular playground used by hundreds of thousands of children on an annual basis. The Green is also where many events take place throughout the year.

Key Events include: -

- Annual family day event including storytelling, archaeology, garden tours, historical re-enactments, kids' activities, etc.
- Permit in excess of 200 photoshoots for business, charity events and weddings.
- International band performances including Tango/swing/salsa dance exhibitions.
- Annual Art and photographic exhibitions.
- Primary teacher training Courses in association with St. Pats Teacher Training College, Drumcondra.
- Schools educational programme including Tree Day/Tree Week in conjunction with local schools and The Tree Council of Ireland.
- Links with local 2nd and 3rd level colleges for student projects.
- Specialized gardens and historical tours.
- Yoga/fitness classes.
- Little Dublin Museum weekly tours in the Green.

An important characteristic of the landscape is the screen of trees and shrubs on the perimeter, which blocks out many of the sights and sounds of the bustling city, while offering a relatively quiet and peaceful oasis in the centre of the city. Functions of the Green can be summarised under five headings as follows:

***(1) Creating an oasis within our ever-increasing urban population***

According to the latest census, almost two thirds of our increasing population are now living in an urban area. *"Over half, 55%, of the world's population are now living in urban areas. By 2050 this is projected to be 68%"*. This is moving us further away from the natural environment and increasing the pressure on government agencies to provide trees and green space for urban populations in areas where the space is at a premium. People in built up areas are now relying more and more on public amenities, accessible green spaces, parks, and parkland.

Parks such as the Green really are the lungs of the city. They are where people can escape to, run, unwind, and relax a place to get back to nature and reconnect. One of the great features of these historic parks is the open/accessible designed treed landscapes that they incorporate. Large mature trees are an integral part of this landscape experience. St. Stephen's Green Park is a green island floating in a sea of concrete. The essence of the Green is its continuous tree lined perimeter as is evident from the image below.

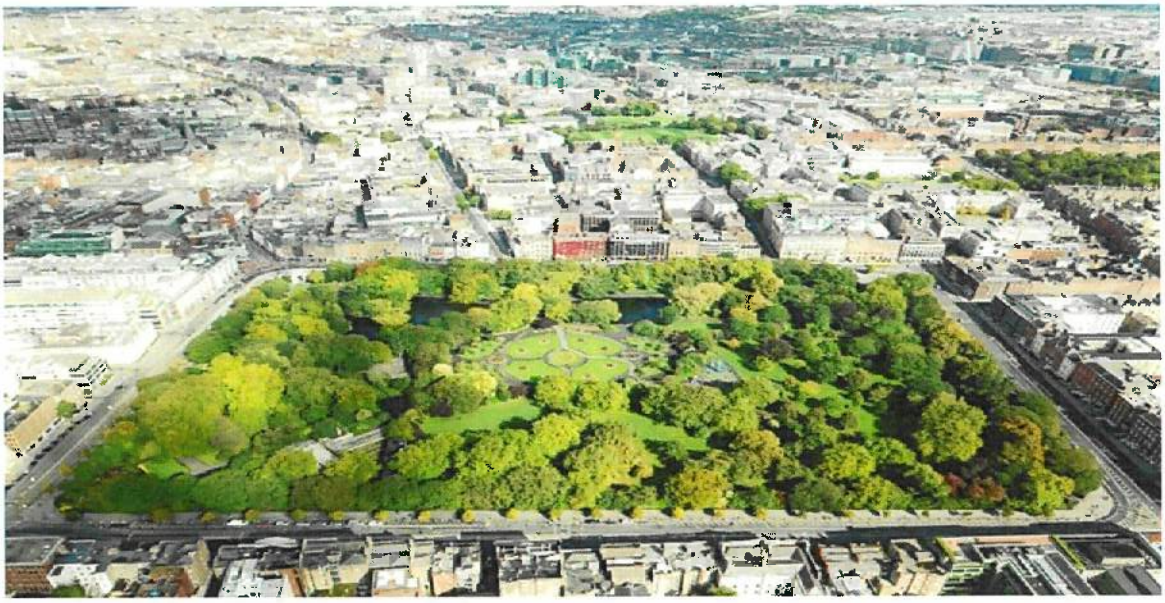

*Figure 6. Aerial View to St. Stephen's Green Park*

***(2) Improvements to the air quality we breathe***

This innate desire to be close to or have contact with nature is known as the Biophilia hypothesis. Considerable worldwide research has been carried out on the many benefits of trees but probably the most current/topical of these benefits is environmental. According to the World Health Organisation (WHO), *"air pollution now kills around 7 million people, globally, every year"*. Mature trees such as those within the Green capture air pollutants and fine dust particles and helps to clean our atmosphere.

***(3) Combatting the effects of Climate Change***

A recent study in the UK has shown that *"increasing tree cover in Urban areas by 10% can reduce urban surface temperatures by as much as 4 degrees Celsius"*. That may be considered the difference between a comfortable and an uncomfortable day, whereas in some countries it can be the difference

between life and death. The Tree Council of Ireland's theme for National Tree Week in 2019 was "Planting for our planet", a nod to how trees can benefit us all worldwide. The removal of over 64 trees on the perimeter of the Green will take decades to recreate the canopy we have today.

***(4) The physical and psychological health benefits of trees***

Research has shown that *"the closer you live and work to trees and the natural environment the better off you are, physically and psychologically"*.

- Asthma. Over the last two decades there has been a huge increase in the numbers of people suffering from asthma. One in eight people in Ireland now suffer from asthma. This makes us the fourth highest in the world and the cost to the State every year is calculated at €500 million. Research has found that *"asthma rates among children aged four and five fell by a quarter for every additional 343 trees per square kilometre"*.
- Mental health/psychological well-being. According to the latest estimates of the WHO, *"Ireland ranks in the highest top 10 countries worldwide for the percentage of the population affected by anxiety disorders at 6.3 per cent, while depressive disorders affect almost 5% of the population."* Studies in Japan of Shinrin-yoku, or forest walking, *"have found effects of improved immune system response, lowered stress indicators as a result of a tree environment"*.
- Stress and lower glucose levels in diabetics. We know that access to trees parks and green space reduces 'cortisol' (a steroid hormone released in response to stress) levels and speeds recovery if you have been ill.

***(5) Biodiversity***

These mature trees support the lives of many organisms. Birds, small mammals, and other wildlife such as bats and invertebrates use the trees for food, shelter, and nesting. During times of extreme weather, animals can seek shade and shelter under the trees without being away from their food sources. This revised proposed construction zone will result in the removal of over 64 trees along with the associated understory planting. Some of these trees exceed heights of 15-20m with the tallest measuring 26m in 2018. The main species include Horse Chestnut, Sycamore, Birch and Holm Oak, a species associated with Lord Ardilaun. One of the last surviving Elm trees is the city centre is located with the proposed construction zone. This scheme will significantly impact the environmental and biological benefits, these habitats provide to the environment and wildlife.

## 4.4 Planning Context

In terms of the planning history pertaining to the subject property and the surrounding area, and as outlined in the Planner's Report of the Draft Railway Order 2022, *"No planning applications are affected by the tunnel alignment between St. Stephen's Green Station and Charlemont."*

It is noted that DOWNEY have also carried out an examination of the planning history pertaining to the property subject to this submission, which determined there are several planning applications made within proximity to the Green. An overview of the most relevant applications are as follows:

**Reg. Ref. 4951/22** - By Order dated 23rd November 2022, Dublin City Council granted planning permission for a development on lands at the National Concert Hall, Earlsfort Terrace, Dublin 2,

consists of *"the conservation and refurbishment of the existing north wing and part of the east wing of the National Concert Hall and the Real Tennis Court building and the construction of a new four storey over basement extension with a planetarium dome to the west of the north wing at the boundary of the Iveagh Gardens. The development includes the change of use of the former UCD School of Civil Engineering to the National Children's Science Centre."*

**Reg. Ref. 4559/22** - Registered on the 27th of July 2022 by Dublin City Council, the proposed development on lands at No. 23 St. Stephen's Green (Protected Structure) and rear of No. 22 St. Stephen's Green, (Protected Structure), Dublin 2, consists of *"a new 3-storey office extension (c. 906.4 sqm GFA) with balconies on southern and western elevation, above the existing, contemporary 4-storey office extension to the rear of No. 23 St. Stephen's Green (Protected Structure)."* The application was decided on 20th of September and is currently under Further Information request. Dublin City Council requested Additional Information on the proposed development by order dated 20th September 2022.

**Reg. Ref. 5099/22** - Registered on the 21st of October 2022 by Dublin City Council, the proposed development on lands at 92 and 93, St. Stephen's Green, Dublin 2, consists of *"a mixed-use development comprising 5 no. apartments and the construction of a hotel development to the rear. The development will consist of: (a) The demolition of lift core at the rear elevation of no. 93 St. Stephen's Green and c. 527 sqm of existing external ancillary 1 and 2 storey structures to the rear. (b) Alterations and modifications to 92 St. Stephen's Green (c. 698 sqm GFA) to provide for 5 no. apartment units comprised of 4 no. 1-bedroom apartment units and 1 no. 3-bedroom units with private courtyard to the rear and staired access from St. Stephen's Green. (c) Alterations and modifications to 93 St. Stephen's Green (c. 799.8 sqm GFA) to provide for a change of use from office to hotel use comprising spa, changing rooms and associated facilities at lower ground floor with staired access from St. Stephen's Green; lobby, lounge, and reception at ground floor level with dining facilities at first floor level (and external terrace to rear) and 4 no. bedrooms on upper floor levels. (d) Construction of a 126-no. bedroom, part 6-storey, part 8-storey over basement hotel (c. 2,798 sqm) with external roof terraces stepping down to 4 storeys at the southern perimeter, linked to the rear of nos. 92 and 93 St. Stephen's Green by a glazed atrium. (e) Internal communal areas, circulations space and storage facilities. (f) 1 no. ESB substation, plant rooms at lower ground floor level and hotel basement, green roofs, landscaping, bicycle parking and all associated site development works with existing access points from St. Stephen's Green retained."* Dublin City Council have requested Additional Information on the proposed development by order dated 13th of December 2022.

It is important to consider the above developments in the context of the construction phase of the Project.

In relation to the Draft Railway Order's consistency with planning policy and planning guidelines, a non-exhaustive list of planning policy and legislation at National, Regional, and Local levels, is included in Appendix 1 of this submission, the Board are invited to refer to this for further details.

In Section 8.0 of this submission, the impacts of the Project on the Green are outlined, relevant planning policies and objectives have been cited here, where appropriate.

We would respectfully request that An Bord Pleanála ensure that TII have fully assessed the Project regarding existing planning policy, as well as adherence to the relevant local policies and guidelines pertaining to each individual property.

DOWNEY note that this proposed Draft Railway Order is a strategic long-term development and An Bord Pleanála may consider Draft Development Plans in assessing the Project. It is also crucial to note that on foot of a granted Order and during the detailed design stage, a revision to planning policy is expected, whereby adopted plans and legislation may have to be adhered within this stage. This may require an amendment to the Draft Railway Order and further assessments, including public consultation.

## 5.0 MATERIAL CONSIDERATIONS

The alignment drawing ML1-JAI-EIA-ROUT_XX-DR-Y-04025 and the Contour drawing ML1-JAI-EIA-ROUT_XX-DR-Y-21148 show different alignments. This error has resulted in deficient information within the SID application submitted under Section 2 of the Planning and Development Act 2000 (as amended), to assess the vulnerability of damage due to vibration cause by both tunnelling and operation of underground train on this section of the alignment. This affects several buildings under the management of the OPW particularly within the Kildare Street, Merrion Square and St. Stephen's Green areas.

## 6.0 LEGAL CONSIDERATIONS

The Commissioners of Public Works would seek to enter into appropriate, property-specific legal agreements with TII, to ensure the protection of key State property and of the State's activities undertaken within those and other properties. Given the importance of such properties and activities, the Commissioners of Public Works consider it appropriate that An Bord Pleanála would make the Railway Order conditional on such legal agreements being in place between TII and the OPW. Creating such legal agreements between TII and the OPW would be possible only after TII make available the more detailed design and risk-mitigation measures for the construction and operational phases of the MetroLink project, and before any development begins.

Therefore, the Commissioners of Public Works would request that this aspect be reflected in the conditions set out by An Bord Pleanála to TII, as this would provide assurances to the Commissioners of Public Works relating to future legal agreements that protect and secure State property and activities from risks associated with the construction or operations of the MetroLink.

In addition, the Commissioners are of the view that the requirements in the National Monuments Act 1930, as amended, would have to be complied with, irrespective of the confirmation of the Railway Order and that a Ministerial consent or consents will have to be obtained by TII where there is potential demolition of a national monument – see legal status of Saint Stephen's Green Park in 6.1.

There is a further consideration that s.14D of the 1930 Act was inserted by the European Union (Environmental Impact Assessment of Proposed Demolition of National Monuments) Regulations 2012 (S.I. No.249/2012) (the "2012 Regulations") to give effect to the Environmental Impact Assessment ("EIA") Directive. The 2012 Regulations require the carrying out of an EIA where a decision

to grant consent under s.14(2)(a) of the 1930 Act, or to issue directions under s.14A(4)(d) of that Act, would result in the demolition of a national monument. Thus, where the Minister is considering whether or not to grant a consent or issue directions, as the case may be, and it appears to the Minister that the granting of the consent or the issuing of the directions, as the case may be, would result in the demolition of a national monument but the applicant has not submitted an environmental impact statement ("EIS") (now an environmental impact assessment report ("EIAR")) to the Minister, the Minister is obliged to call for an EIAR to be submitted. Further information relating to the legal status of the Park is set out in 6.1.

## 6.1 Legal Status of Saint Stephen's Green

Saint Stephen's Green ("the Green") has a special statutory status as a public park. This is provided for under the *Saint Stephen's Green (Dublin) Act 1877* ("the Act of 1877"), which is expressly maintained in force under section 2 and Schedule 1 of the *Statute Law Revision Act 2012*. It should be noted that this is the specific and original statutory status of the Green, separate from any consideration of the Green as a national monument within the meaning of the *National Monuments Acts 1930 to 2014* and any issues arising in that regard.

Arising from a series of transfers of statutory functions since the 1990s, ownership of the Green under the Act of 1877 is vested in the Minister for Housing, Local Government and Heritage, as are all functions under the Act of 1877 which do not relate to day-to-day operation of the Green. The ownership of the Minister extends not only to the area enclosed within the railings surrounding the Green, but also to the area outside the railings but within the surrounding posts (see section 6 of the Act of 1877). The day-to-day operation of the Green is, by reason of the transfers of statutory functions just mentioned (see in particular S.I. No. 690 of 2003), vested in the Minister for Finance and discharged on that Minister's behalf by the Office of Public Works.

Accordingly, the Green is one of only a handful of public parks in the State afforded the status of being specifically established under its own particular statute, the others being the Phoenix Park (under the *Phoenix Park Act 1925*) and the Bourn Vincent Memorial Park at Killarney (under the *Bourn Vincent Memorial Park Act 1932*).

Section 15 of the Act of 1877 provides that the Green shall be maintained as "*an ornamental park or pleasure ground for the recreation or enjoyment of the public*" and that the Green shall be allowed to be "*used and enjoyed as a public park for the recreation and enjoyment of the public, and not for any other purpose*".

Section 116 of the *Dublin Transport Authority Act 2008* dis-applies section 15 of the Act of 1877 in respect of railway works carried out pursuant to a railway order under applicable legislation and in respect of the operation of a railway or metro in or under the Green. However, this provision appears to govern the situation after a railway order has been granted and does not require that such an order be granted.

While the Green evolved historically over a long period, its current form largely arises from statutorily required works carried out under the provisions of section 4 of the Act of 1877.

By reason of its great heritage importance, the Green also falls into the definition of "national monument" for the purposes of section 2 of the National Monuments Act 1930 and, as it is currently owned by the relevant Minister under the National Monuments Act 1930 (as amended), i.e. the Minister for Housing, Heritage and Local Government, is subject to a legal requirement under section 14 of the Act of 1930 for consent for any works to it or ground disturbance around or in proximity to it. The Green is also a Protected Structure under the Planning and Development Act, 2000 (as amended).

## 7.0 ENGINEERING CONSIDERATIONS

It is acknowledged that a station is required between Tara and Charlemont, as identified in the Emerging Preferred Route (EPR hereinafter) and that an intervention/evacuation shaft will be required if the stations are more than 1000m apart and this has informed the chosen location. The option studies have been reviewed by the OPW and its engineering consultants, who have concluded that some of the key assumptions adopted to reach their conclusion are flawed.

The OPW wishes to work jointly with TII to develop a solution that satisfies the requirement for a station in the vicinity of the Green, a National Monument, but has no impact on the Park.

### 7.1 Route Alignment

The western edge of the St. Stephen's Green station box lies within the boundary of the Park and the eastern edge of the box lies within the road St. Stephen's Green East.

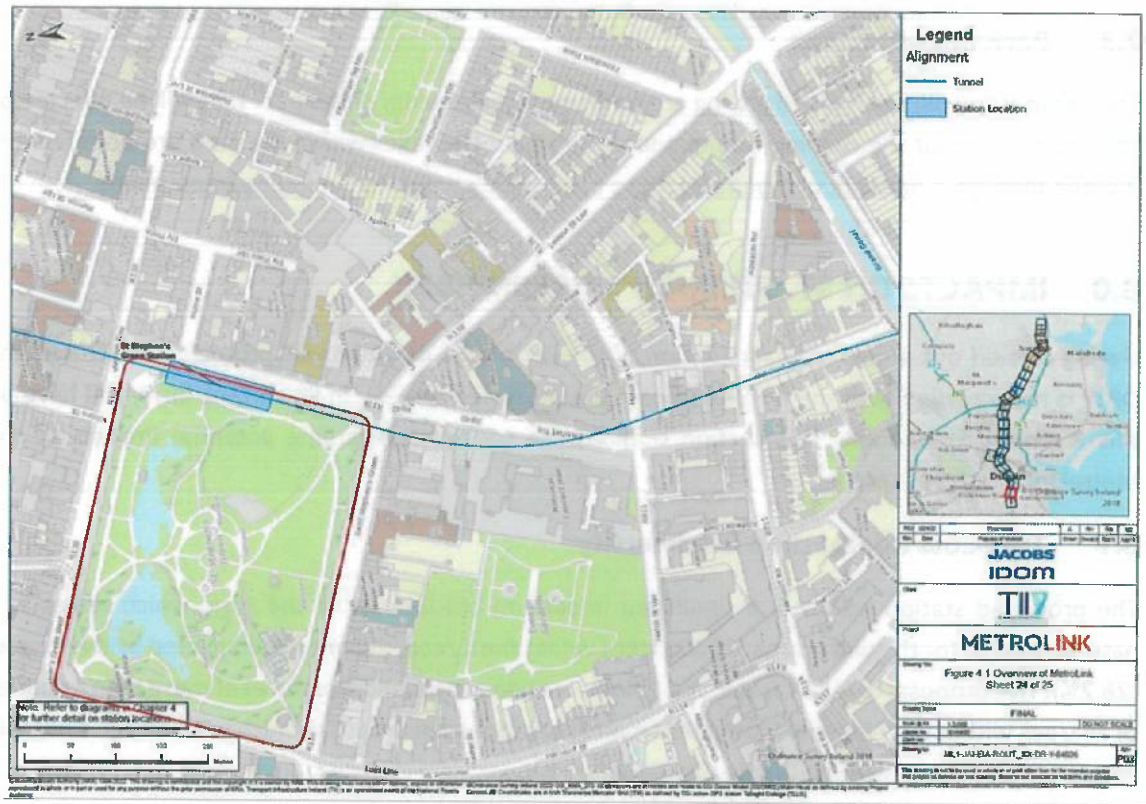


*Figure 7. Plan Showing Horizontal Alignment (extract from ML1-JAI-EIA-ROUT_XX-DR-Y-04026)*

Many of the reports refer to chainages along the alignment. However, there are no plans that indicate these chainages, and this makes reviewing the Draft Railway Order and EIAR difficult.

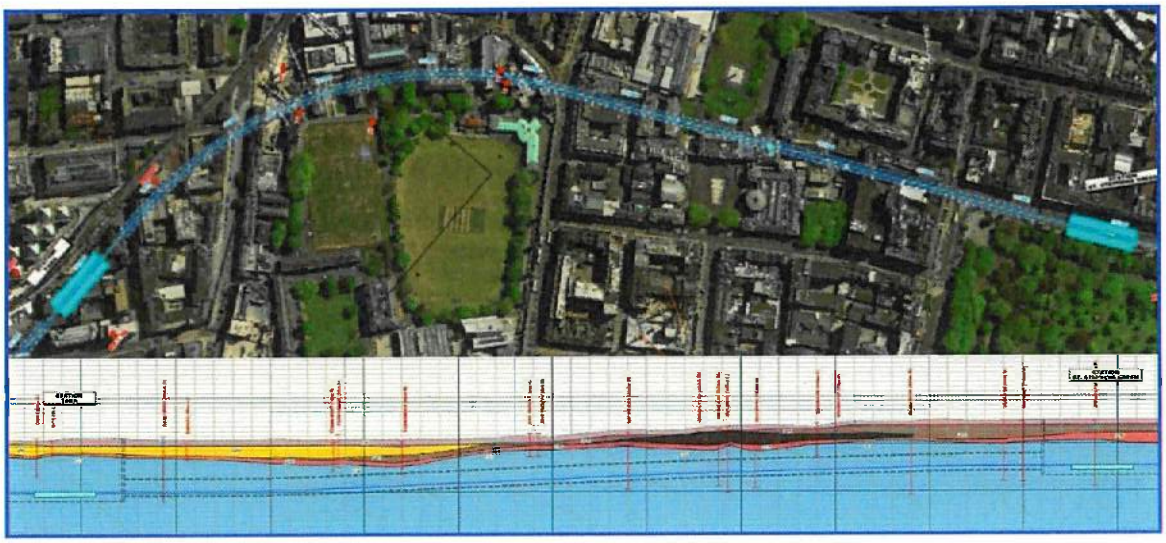

*Figure 8. Geological Section*

### 7.2 Station Excavation

The proposed St. Stephen's Green box station will be excavated through Argillaceous Limestone rock (CLU) that underlies Brown Boulder Clay (QBR), containing fluvio-glacial sands and gravels. The excavation will pass through approximately 12.5m soil and 17.5m rock.

### 7.3 Park Infrastructure

The perimeter wall, railings and paving are fundamental elements of the park that will be affected by the construction of the running tunnel and station box. The lakes within the park are both fed and drained through a network of pipes and these need to be considered in future assessments.

## 8.0 IMPACTS ON ST. STEPHEN'S GREEN PARK

Having carried out a detailed examination of the Park, with its numerous protected structures, the OPW is not satisfied with the level of impact the proposed Project, in its current form, will have on this National Monument. This section outlines the concerns regarding potential impacts of the MetroLink on the property.

### 8.1 Tree Loss & Impact on Biodiversity

The proposed station will have a significant impact on biodiversity of the Park, which serves as a natural reserve for the wider area. Of 800 trees within the Green, 225 may be impacted by this Project (28.2%). The proposal to fell 64 trees, and to impact on the roots and structures of more than a quarter of all trees within this National Monument is an unprecedented proposal which will damage a flagship green, tranquil spaces within Dublin City Centre.

In addition, 75% of the trees, shrubs and ground cover that line the eastern boundary are to be removed. Five of the 225 trees that were surveyed are classed as Category A trees in that "*They are large, high-quality trees which should be retained. They are capable of making a significant contribution to the area for 40 or more years*" and they are particularly good examples of their species, especially if rare or unusual, or those that are essential components of groups or formal or semi-formal arboricultural features (e.g., the dominant and/or principal trees within an avenue) Trees, groups or woodlands of significant conservation, historical, commemorative or other value.

These mature trees support the lives of many organisms. Birds, small mammals, and other wildlife such as bats and invertebrates use the trees for food, shelter, and nesting. During times of extreme weather, animals can seek shade and shelter under the trees without being away from their food sources. This revised proposed construction zone will result in the removal of over 64 trees along with the associated understory planting.

Some of these trees exceed heights of 15/20m with the tallest measuring 26m in 2018. The main species include Horse Chestnut, Sycamore, Birch and Holm Oak, a species associated with Lord Ardilaun. One of the last surviving Elm trees is the city centre is located with the proposed construction zone. This scheme will significantly impact the environmental and biological benefits, these habitats provide to the environment and wildlife.

These trees are critical to the historic boundary of this National Monument. They are also critical to protecting the people of Dublin using the Green from harmful pollutants in the air. The park is surrounded by 3-4 lanes vehicular traffic, Luas, and buses. These trees significantly reduce noise emanating from the city, the trees control temperature extremes, reduce the risk of flooding and remove carbon dioxide from the atmosphere.

The unprecedented impact that the construction of the station would have on biodiversity in Dublin's city centre contravenes the policy within the Dublin City Development Plan 2022-2028.

The impacts on the biodiversity of the Green can be considered as follows:

- Landscape, historical, and visual character of the Green will be lost. Extensive parkland will be removed from the public to facilitate storage and construction works outside the footprint of the station and tunnel.
- The continuous tree lined perimeter and Victorian landscape character of the Green will be lost. Lime walk may be impacted.
- Removal of 64 mature trees, plus semi mature trees, shrubberies, and spring floral displays.
- Removal of external perimeter path and removal of access to a large portion of the internal perimeter path used by thousands daily.
- Noise pollution and visual intrusion and loss of habitats for wildlife. Habitats for Flora and Fauna will be impacted with the loss of tree canopy.
- Impact on tourism during the construction period.

- We cannot ascertain if large trees will re-establish at this location. As a result of the underground structure, the depth of soil may not be sufficient to ensure adequate rooting zones for large trees.
- The social and environmental benefits as outlined above will be compromised.
- The proposed reinstatement treatment is not in keeping of the historic fabric of the Green, Dublin's oldest public park. The placement of infrastructure within the green will require planting exclusion zones and maintenance access areas, further reducing the space available for public enjoyment and habitat provision.

*Figure 9. Trees highlighted in red are to be removed and those highlighted in orange may be impacted by the Project works*

The Dublin City Development Plan outlines a number of policies with respect to the Green and the importance of biodiversity and green infrastructure. We would respectfully request that TII re-evaluate the proposal to ensure compliance with the following:

***G13 Multi-functionality***

*To ensure delivery of multifunctional green and civic spaces that meet community needs, support biodiversity, promote active and passive recreation, flood and surface water management and local habitat improvements. The multifunctionality of spaces will be balanced against the need to protect and enhance local habitat and the recreational and functional requirements of parks.*

***G107 National Biodiversity Action Plan 2017-2021***

*To support the management targets for nature conservation sites set out in the National Biodiversity Action Plan 2017 (and as updated) and the objectives for local authorities to address threats to biodiversity.*

***GIO8 Dublin City Biodiversity Action Plan 2021-2025***

*To support the implementation of the 'Draft Dublin City Biodiversity Action Plan 2021–2025' (or as updated), which sets out key themes and objectives for biodiversity conservation and restoration and measurable targets and actions, in partnership with all relevant stakeholders.*

***GI24 Multi-Functionality***

*To incorporate new open space into the green infrastructure network for the city and providing a multi-functional role including outdoor recreation, biodiversity, urban drainage, flood management, connection, and carbon absorption without compromising public access to and the amenity function of open space (see Section 15.6: Green Infrastructure and Landscaping).*

***15.6.1 Green Infrastructure***

*To support the green infrastructure network, any proposed development for sites which adjoin either core areas or any buffering parks and open spaces shall include an assessment of impacts on biodiversity and make provision for enhancement of ecological features. The following measures to strengthen the city green infrastructure (GI) network plan will be required.*

- *Increase habitat protection to support the wider GI network.*
- *Provide additional green space to meet deficiencies in connectivity of the GI network.*
- *Ensure retention of mature habitats and provide for long-term ecological succession.*
- *Increase connections and improve accessibility for pedestrians and cyclists to the wider GI network.*
- *The use of drainage systems (SuDs) and soft/nature-based engineering solutions for surface water management to control the rate of run-off, protect water quality and mitigate the environmental impacts of flooding and erosion.*
- *Provide for public access to ensure that the benefits of access to the GI network is available to all citizens.*
- *Ensure that proposed developments do not create negative impacts on the existing GI network.*

***15.6.10 Tree Removal***

*Where a proposal impacts on trees within the public realm, a revised design will need to be considered to avoid conflicts with street trees. Where a conflict is unavoidable and where a tree, located on street, requires removal to facilitate a new development or widened vehicular entrance and cannot be conveniently relocated within the public domain, then when agreed by Parks Services and the Planning Department by way of condition to a grant of permission, a financial contribution will be required in lieu. The financial contribution is calculated by the Capital Asset Value for Amenity Trees (CAVAT) by an Arboriculturist. The payment is required to be lodged with Dublin City Council before the tree can be removed.*

The removal of 28% of the trees within the park is also a clear violation of the St. Stephen's Green Park Conservation Management Plan 2015-2020. It lists the following objectives specifically for nature and biodiversity:

*"- To continue to adopt management measures sensitive to biodiversity, to identify areas where such measures would have precedence and to develop action plans to maximise biodiversity,*

*- To raise awareness of biodiversity,*

***- To protect and enhance the condition of rare and important species of flora and fauna,***

*- To continue research and development and monitoring on all aspects of biodiversity, in order to support the decision-making process in management practices for the overall enhancement of biodiversity,"*

The loss of biodiversity due to the impact of the Project on the Green, will have a detrimental impact on the biodiversity of the park and the city as a whole. Good planning promotes the growth and intensification of biodiversity within green spaces in the city centre. The development is in clear violation of this and would be an unprecedented regression and destruction of one of Dublin's vital green infrastructure spaces.

## 8.2 Impacts on the Built Heritage

The proposed plan would replace the historic elements of this Park with a contemporary plaza, which is incongruent with the wider character of the area. The Green is a square park, and all four corners of that square should read as a whole and not be diluted by a contemporary plaza to one corner. The existing granite slabs located around the exterior pavement of the Green is laid to an historic bond, the proposed feature pavement is completely out of the historic character. The proposed 36 stainless steel security bollards and contemporary standard lighting are not in keeping with the historic park and are further evidence of an inaccurate assessment of the historic importance of this Park.

The Planning and Development Act, 2000 (as amended) requires each Planning Authority to include in their development plan objectives for the protection of structures, or parts of structures, which are of, special architectural, historical, archaeological, artistic, cultural, scientific, technical, or social interest. These buildings and structures are compiled on a register referred to as the Record of Protected Structures (RPS). The record is a mechanism for the statutory protection of such structures. Reference to the National Inventory of Architectural Heritage (NIAH) which compiles a separate list and Ministerial Recommendations is made when assessing a building for inclusion on the RPS.

A 'Protected Structure' is defined as any structure or specified part of a structure, which is included in the RPS. The protection also extends to any features specified as being in the attendant grounds including boundary treatments. The NIAH list is more exhaustive and identifies architectural heritage from 1700 to the present day. The purpose of the NIAH aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for Housing, Local Government and Heritage to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS). This is outlined in the Dublin City Development Plan Objective CHC03 which states the following,

*"**CHC03:** To review and consider the recommendations of the National Inventory of Architectural Heritage as part of the conservation strategy to review the Record of Protected Structures and to designate Architectural Conservation Areas within the identified phase 1 priority areas (as set out in Section 11.1.4: The Strategic Approach) of*

*special historic and architectural interest. Consideration will also be given to the inclusion of industrial heritage structures of special interest."*

The station will directly impact two Dublin City Record of Protected Structures and three NIAH sites the list is as follows.

List of RPS impacted by the station:

- Railings, gates, and plinth walls of perimeter boundary on St. Stephen's Green (REF NO. 7751).
- Surrounding bollards and traditional-style lampposts (REF NO. 7752).

List of NIAH sites impacted by the station:

- Wolfe Tone Memorial (NIAH REG NO. 50100265) (Regional rating).
- Famine Memorial (NIAH REG NO. 50100264) (Regional rating).
- St. Stephen's Green Park (NIAH REG NO. 50100259) (National Rating).

This is in violation of the policies stated in the Dublin City Development Plan 2022-2028 with regard to Built Heritage, which read as follows:

***"BHA2 Development of Protected Structures***

*That development will conserve and enhance Protected Structures and their curtilage and will:*

*(a) Ensure that any development proposals to Protected Structures, their curtilage and setting shall have regard to the 'Architectural Heritage Protection Guidelines for Planning Authorities' 2011 published by the Department of Culture, Heritage, and the Gaeltacht.*

*(b) Protect Structures included on the RPS from any works that would negatively impact their special character and appearance.*

*(c) Ensure that works are carried out under supervision of a suitably qualified person with expertise in architectural conservation.*

*(d) Ensure that any development, modification, alteration, or extension affecting a Protected Structure and/or its setting is sensitively sited and designed, and is appropriate in terms of the proposed scale, mass, height, density, layout, and materials.*

*(e) Ensure that the form and structural integrity of the Protected Structure is retained in any redevelopment and ensure that new development does not adversely impact the curtilage or the special character of the Protected Structure.*

*(f) Respect the historic fabric and the special interest of the interior, including its plan form, hierarchy of spaces, structure and architectural detail, fixtures and fittings and materials.*

*(g) Ensure that new and adapted uses are compatible with the architectural character and special interest(s) of the Protected Structure.*

*(h) Protect and retain important elements of built heritage including historic gardens, stone walls, entrance gates and piers and any other associated curtilage features.*

*(i) Ensure historic landscapes, gardens, and trees (in good condition) associated with Protected Structures are protected from inappropriate development.*

*(j) Have regard to ecological considerations for example, protection of species such as bats.*

***BHA3 Loss of Protected Structures***

*That the City Council will resist the total or substantial loss of Protected Structures in all but exceptional circumstances.*

***BHA4 Ministerial Recommendations***

*To have regard to the National Inventory of Architectural Heritage (NIAH) rating of a structure and any associated Ministerial Recommendation in the assessment of planning applications.*

***BHA5 Demolition of Regional Rated Building on NIAH***

*That there is a presumption against the demolition or substantial loss of any building or other structure assigned a 'Regional' rating or higher by the National Inventory of Architectural Heritage (NIAH), unless it is clearly justified in a written conservation assessment that the building has no special interest and is not suitable for addition to the City Council's Record of Protected Structures (RPS); having regard to the provisions of Section 51, Part IV of the Planning and Development Act, 2000 (as amended) and the Architectural Heritage Protection Guidelines for Planning Authorities (2011)."*

The removal of built heritage will result in the degradation of the importance of the surrounding of the Green. The dilution of historic monuments and spaces of historical and national significance is to be avoided or justified according to the Dublin City Development Plan 2022-2028. MetroLink is in contravention of the built heritage and archaeology chapter of the Development Plan.

It also goes against the specific objectives for Archaeology, Architecture and Built heritage outlined in the St. Stephen's Green Park Conservation Management Plan 2015-2020. These are as follows:

*"To record a comprehensive inventory/audit, with periodic reviews, of the full extent of the archaeological, architectural, engineering, and artistic heritage of St. Stephen's Green, including buildings, monuments, other structures and artefacts, details such as ironwork, gardens, etc.,*

*To identify infrastructure and artefacts (including street furniture, fences, railings, etc.) that are inappropriate to the setting of St. Stephen's Green and to seek for replacement with more appropriate forms,*

*To encourage and facilitate further studies of the archaeological, architectural, cultural, and artistic heritage (including excavations, where appropriate) and to promote a better understanding of the importance and significance of this heritage,*

*To promote and facilitate high standards of conservation, architectural design, construction, and craftsmanship in all developments within the Green,*

*To ensure that the DoEHLG Guidelines for Protection of Architectural Heritage be adopted as best practice for all works in the Green,*

*To maintain the current lighting levels within the Green so as to minimise levels of light pollution."*

## 8.3 Landscape & Visual Impact

St. Stephen's Green is Dublin's oldest public park. It was made a city park in 1663 and was remodelled in the 1880's to become an enclosed park, fashionable throughout the Victorian period, with a solid perimeter, the plantation of trees, ornamental lakes and garden buildings and shrubs, which created a sense of enclosure for the visitors to the Green. The City Surveyor during this period, Arthur Neville introduced a series of serpentine walks, namely the Beaux Walk, Monk's Walk, Leeson's Walk and French Walk and iron railings replaced the wall. The City Engineer of the time, W.G. Hemans drew up a plan proposing a large new entrance at Dawson Street, on the north side, broad avenues with flower beds and four main entrances at either corner to allow for easy crossing of the park. The four entrances would also link up with the named walks. However, his plan was not realised but some of his ideas were implemented during the Victorian period of Sheppard's and Sir Ardilaun's time i.e., during the years of 1880-1887.

Since the late 19th century, the park has largely stayed the same with only some minor alterations. Trees have matured, commemorative statues have been added such as the Wolfe Tone Memorial and indeed been removed for example an equestrian statue of King George II. The most noticeable changes have been at the north-east and north-west entrances which commemorate Wolfe Tone and the Boer War in the Fusilier's Arc. However, these have not compromised the Victorian walkways and park design that have been well preserved.

The proposed station will completely disrupt the Park's Victorian square design by implementing a plaza at the north-eastern corner. The plaza will upset the existing symmetry and completely alter the character of the Green. St. Stephen's Green is a square park, and all four corners of that square should read as a whole and not be diluted by a contemporary plaza to one corner. The square design is an essential aspect of the park's character and of Victorian and Georgian parks across Dublin. The Green participated in "Square Day" which is held in association with the Dublin Civic Trust, to celebrate the city's unique square parks.

The development of a plaza along the north-eastern corner is contrary to the vision outlined for the protection of the Green in the Dublin City Park Strategy 2019-2022 which states that,

*"The long-term vision for St. Stephen's Green combines its protection, conservation and, where appropriate, restoration as an important and unique historic landscape with the facilitation of appropriate access and use."*

This development will completely alter the landscape and historical layout of the park and contravenes the specific objectives of the St. Stephen's Green Park Conservation Management Plan 2015-2020. These are as follows:

*"- To encourage the planning authorities to have regard to the landscape setting of the Green, including its perimeter footpath.*

*- To ensure that trees and plantations continue to thrive in the Green, using species that are appropriate to the setting and soil conditions. Such features are fundamental in creating the landscape character by defining spaces and in directing views within the Green. Sustaining the current balance between open space and plantations is essential to the landscape character. The form, structure and species diversity and character of plantations will be conserved, and new plantations established by sensitive management including felling, remedial work, and appropriate replanting.*

*- To conserve the existing topography of the Green which is integral to the character and quality of the designed landscape and to ensure that if changes to landform are required these reflect and enhance the historic landscape.*

*- To conserve and enhance buildings, structures, and works of art that form focal points for views in the Green and give a special sense of place and, where appropriate to the setting, to reinstate those that have been removed.*

*- To ensure that, where any new features, services and amenities in the Green are required, it is essential that they are appropriate and sensitive to the historic character of the Green.*

*- To continue to develop educational materials on the historical and designed landscape of the Green."*

## 8.4 Access & Public Use

The construction of the station will impede upon how people use the historic public park. The proposed alignment of the entrance to the MetroLink would encourage commuters to transverse the Green, in order to connect with the southern shopping district or change for the Luas Green Line. This will change the use of the park to become a cut through for commuters and shoppers on their way to other parts of the city, disturbing visitors walking at a gentle pace in a tranquil environment. The Green was not designed to facilitate this kind of movement and no design or thought has gone into how commuters will connect from the Luas green line Luas stop with the proposed MetroLink station at each end of the square. The Green will become a transport hub and very little is being done to create routes for commuters to connect with other modes of transport without impacting the serenity of the Park.

While the Green is not designated as a major mobility hub, the proximity to connections with the Luas Green line, Dublin Bus, and other modes of transport, as well as it being a city centre location, will make it a major interchange. The Draft Greater Dublin Area Transport Strategy 2022-2042 states the following about the integration and inclusion of public transport modes:

*"The features of a well-integrated transport system include the physical environment of stops and stations; the length and quality of the walk between services; crossing points; travel information; fares integration; cycle parking; shelter; frequency and capacity of connecting services."*

It goes against Measure INT5 of the Draft Strategy:

> *"Measure INT5 – Interchange: It is the intention of the NTA, in conjunction with local authorities and transport operators, to ensure that passengers wishing to change between services on the transport network are provided with as safe, convenient and seamless interchange experience."*

This anticipated increase in footfall between the north-east and north-west corners of the Green will generate greater commuter footfall traffic that has not been accounted for in the planning statement. It is critical for the design of the MetroLink station to accommodate this interchange and provide an appropriate interchange, and not for the historic park to become a walkthrough for multi-modal transport use.

The change in access and public use change in use is a contravention of the objectives outlined in the St. Stephen's Green Park Conservation Management Plan 2015-2020. These are as follows:

> *"- The overall objective is to provide a world-class visitor experience within the setting of a National Historic Park,*
>
> *- To facilitate an appropriate balance of recreational use and public appreciation that maximises visitor enjoyment and protects the landscape and infrastructure of the Green in a sustainable manner,*
>
> *- To facilitate and encourage a greater public understanding of the national and international significance of the Green, through continued research, publications, and use of technology such as the internet,*
>
> *- To ensure that all events demonstrate that they will minimise their carbon footprint within the Green,*
>
> *- To reduce the environmental impact of traffic & transport infrastructure on the perimeter of the Green,*
>
> *- To maintain the current high levels of access to the Green 365 days per year.*
>
> *- To respect and conserve the layout and distribution of the designed features and facilities,*
>
> *- To promote St. Stephen's Green including its landscape, natural amenities, and wildlife as a unique passive recreational area for refreshment of body, mind, and soul,*
>
> *- To develop educational and tourist programmes facilitating the interpretation of the significance of the Green in a historic, landscape, natural and sociological context,*
>
> *- To continue to implement high standards of security and policing of the Green."*

# 9.0 FURTHER CONSIDERATIONS

## 9.1 Monitoring

Once an agreement on the location of the Station has been agreed between the OPW and TII, we request that An Bord Pleanála attach a condition to the Draft Railway Order that ensures continuous monitoring of the Green to prevent any negative impacts on this National Monument. Access to all

sections of the Green for monitoring, must be agreed in advance with the OPW. It is recommended that this monitoring takes place at least 3 months in advance of the construction of the Project and at least 6 weeks post the operational stage of the MetroLink.

## 9.2 Security Issues

Given the nature of the State properties affected by the Project, we would respectfully refer An Bord Pleanála to Part XI of the Planning & Development Act 2000 (as amended), which states that:

> *"Development by State authorities. 181.—(1) (a) The Minister may, by regulations, provide that, except for this section F902[and sections 181A to 181C], the provisions of this Act shall not apply to any specified class or classes of development by or on behalf of a State authority where the development is, in the opinion of the Minister, in connection with or for the purposes of public safety or order, the administration of justice or national security or defence and, for so long as the regulations are in force, the provisions of this Act shall not apply to the specified class or classes of development.*
>
> *b(iii) the making available for inspection by members of the public of any specified documents, particulars, plans or other information with respect to the proposed development;"*

It is essential that security issues do not arise in the event of sensitive information being shared on the structure and operation of the OPW properties, including the operation of St. Stephen's Green Park. However, the OPW understands the importance of the detailed design stage of the Project and the wish to ensure that the detailed assessment of the Park takes place in the early stages of the design process, in conjunction with the OPW, to ensure that these sensitive State properties are not negatively impacted upon by the proposed Project. The OPW will liaise with TII and An Bord Pleanála on this matter.

All employees contracted to work on behalf of TII on this Project, and any associated works, must adhere to the properties protocol around access, security, and safety. This applies to all persons entering or working in proximity of the property. The day-to-day operations of the property cannot be interrupted by disruptions to any utilities. The design and operation of the MetroLink should be in line with best international practice, in relation to anti-terrorism and security measures.

### 9.2.1 Ground Movement

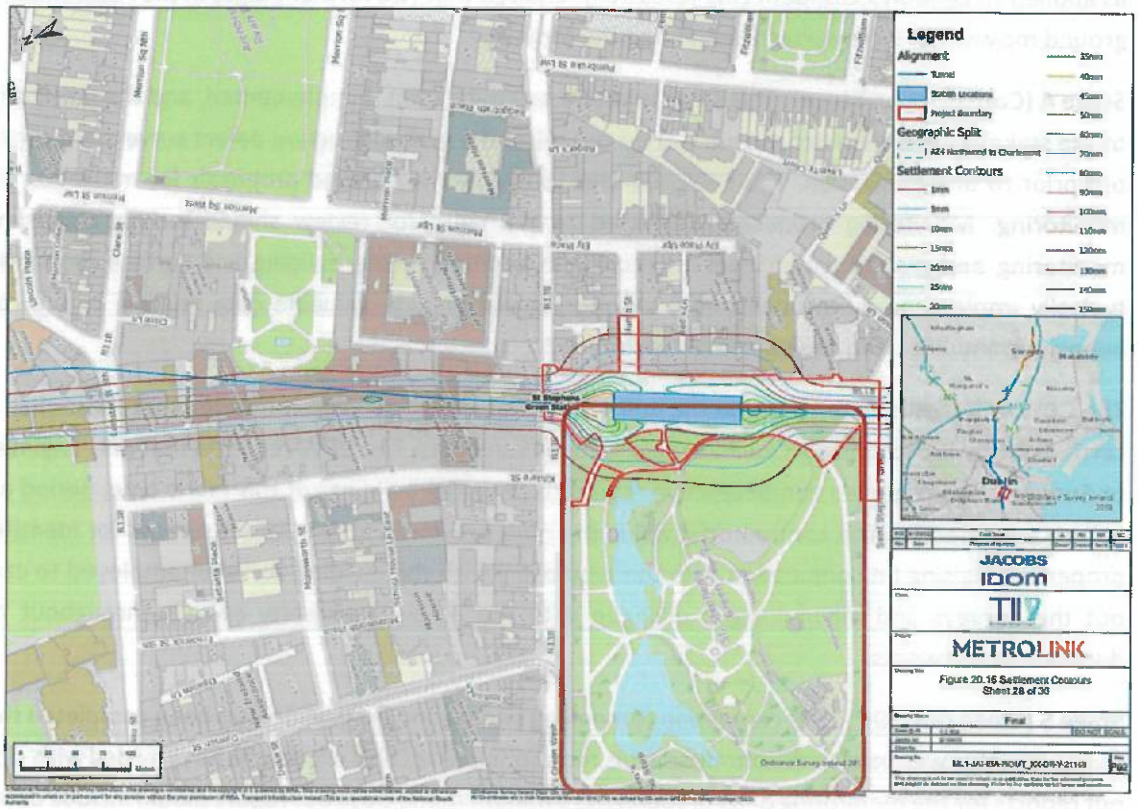


*Figure 10. Settlement Contours (Extract from ML1-JAI-EIA-ROUT_XX-DR-Y-21148)*

Key points of the staged analysis for ground movement impacts on structures is provided below:

**Stage 1**: Defines extent of ground movement using Moderately Conservative parameters. The parameters considered by MetroLink are:

- Volume Loss, $V_s = 0.75$
- Trough Width parameter, $k = 0.4$

These are considered appropriate for defining the zone of influence.

The extent of the zone of influence is defined by the 1mm contour line (Dark Red) and ~100% of the significant proportion of the Green sits in the zone of influence delineated by the Building Assessment report.

**Stage 2**: Stage 2 assessments of the walls, monuments and statuary in the Green shall be undertaken.

**Stage 3**: The EIAR states that Stage 3 assessment will be carried out where required for National Monuments by the Contractor appointed to construct this section of the MetroLink. The OPW expects to be consulted on the detail, scope of this assessment and programme for these assessments. It would be helpful if TII were to develop a Design Standard to ensure that all Stage 3 analyses of the OPW properties are carried out equally.

No mention of Stage 4 or 5 has been found in the Draft Railway Order or EIAR. Industry best practice as applied to London's Elizabeth Line (Crossrail) required that two further Stages in the Assessment of ground movement were undertaken during the project.

**Stage 4 (Construction Stage):** This stage is where any mitigation is implemented, and the monitoring of the stakeholders' infrastructure is carried out. Also, the preconstruction defect surveys are carried out prior to any excavation. The OPW requires to review the detailed proposals for mitigation and monitoring. Monitoring proposals submitted to the OPW for review should include deep level monitoring and ground water level monitoring in addition to the building and surface monitoring typically implemented. The deep level monitoring will provide valuable data relating to the rock behaviour and has been usefully employed on HS2.

The OPW will facilitate and observe the preconstruction defect surveys. It is noted that these shall be carried out by Professionally Qualified Engineers or Surveyors. The OPW requests that only Engineers or Surveyors with proven competence in regard to (historic) buildings of this fabric type, period and nature are selected. The contractor(s) will coordinate pre-construction defect surveys for identified properties, liaising (in conjunction with the employer) with the building surveyor employed to carry out the surveys and maintaining a dialogue with the relevant property owners throughout the duration of the works.

**Stage 5 (Close out):** Once the excavation (tunnelling and station excavation) has been completed then the Contractor will want to decommission his monitoring. The OPW expects to be provided with close out reports for the monitoring of its property. As a minimum the close out report should include details of any mitigation carried out, a list of any repairs, time history graphs showing the movements monitored.

### 9.2.2 Utilities

It is likely that significant utility diversions will be required on St. Stephen's Green East to facilitate St. Stephen's Green station construction.

### 9.2.3 Noise and Vibration

***(a) Tunnelling***

EIAR Chapter 14 Ground Borne Noise and Vibration Measures identifies identify impacts on the Green during TBM excavation:

- Ground borne noise 50 dBA LAmax – Significant Impact
- Ground borne vibration 0.275 VDVdb, $ms^{-1.75}$ – No Significant Impact

EIAR Table 6.2- GNV1 states that there is no effective mitigation available and therefore the impact will be managed by detailed consultation with the building owners.

The OPW requests specific vibration limits that will be applied to the Green and that a monitoring regime to be implemented.

EIAR Table 6.2- ANV16. sets out requirement for pre- and post-construction surveys of structures vulnerable to vibration induced damage. The OPW seeks to ensure pre- and post-construction surveys

of structures vulnerable to vibration induced damage are carried out and this should include the Green.

***(b) Station Excavation***

GNV2 states that Monitoring of blasting and re-optimising the blast design (minimising the explosive charge considering the results) will be carried out as standard. A5.20 Blasting Strategy provides information on the classification of buildings and potential damage due to blasting for the station excavations. There are also calculations for estimated magnitude of the peak particle velocity (ppv) for various explosive charges. The assumption is that the lowest charge would be implemented to avoid damage.

The Green is located above and adjacent to the planned station box. At this distance, ground vibrations from the excavation may register up to 2.7mm/s.

### 9.2.4 Work Sites

***(a) Dust***

Appendix A16.4 of the EIAR requires a Dust Management Plan to be produced and implemented. The tunnelling will not generate dust in the vicinity of the Green. The station construction is in the Green and therefore dust from these constructions' sites may affect this building.

***(b) Ground Water Control***

There is an assumption that the tunnelling will not affect the ground water above the tunnel. However, there should be a ground water monitoring scheme implemented to confirm this and a contingency plan to manage any residual risk.

***(c) Working Hours***

**Tunnelling**: Working Hours will be 24 hours a day, 7 days a week for the tunnelling works using a 3x8hr shift pattern, with a total of 4 crews.

**Station Excavation**: Working Hours will be:

- Monday to Friday: 07:00 to 19:00
- Saturday: 07:00 to 13:00

***(f) Intervention Strategy***

The Green is located at the construction site of St. Stephen's Green Station. The construction of this station will generate additional lorry movements, for both deliveries and spoil removal and other associated construction activities. There is significant risk that this will impact on the historic, fabric, structure, and elements of this important Protected Structure. It will be necessary that TII and their contractors demonstrate that this risk will be addressed and that all measures are taken to ensure there is no impact arising.

## 9.3 During Operation of the MetroLink

### 9.3.1 Noise and Vibration

TII propose to mitigate the noise and vibration resulting from the railway operations by installing floating track slab to meet thresholds of 25 dBLamax,s and VC-D respectively. EIAR Chapter 14 Table 14.47 provides some guidance on where this will be constructed but it is not clear exactly where. The OPW requests that floating track slab is installed between Chainage 17+980 and 18+400 (St. Stephen's Green Station). This would mitigate the noise and vibration to acceptable levels under all the Government buildings, museums and the National Concert Hall and other significant Protected Structures along this route such as St. Stephen's Green.

The vibration during railway operations will not impact the building fabric or structure.

### 9.3.2 Evacuation Strategy

The Green, being a station location, will de facto also incorporate, evacuation routes, access for firefighting and associated ducts. The Green is located close to this station and so may be impacted by such interventions.

As a significant building forming part of the important east terrace of protected structures addressing the Green and station, it is important that all interventions and impacts in this quarter are considered at the both the urban scale, individual building and down to individual elements of fabric and detail.

## 9.4 Contractual Arrangement

TII intend to procure the detailed design and construction of the proposed Project using Design and Build contracts that will be divided up by geographical section and by type of works. Under this form of contract, the contractor(s) will ultimately be responsible for the final detailed design of the proposed Project and for preparing a more detailed Construction Environmental Management Plan (CEMP) for each specific package of works, as outlined in Section 1.3.

The contractor(s) appointed will be responsible for the organisation, direction, and execution of environmental related activities during the detailed design and construction of the proposed Project. The contractor(s) is required to undertake all activities in accordance with the relevant environmental requirements including the consent documentation and other regulatory and contractual requirements.

## 9.5 Future Development

The OPW reserves the right to development the subject property in the future, this includes property above and below ground, subject to normal planning criteria.

It is important that the development of the MetroLink does not interfere with extant planning permissions pertaining to the subject property and the right of the applicant to develop these, in advance, in tandem or post operation of the MetroLink Project.

## 10.0 CONCLUSION

This submission has been prepared by DOWNEY, Chartered Town Planners, 29 Merrion Square, D02 RW64, in conjunction with Gall Zeidler, International Consulting Engineers specialising in tunnel and underground schemes, on behalf of the Commissioners of Public Works in Ireland, OPW Headquarters, Jonathan Swift St, Trim, Co Meath and on foot of extensive consultation(s) with the OPW's clients, which relates to the MetroLink route and its impact on St. Stephens's Green Park.

With reference to the Draft Railway Order 2022 (MetroLink - Estuary to Charlemont via Dublin Airport), the OPW welcomes this strategic project and recognises the significance of its delivery to provide for a sustainable, safe, efficient, integrated, and accessible public transport service between Swords, Dublin Airport and Dublin City Centre.

With regards to the Gall Zeidler assessment, the OPW asserts that the risk of damage to St. Stephen's Green Park, a National Monument, is unacceptable in its current form. It is acknowledged that a station is required between Tara and Charlemont, as identified in the Emerging Preferred Route (EPR) and that an intervention/evacuation shaft will be required if the stations are more than 1,000m apart and this has informed the chosen location. The option studies have been reviewed by the OPW and its engineering consultants who have concluded that some of the key assumptions adopted to reach their conclusion are flawed.

The OPW wishes to work jointly with TII to develop a solution that satisfies the requirement for a station in the vicinity of the Green but has no impact on the Park.

This proposal will have a significant negative impact on the Green. Landscape Architect Frederick Law Olmstead, designer of New York Central Park once famously stated that "*Parks are the lungs of a city*". This is still true to this day. The economic, social, and environmental benefits of urban parks, and in particular the Green in the heart of Dublin, are immeasurable, given that the urban population is steadily increasing.

The OPW has several concerns regarding the design and location of St. Stephen's Green Station. The current design of the Station will have irreparable impacts on the biodiversity, built heritage, landscape and design, and the experience of the public park. It will dilute the historical significance of the Park and weaken its separation from the active and loud streetscapes, that it currently acts as an oasis from.

The design and the submission from MetroLink must provide clear and specific detail as to how the Station will impact the Park. We are of the view that any dilution of the Park's historic or ecological importance is a clear violation of local planning guidelines and must be avoided. The Green is a special and unique part of Dublin and Ireland's heritage and a key aspect of the city's green infrastructure that must be protected going forward.

In light of the above, DOWNEY respectfully request that An Bord Pleanála take into consideration the concerns and issues raised by the OPW when assessing the Draft Railway Order 2022 (MetroLink - Estuary to Charlemont via Dublin Airport).

# APPENDIX 1: LIST OF PLANNING LEGISLATION & POLICY DOCUMENTS

This appendix provides a non-exhaustive list of planning policy, legislation, and guidelines. We would respectfully request that An Bord Pleanála ensure that TII have fully assessed the Project with regard to existing planning policy, as well as adherence to the relevant local policies and guidelines pertaining to each individual property.

DOWNEY, note that this proposed Draft Railway Order is a strategic long-term development and An Bord Pleanála may consider Draft Development Plans in assessing the Project. It is also crucial to note that on foot of a granted Order and during the detailed design stage, a revision to planning policy is expected, whereby adopted plans and legislation may have to be adhered within this stage. This may require an amendment to the Draft Railway Order and further assessment, including public consultation.

## Legislative Context

- **Planning and Development Act 2000 (as amended)**

The proposed Project comes within the definition of Strategic Infrastructure Development (SID) under Section 2 of the Planning and Development Act 2000 (as amended). 'Strategic Infrastructure Development' means *"any proposed railway works referred to in section 37(3) of the Transport (Railway Infrastructure) Act 2001 (as amended by the Planning and Development (Strategic Infrastructure) Act 2006."*

- **Planning and Development Regulations 2001 (S.I. No. 600 of 2001)**

The principal regulations underpinning the Planning and Development Acts are the Planning and Development Regulations 2001 (S.I. No. 600 of 2001). A number of Regulations amending the 2001 Regulations have been made, which, taken together, are collectively cited as the Planning and Development Regulations 2001 to 2022.

An unofficial consolidation of the Planning and Development Regulations 2001-2022 has been prepared for ease of reference by users and has no legal status. This can be accessed here: Planning and Development Regulations 2001-2022.

- **Directive 2014/52/EU3**

Directive 2011/92/EU, passed on 13th December 2011, pertains to the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU (hereafter referred to as the 'EIA Directive'), passed on 16th April 2014, which sets the requirements for EIA in European law. It requires EIA to be carried out for certain public and private projects listed in Annexes I and II of the EIA Directive.

The requirements of Directive 2014/52/EU were transposed into Irish law with the adoption of the S.I. No. 743/2021 - European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 (hereafter referred to as the EIA Regulations), which amend the Transport (Railway Infrastructure) Act 2001 to bring it in line with Directive 2014/52/EU.

- **Transport (Railway Infrastructure) Act 2001 (as amended)**

The 2001 Act provides for a Draft Railway Order application to be made by the Applicant to An Bord Pleanála.

> *"37(1) An application may be made to An Bord Pleanála ('the Board') for a railway order by the Dublin Transport Authority ('DTA'), the Agency, CIÉ or another person. Where any part of the proposed railway works in the application is within the functional area of the DTA the applicant (not being the DTA) must have obtained the prior written consent of the DTA for the application*
>
> *(2) An application under subsection (1) shall specify whether the application is in respect of a light railway, metro or otherwise.*
>
> *(3) An application under subsection (1) shall be made in writing in such form as the Minister may specify and shall be accompanied by—*
>
> *(a) a draft of the proposed order,*
>
> *(b) a plan of the proposed railway works, MetroLink Planning Report*
>
> *(c) in the case of an application by the Agency or a person with the consent of the Agency, a plan of any proposed commercial development of land adjacent to the proposed railway works,*
>
> *(d) a book of reference to a plan required under this subsection (indicating the identity of the owners and of the occupiers of the lands described in the plan), and*
>
> *(e) a statement of the likely effects on the environment (referred to subsequently in this Part as an 'environmental impact assessment report') of the proposed railway works, and a draft plan and book of reference shall be in such form as the Minister may specify or in a form to the like effect."*

Section 37 (4) of the 2001 Act sets out that "The construction of railway works, the subject of an application for a railway order under this Part, shall not be undertaken unless the Board has granted an order under Section 43".

A number of other relevant documents have also been prepared as part of the Draft Railway Order application, including the following, provided as stand-alone documents.

- Wider Effects Report; and
- Natura Impact Statement
- National Cultural Institutions Act 1997

- **The National Cultural Institutions Act**

The National Cultural Institutions Act sets the framework for which National Cultural Institutions must operate. The act provides for the establishment of Boards for the national institutions.

- **National Cultural Institutions (National Concert Hall) (Amendment) Bill 2022**

A Bill entitled an Act to provide for the transfer of certain functions, staff, property, rights and liabilities of RTÉ to the National Concert Hall; to provide for the validity and effect of acts by RTÉ and the National Concert Hall in relation to that transfer; to extend the functions of the National Concert Hall and to make certain changes to its board and, for those purposes to amend the National Cultural Institutions (National Concert Hall) Act 2015; to increase the aggregate amount of liability in respect of undertakings given for cultural objects on loan from a person resident outside the State and, for that purpose to amend the National Cultural Institutions Act 1997; to make certain changes to the objectives of RTÉ and, for that purpose to amend the Broadcasting Act 2009; and to provide for related matters.

## National Planning Policy Context

The key provisions of the national planning policy, including the Planning Guidelines, as it relates to the proposed project are set out. A summary list of the relevant national planning policies and planning guidelines consist of the following:

- All-Ireland Pollinator Plan 2021-2025
- Architectural Heritage Protection Guidelines for Planning Authorities
- Climate Action Plan 2023
- Guidelines for Landscape and Visual Impact Assessment
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018)
- Heritage at the Heart: Heritage Council Strategy 2018-2022
- Housing for All – A New Housing Plan for Ireland
- Investing in Our Transport Future – Strategic Investment Framework for Land Transport 2015
- National Adaptation Framework 2018 accompanied with Sectoral Adaptation Plan for Transport Infrastructure 2019
- National Biodiversity Action Plan 2017-2021
- National Development Plan 2021-2030
- National Investment Framework for Transport in Ireland 2021
- National Landscape Strategy for Ireland 2015-2025
- National Planning Framework (Project Ireland 2040)
- National Sustainable Mobility Policy
- Places for People – National Policy on Architecture
- Road Safety Strategy 2021-2030
- Smarter Travel – A Sustainable Transport Future; A new Transport Policy for Ireland 2009-2020
- Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities December 2022
- The National Cycle Policy Framework 2009-2020
- The Sustainable Development Goals National Implementation Plan 2018-2020
- The White Paper, Ireland's Transition to a Low Carbon Energy Future 2015-2030

- Town Centre First
- Traffic and Transport Assessment Guideline
- Transport Access for All 2012
- Urban Development and Building Height Guidelines 2020

## Regional Planning Policy Context

The key provisions of the regional planning policy as it relates to the proposed project are now set out in the following sections. A summary list of the relevant regional planning policies consists of the following:

- Draft Greater Dublin Area Cycle Network Plan 2021
- Draft Greater Dublin Area Transport Strategy 2022-2042
- Dublin Agglomeration Environmental Noise Action Plan 2018-2023
- Dublin Metropolitan Area Strategic Plan (MASP)
- Greater Dublin Area Cycle Network Plan
- Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019-2031
- Transport Strategy for the Greater Dublin Area 2016-2035

## Local Planning Policy Context

The key provisions of the local planning policy as it relates to the proposed project are now set out. A summary list of the relevant local planning policies consists of the following:

- Ballymun Local Area Plan 2017
- Barryspark & Crowcastle Masterplan 2019
- Dardistown LAP 2013
- Docklands Public Realm Plan
- DRAFT Fingal County Development Plan 2023-2029
- DRAFT Lissenhall East Local Area Plan
- DRAFT Scheme of Special Planning Control: O'Connell Street and Environs 2022
- DRAFT Sustainable Swords Strategy
- Dublin Airport Local Area Plan
- Dublin City and County Archaeology GIS Dataset
- Dublin City Biodiversity Action Plan 2021-2025
- Dublin City Centre – Developing the Retail Core
- Dublin City Council Climate Action Plan 2019-2024
- Dublin City Development Plan 2016-2022
- Dublin City Development Plan 2022-2028
- Dublin City Industrial Heritage Record
- Dublin City Park Strategy 2019-2022
- Dublin City Strategic Heritage Plan 2022-2028
- Estuary Central Masterplan
- Fingal County Development Plan 2017-2023

- Fostertown Masterplan 2019
- George's Quay Local Area Plan 2012 (Extended to July 2022)
- Grafton Street Quarter Public Realm Plan
- Local Environmental Improvement Plans
- Merrion Square Conservation Plan
- Moore Street and Environs Local Area Plan
- Moore Street Battlefield Site Plan
- National Concert Hall Statement of Strategy 2022-2026
- National Gallery of Ireland – Strategic Plan 2019-2023
- National Library Ireland 2022 – 2026 Strategy
- National Museum 2019 – 2022 Strategic Plan: Building Capacity, Driving Change
- Oireachtas Strategic Plan 2022-2024
- Scheme of Special Planning Control: O'Connell Street & Environs 2016
- Seatown North Masterplan
- Seatown South Masterplan
- South Fingal Transport Study 2019
- St. Stephen's Green Park Conservation Management Plan 2015-2020
- Strategic Development Regeneration Area 2: Ballymun
- Strategic Development Regeneration Area 18: National Concert Hall Quarter
- The Future of the South Georgian Core
- The Heart of Dublin – City Centre Public Realm Masterplan
- Your City Your Space – Dublin City Public Realm Strategy
- Your Swords – An Emerging City Strategic Vision 2035

# APPENDIX 2: GROUND MOVEMENT ASSESSMENT

The following sets out the requirements for assessing the impact of ground movement resulting from underground construction, such as tunnelling, embedded wall installation, and excavation for station boxes, together with requirements for monitoring and the close out.

The Designer shall investigate the potential for ground movement associated with the design and possible construction:

a) To assess risk of building damage by identifying those zones where the implementation of the design is likely to cause ground movements which will result in risk of Damage Category 2 'Slight' being exceeded (see Table 1) or where damage exceeds the agreed tolerable limits. To assess the risks of such degrees of damage occurring and either investigate alternative designs or advise interfacing Designers that alternatives need to be considered and modify the design as necessary. To undertake an assessment of the potential consequences where there is a significant likelihood that Risk of Damage Category 2 'Slight' will be exceeded or where damage exceeds the agreed tolerable limits and identify specifically what the risks are. Design protective measures where necessary to mitigate against the risk of damage exceeding Risk of Damage Category 2 or where damage exceeds the agreed tolerable limits.

b) To demonstrate that the environmental effects of excavation induced ground movements have been considered and taken account of in the design.

c) To assess the risk of damage to utilities and to design mitigation measures in agreement with the utility owner.

d) To assess the effects of excavation to existing above ground and underground infrastructure and to design suitable mitigation measures.

e) To indicate where property may require demolition or structural modification.

f) To enable the preparation of contingency plans to deal with residual risks.

## Stage 1 – Scoping

Schedules and plans shall be prepared to identify all assets assessed to experience ground movement exceeding 1mm using conservative parameters.

## Stage 2 – Initial Assessment

The designer shall carry out initial assessment calculations using simple empirically calibrated methods and moderately conservative parameters to classify the risk of damage to assets. For masonry building structures the risk should be classified in accordance with Table 1. For non-masonry buildings and infrastructure, the level of risk should be determined by ensuring that deformations do not exceed tolerable values determined in consultation with the asset owner.

A schedule and plans of predicted damage shall be prepared, along with outline trigger levels.

The assessment calculations shall be based on record drawings, where available and an inspection for assessment. Assets estimated to be a risk of damage greater than Category 2 'Slight' or where damage exceeds the agreed tolerable limits require further detailed assessment at Stage 3.

*Table 1. Building Damage Classification*

| Damage Category | Description of degree of damage* | Description of typical and likely forms of repair for typical masonry buildings | Approx. crack width** (mm) | Max. tensile strain % |
|---|---|---|---|---|
| 0 | Negligible | Hairline cracks | | <0.05 |
| 1 | Very slight | Fine cracks easily treated during normal redecoration. Perhaps isolated slight fracture in building. Cracks in exterior visible upon close inspection | 0.1 to 1.0 | 0.05 to 0.075 |
| 2 | Slight | Cracks easily filled. Redecoration probably required. Several slight fractures inside building. Exterior cracks visible; some repainting may be required for weathertightness. Doors and windows may stick slightly | 1 to 5 | 0.075 to 0.15 |
| 3 | Moderate | Cracks may require cutting out and patching. Recurrent cracks can be masked by suitable linings. Tuck pointing and possible replacement of a small amount of exterior brickwork may be required. Doors and windows sticking. Utility services may be interrupted. Weather tightness often impaired | 5 to 15 or a number of cracks greater than 3 | 0.15 to 0.3 |
| 4 | Severe | Extensive repair involving removal and replacement of walls especially over door and windows required. Window and door frames distorted. Floor slopes noticeably. Walls lean or bulge noticeably. Some loss of bearing in beams. Utility services disrupted | 15 to 25 but also depends on number of cracks | > 0.3 |
| 5 | Very severe | Major repair required involving partial or complete reconstruction. Beams lose bearing, walls lean badly and required shoring. Windows broken by distortion. Danger of instability | Usually > 25 but depends on No. of cracks | |

** In assessing the degree of damage, account must be taken of its location in the building or structure.*

*** Crack width is only one aspect of damage and should not be used on its own as a direct measure of it. Burland, J.P. and Wroth, C.P., Settlement of Buildings and Associated Damage, Proceedings of a Conference on the Settlement of Structures, Cambridge, 1974, pp 611-54 and 764-810.*

The heritage value of a Listed or Protected Structure should be considered during the initial assessment by reviewing the sensitivity of the building structure and of any particular features together with the initial assessment calculations. The heritage assessment examines the following:

a) The sensitivity of the building/structure to ground movements and its ability to tolerate movement without significant distress. The potential for interaction with adjacent buildings/ structures is also considered. A score within the range of 0-2 should be allocated to the building/structure in accordance with the criteria set out in Table 2.

b) The sensitivity to movement of particular features within the building/structure and how they might respond to ground movements. A score within the range of 0-2 should be allocated to the building in accordance with the criteria set out in Table 2.

The scores for each of the two categories (a) and (b) should be combined and added to the category determined in Stage 2 to inform the decision-making process. In general, Listed Buildings which score a total of 3 or higher should be subject to further assessment as part of the Stage 3 – Detailed Assessment. Buildings that score a total of 2 or less are predicted to suffer a degree of damage which may be easily repairable using standard conservation-based techniques and hence no protective measures for the building's particular features should be required. However, ultimately the professional judgement of engineering and historic building specialists should be used to determine whether additional analysis is required.

*Table 2. Scoring for Sensitivity Assessment of Listed Buildings*

| Criteria | | |
|---|---|---|
| Score | **a) Sensitivity of the structure to ground movements and interaction with adjacent buildings** | **b) Sensitivity to movement of particular features within the building** |
| 0 | Masonry building with lime mortar not surrounded by other buildings. Uniform façades with no particular large openings. | No particular sensitive features |
| 1 | Buildings of delicate structural form or buildings sandwiched between modern framed buildings which are much stiffer, perhaps with one or more significant openings. | Brittle finishes, e.g., tight-jointed masonry, which are susceptible to small movements and difficult to repair. |
| 2 | Buildings which, by their structural form, will tend to concentrate all their movements in one location. | Finishes which if damaged will have a significant effect on the heritage of the building, e.g., cracks through frescos. |

## Stage 3 – Detailed Assessment, Mitigation Design and Monitoring Plans

The Designer shall carry out detailed assessments of structures that will be affected by the works so that any monitoring works and mitigation works can be designed and implemented.

For structures at risk of exceeding Damage Risk Category 2 'Slight' or where damage exceeds the agreed tolerable limits the designer shall undertake a detailed assessment (more rigorous) to determine:

a) The influence of the structure and its foundations on the predicted ground movements (soil/structure interaction).

b) The volume loss at which the risk of damage to the structure (or any sensitive finishes/features) is 'slight' or better.

c) Whether this volume loss may be achieved by the proposed excavation design/control measures.

d) Any special control measures required to reduce the predicted damage to acceptable levels (i.e., Risk Category 2 'slight' damage category and below or below the agreed tolerable limits) such as significantly higher face pressures with EPBM tunnelling and the practicality of these.

e) The amount of ground movement that the structure (and or any sensitive finishes/features) can accommodate without exceeding Damage Risk Category 2 or where damage exceeds the agreed tolerable limits.

f) The level of residual risk if intrusive mitigation measures are not implemented.

The detailed assessments should include a number of iterations to determine how the risk of damage to a building may be reduced. Asset-specific empirical models shall be prepared successively using moderately conservative and best estimate parameters. If after these iterations the use of empirical methods do not reduce the risk of building damage to acceptable levels (i.e., Damage Category 2 'slight' damage category and below or below the agreed tolerable limits), the damage assessment shall be refined by increasing the sophistication of the analysis with the aim of reducing the risk of asset damage to acceptable levels and to eliminate the asset from further assessment.

If the risk of damage cannot be shown to be reduced by detailed assessment to acceptable levels, then mitigation measures shall be designed. The primary means of settlement mitigation shall be practical measures to control ground movement by good design and construction practice. This could include staged excavation sequences within sprayed concrete lining (SCL) works, ground treatment, face stabilisation, spiling/face dowels, increasing face pressure when using a tunnel boring machine (TBM), adopting stiffer walls/propping for rectangular shafts etc.

In the event that physical mitigation measures are still required (i.e., to control building damage to Damage Category 2 'slight' and below or below the agreed tolerable limits), the Designer shall seek to obtain the Asset Owners approval.

The Designer shall also undertake a comparative risk assessment to demonstrate that the risks associated with installation/implementation of any intrusive mitigation measures (such as compensation grouting) are no worse than the risks associated with the base case.

The relevant Local Authority and the OPW shall be consulted on the results of the Protected Building assessment reports and the proposals for protective measures, if any are required. The OPW shall also be consulted in relation to Listed or Protected Buildings where they would normally be notified or consulted on planning applications or listed building consent applications.

When considering the need and type of protective measures for Listed or Protected Buildings, due regard should be given to the sensitivity of the particular features of the building which are of architectural or historic interest and the sensitivity of the structure of the building to ground movement. Where the assessment highlights potential damage to the features of the building which it will be difficult or impossible to repair and/or if that damage will have a significant effect on its heritage value, the assessment may recommend appropriate measures to safeguard those features either in-situ or by temporary removal and storage off-site if those with relevant interest(s) in the building consent.

The form of monitoring of Listed Buildings should be determined based on the results of the assessment process.

Where repair works are necessary, they will require the consent of those with relevant interest(s) in the building.

For railway track and track support structures the designer shall:

a) Review the track surveys (including specifying additional surveys if required) and establish that ground movement can be accommodated without exceeding track standard operational tolerance in conjunction with the relevant Infrastructure Manager.
b) Identify locations where fettling of the track is required pre-construction and/or during construction to ensure the track geometry and clearances are acceptable.

The designer shall prepare plans and sections showing the zone of influence of the works that is defined by ground movements exceeding 1mm.

The designer shall develop an instrumentation and monitoring plan to validate that ground movements within the zone of influence are in accordance with design assumptions and that the infrastructure remains within acceptable limits. The designer shall ensure that there is a clear distinction between parameters measured to confirm the change in any parameter is in accordance with the design and parameters measured to limit damage to the assets. This plan shall identify the minimum period of time required to obtain base line data for each monitoring point.

Note: *A competent engineer responsible for the works shall consider those factors which may influence the monitoring data and shall determine an appropriate period and frequency for baseline monitoring. This decision-making process will include an element of engineering judgement to account for the possible effects of any underlying environmental trends (seasonal, diurnal, tidal) in the assets under consideration.*

Note: *The designer shall demonstrate that the monitoring system complies with the British Tunnelling Society Monitoring Underground Construction best practice guide.*

Note: *A review of the monitoring system against the checklists provided in Appendix B of the BTS Monitoring Underground Construction best practice guide may be used as a tool to demonstrate compliance.*

The detailed assessments shall define the control limits that need to be imposed on the TBM/SCL excavation in the zone of influence. The designer shall state these control measures on drawings and specifications.

The designer shall identify the critical parameters to be monitored and define the Asset Control Limits based on:

a) The ability of the asset or structure to withstand ground movement investigated.
a) During the assessments carried out in Stage 2 and 3.
b) The risk to third party operations.

The designer shall link the Asset Control Limits to actions within an Emergency Preparedness Plan.

The Instrumentation and Monitoring Plan and Emergency preparedness Plan shall be agreed with the relevant Asset Owner.

## Stage 4 – Construction

Contingency plans shall be developed and agreed with the OPW to cover the risks posed to the OPW before commencement of the construction activity.

Contingency plans shall be implemented where the results of monitoring or inspection so indicate.

Ground movement and construction progress records shall be maintained and reported in regular reviews when construction processes are taking place within the zone of influence.

Predictions and assumptions made during design in respect of both ground movement and the effects which such ground movement will have on adjacent assets shall be verified by measurement during construction.

## Stage 5 – Completion and Close-out

After ground movement has stopped, as confirmed by instrumentation and monitoring, the designer shall prepare a "Completion Report". This shall include the following:

a) Details of any modifications/mitigation measures to the existing structure.

b) Graphs that show the ground movement and construction progress over time.

c) With at least 3 months duration of readings which show no change.

d) A schedule showing actual movement compared to predicted movement.

e) A schedule of defects recording only the exceptions (changes) identified during the post construction defects survey.

f) Details of any remedial works undertaken.

g) As-built records (including any temporary works remaining in situ on completion of the works).

## Schedule of Defects

A schedule of defects shall be recorded prior to the start of construction for all buildings, structures, utilities and facilities and Outside Party assets predicted to experience ground movement exceeding 1mm.