Our Case Number: ABP-314724-22

Your Reference: Earlsfort Basin Limited

An Bord Pleanála

Punch Consulting Engineers
Carnegie House
Library Road
Dun Laoghaire
Co. Dublin
A96 C7W7

Date:

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 (including your fee of €100) 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.

Please be advised, there is no fee for an affected landowner, listed on the schedule, to make an observation on this case. Further note, there is also no fee required to request an oral hearing, therefore, a cheque refund of €100 is enclosed.

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.

Teil	**Tel**	(01) 858 8100
Glao Áitiúil	**LoCall**	1800 275 175
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Láithreán Gréasáin	**Website**	www.pleanala.ie
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The Secretary

An Bord Pleanála,

64 Marlborough Street,

Dublin 1

12/01/2023 **222261-PUNCH-XX-XX-C0-TS-001**

Dear Sir or Madam,

RE: SUBMISSION ON THE METROLINK ON BEHALF OF EARLSFORT BASIN LTD, (PREVIOUSLY EARLSFORT VENTURES LTD) IN RELATION TO PROPERTY AT 15-18 EARLSFORT TERRACE, DUBLIN 2

ABP Ref. NA29N.314724

Description - Metrolink Railway Order – Estuary through Swords, Dublin Airport, Ballymun, Glasnevin and City Centre to Charlemont, Co. Dublin

Submission on behalf of: Earlsfort Basin Ltd, (previously Earlsfort Ventures Ltd) , 9 Fitzwilliam Square, Dublin 2.

Our client, Earlsfort Basin Ltd, (previously Earlsfort Ventures Ltd), welcomes the opportunity to make a submission on the Railway Order for the Metrolink line. Our client has a number of observations and concerns in relation to impact of the proposed Railway Order and the MetroLink project on its above property and would ask An Bord Pleanála fully review same.

Our client also wishes to request that an Oral Hearing is held in respect of the Railway Order application so that the points raised within this submission can be further clarified and addressed at the hearing for the benefit of all parties. The proposal is of both national and local significance and accordingly warrants an Oral Hearing.

PUNCH
consulting engineers

We enclose the fee of €50.00 in respect of this submission (although we note that no fee is payable for landowners affected) a further fee of €50.00 in respect of the Oral Hearing request is also enclosed.

Yours sincerely

Robert Coughlan

Technical Director
PUNCH Consulting Engineers

Memorandum

Project Title	Project Metrolink – 15-18 Earlsfort Terrace, Dublin 2	**From**	Robert Coughlan, PUNCH Consulting Engineers
Project No	222261	**To**	An Bord Pleanála
Subject	Technical Submission to Railway (Metrolink–Estuary to Charlemont via Dublin Airport) Order 2022 at – 15-18 Earlsfort Terrace, Dublin 2	**Cc**	
Date	12-01-2023		

1.0 Introduction

PUNCH Consulting Engineers (PUNCH) have been appointed by Earlsfort Basin Ltd, (previously Earlsfort Ventures Ltd) to produce a Technical Submission to An Bord Pleanála in response to the Railway (Metrolink–Estuary to Charlemont via Dublin Airport) Order 2022 at 15-18 Earlsfort Terrace, Dublin 2.

The National Roads Authority, operating as Transport Infrastructure Ireland) (TII), applied for a Railway Order to An Bord Pleanála on the 30th September 2022. This order was for a Railway Metrolink–Estuary to Charlemont via Dublin Airport. PUNCH Consulting Engineers have reviewed information available on https://www.metrolinkro.ie/ relevant to 15-18 Earlsfort Terrace and this information forms the basis for this Technical Submission.

It is essential that each of the points raised in this submission are addressed in full by TII. It is noted that the comments in this submission will expand following further engagement with TII. We note, it is vital to our client EBL, that the four buildings remain fully operational during the tunnel works and they cannot accept any interruption or damage to the buildings and their business. We highlight that two of the four buildings in question, No 17 and No. 18 Earlsfort Terrace, are Protected Structures and their National Inventory of Architectural Heritage (NIAH) references are as follows: No. 17 - 50110448 and No. 18 – 50110447. Hence, considering this status, the buildings are of significant national importance and the tunnel works must not negatively impact on the structure or fabric of these four buildings including the protected structures.

b. **Confirmation that a full copy of the detail design and construction package will be issued by TII in relation to 15-18 Earlsfort Terrace .**

In responding to this item , we ask that TII to consider the following along with any other items they consider relevant:

i) We expect to see a full copy of the detailed design and construction package which allows for an independent assessment to be carried out by EBL as they wish. We request confirmation of timelines from TII for this but note this needs to allow sufficient time for our client to fully review the proposals.

ii) It is vital for EBL that the building is not damaged during these works. It is noted that 'very slight' building damage may occur and the extent of building damage suggested by TII in the Railway Order is not acceptable.

iii) The efficient running of the business operations in each of the 4 buildings is of paramount importance to EBL. Whilst some disruption in terms of noise and vibration is likely, these levels cannot be such that they affect the company's daily operations. We would request that TII provide detailed reassurances on these matters.

c. **Confirmation by TII of the Identity of the Civil and Structural Design Firm for the Metrolink tunnel beneath 15-18 Earlsfort Terrace ?**

d. **Confirmation of the Identity of the Geotechnical Design Firm for the Metrolink tunnel beneath 15-18 Earlsfort Terrace?**

e. **Confirmation of the Technical Design Checking Process for the Metrolink tunnel beneath 15-18 Earlsfort Terrace?**

In responding to this item , we ask that TII to consider the following along with any other items they consider relevant:

i) Category 3 independent checking is expected as a minimum checking process. We ask TII to confirm checking process and we request An Bord Pleanála to condition same in any grant of the Railway Order

Our client requests early engagement with TII on the items raised in this submission and requests that An Bord Pleanála conditions a requirement for TII to engage directly with EBL in any grant of the Railway Order.

We wish to confirm our client requests an Oral Hearing is held in respect of the Railway Order application and again the justification for this is outlined further in this submission. We enclose the fee of €50.00 in respect of this submission (although we note that no fee is payable for landowners affected) a further fee of €50.00 in respect of the Oral Hearing request is also enclosed.

2.0 Technical Observations

The following is a preliminary list of technical queries which we require to be fully assessed and resolved to our client's satisfaction prior to the proposed Oral Hearing. We request ABP condition in any grant of the Railway Order early engagement from TII with EBL to work though this technical list.

a. What is the Tunnel detail design procurement approach i.e. client design or contractor design?

In responding to this item , we ask that TII to consider the following along with any other items they consider relevant:

i) A detailed design programme for the tunnel under 15-18 Earlsfort Terrace is required?

ii) If the tunnel design is by the main contractor, TII to confirm how soon after the grant of the Railway Order a Main Contractor be appointed.

iii) TII to confirm estimated construction programme from when EBL are likely to experience noise and vibration from the proposed Construction Works.

iv) TII to confirm what information EBL will receive prior to the Oral Hearing.

v) Assuming the detailed design is by the Main Contractor, TII to confirm the extent to which the Main Contractor will be required to engage with EBL during the detailed design process.

f. Details and frequency of proposed condition surveys for 15-18 Earlsfort Terrace by TII, both in advance of and during the construction works as well as during the tunnel operational phase.

In responding to this item , we ask that TII to consider the following along with any other items they consider relevant:

i) In the Damage Assessment Report of Building document on https://www.metrolinkro.ie/, it places 15-18 Earlsfort Terrace (B-55) in Damage Category 1 (Refer to Appendix A) . Possible cracking up to 1mm may occur. Given the sensitive nature of these historical buildings with No 17 and No. 18 Earlsfort Terrace being Protected Structures, this damage cannot be accepted by EBL.

ii) Visual condition surveys of the building are expected prior to and during construction works. There must be photographic condition surveys carried out by professional independent parties procured by TII/Main Contractor to ensure any potential damage to the building is accurately recorded.

iii) It is expected that the condition surveys continue post construction and through the tunnel operational stages and request frequency of these surveys to be confirmed by TII.

iv) We request this information from TII as soon as possible to ensure the integrity of the building is maintained during all phases of the works.

v) We request TII to confirm when guidelines regarding the process for remediation will be released, should remediation be required. It is our understanding these guidelines are under development by TII based on information from https://www.metrolinkro.ie/ . We reiterate that damage to the building cannot be accepted but we need to understand the guidelines nonetheless.

g. Vertical settlement of the existing structure at 15-18 Earlsfort Terrace from the proposed works.

In responding to this item , we ask that TII to consider the following along with any other items they consider relevant:

i) The predicted settlement is a concern from available information on https://www.metrolinkro.ie/. The settlement contours on Figure 20.16, sheet 26 of 30 (Refer to Appendix B), suggest settlement up to 25mm in the calculated settlement trough. We request details from TII on how they established this deflection data. The building is a Protected Structure and over 130 years and TII must recognise this.

ii) There is no evidence of undertakings to confirm the quality of the rock at the tunnel level. We request that geophysical surveys are carried out on the rock at tunnel level from the existing basement. 2d Resistivity and Seismic Refraction surveys are suggested to determine the rock mass characteristics and ask An Bord Pleanála to condition same.

iii) If a dense rock with little fractures is encountered, this will lower the risk of potential ground movement and would verify the Ground Loss % used in the design of the tunnel.

iv) If a dense rock with little fractures is encountered, this potentially magnifies the noise and vibration levels through our building further which is a significant concern.

v) The distance (cover) from the soffit of basement and pile structures to the crown of the tunnel should be used to determine the differential settlement of the proposed works.

vi) PUNCH request to review proposed positions of Settlement Monitors and Monitor types as part of the detailed design review and certainly prior to works starting on site.

h. Noise Impacts under the existing structure at 15-18 Earlsfort Terrace from the proposed works.

In responding to this item , we ask that TII to consider the following along with any other items they consider relevant:

i) There is a concern in relation to the identified noise and associated disruption contained within https://www.metrolinkro.ie/. A "Very High Adverse (significant)" residual impact is identified in the documentation. This is not acceptable to WHD and will be detrimental to our client's daily business operations . TII should assess this further and mitigate this impact.

ii) Whilst this impact is noted as being "short term", there is no clarity or estimate provided beyond this in relation to the duration of these works and associated negative impacts. We request TII to confirm duration of the proposed works and associated impacts on our client's building.

iii) Table 14.3: Groundborne Noise from Underground Sources - Threshold of Significant Effects on Non-Residential Buildings (Refer to Appendix C) states a threshold of 45dB for commercial buildings. The calculated noise levels from works under the hotel are 50dB and in excess in the threshold.

iv) A further area of concern is Figure 12.2, Sheet 29 of 30, Construction Noise Assessment Locations (Refer to Appendix D) which shows there were no construction noise receivers placed on or surrounding our clients building. This is a huge concern as we cannot see how the predicted noise limits can be determined without a noise receiver on our client's building or surrounding buildings.

i. TII to confirm that the tunnel can be constructed in the proposed position/depth considering the depth of the existing rock and gravels and formation level of the 4 buildings at 15-18 Earlsfort Terrace?

j. TII to confirm that the permissible vertical deviation for the tunnel as outlined in Section 6(d)ii of the Draft Railway Order of 5m upwards has been fully considered on the proposed tunnel under the 4 buildings at 15-18 Earlsfort Terrace?

i) We have concerns about the proposed tunnel location relative to the existing buildings at 15-18 Earlsfort Terrace both on plan and on section. . Refer Appendix E of this submission for drawings illustrating the close proximity of the tunnel to the existing buildings.

k. TII to confirm the calculated loads used in the tunnel design from the existing building at at 15-18 Earlsfort Terrace?

l. TII will need to provide full details of the constraints the tunnel will impose on the future development potential/value of the site. This will need to set out the engagement process which the client/site owner will need to undertake for the preparation of any future planning applications.

In responding to this item , we ask that TII to consider the following along with any other items they consider relevant:

i) We request the Asset Protection Policy is released as soon as possible and well in advance of future Oral Hearings. TII to confirm when this will be available?

ii) Our client would not wish to be restricted by any measures which constrain the future development potential for the site either above or below ground level.

iii) Plan Number ML-P 306 E-O- Railway Works Metrolink – Property Details Hatch Street Lower to Grand Parade, Area No 306 (Refer to Appendix F) indicates the property details of 15-18 Earlsfort Terrace

m. Written confirmation from TII of any anticipated negative impacts on the buildings at 15-18 Earlsfort Terrace and its occupants during the construction phase?

In responding to this item , we ask that TII to consider the following along with any other items they consider relevant:

i) PUNCH request TII to issue details and timelines of any negative impacts for EBL on the normal execution of their business operations during construction phase of the works.

n. Written confirmation from TII of any anticipated negative impacts on the on the buildings at 15-18 Earlsfort Terrace and its occupants during the operational phase?

In responding to this item , we ask that TII to consider the following along with any other items they consider relevant:

i) PUNCH request TII to issue details and timelines of any negative impacts for EBL on the normal execution of their business operations during the operational phase of the works.

o. **Confirmation that that the structural integrity of the building at 15-18 Earlsfort Terrace will not be affected in any way by the proposed works during the construction and operational phase.**

In responding to this item , we ask that TII to consider the following along with any other items they consider relevant:

i) In the Damage Assessment Report of Building document on https://www.metrolinkro.ie/, it places the 15-18 Earlsfort Terrace (B-55) in Damage Category 1 (Refer to Appendix A). We note that the building is a part protected structure and because of this, a Phase 3 assessment will be undertaken. This Phase 3 assessment, as we understand it, will be a detailed assessment of the Ground Movement Response for the office development specifically. We request timelines of when this will be carried out by TII and specific details of the process?

ii) EBL will not accept building damage and the integrity of the building cannot be compromised in any way. The superstructure and facades cannot be damaged. Should remediation be required to the superstructure, the work practices and daily operations of the company will be hugely affected.

3.0 Conclusions

i) The project is of both Local and National significance and accordingly warrants an Oral Hearing. Accordingly, our client wishes to request that an Oral Hearing is held in respect of the Railway Order application, so that the points raised within this submission can be further clarified and addressed in detail at the hearing for the benefit of all parties.

ii) We wish to develop and resolve each of the observations made in this submission in advance of any future Oral Hearing and request immediate engagement with TII accordingly. We request that ABP condition same in any grant of the Railway Order.

iii) EBL's primary concern is the effect the proposed works will have on the business operations of its company. The buildings at 15-18 Earlsfort Terrace are over 130 years, with 2 of the buildings Protected Structures and its operations cannot be negatively impacted by the

proposed Metrolink works, either in the construction or the operational phase. We would request immediate engagement with TII to allay these concerns.

iv) There are concerns based on information received, that the building will be damaged by the proposed Metrolink works. The building is a part protected structure and its structural integrity cannot be compromised by any works. We would request immediate engagement with TII to allay these concerns.

Yours sincerely

Robert Coughlan

BE CEng MIEI MIStructE

Technical Director

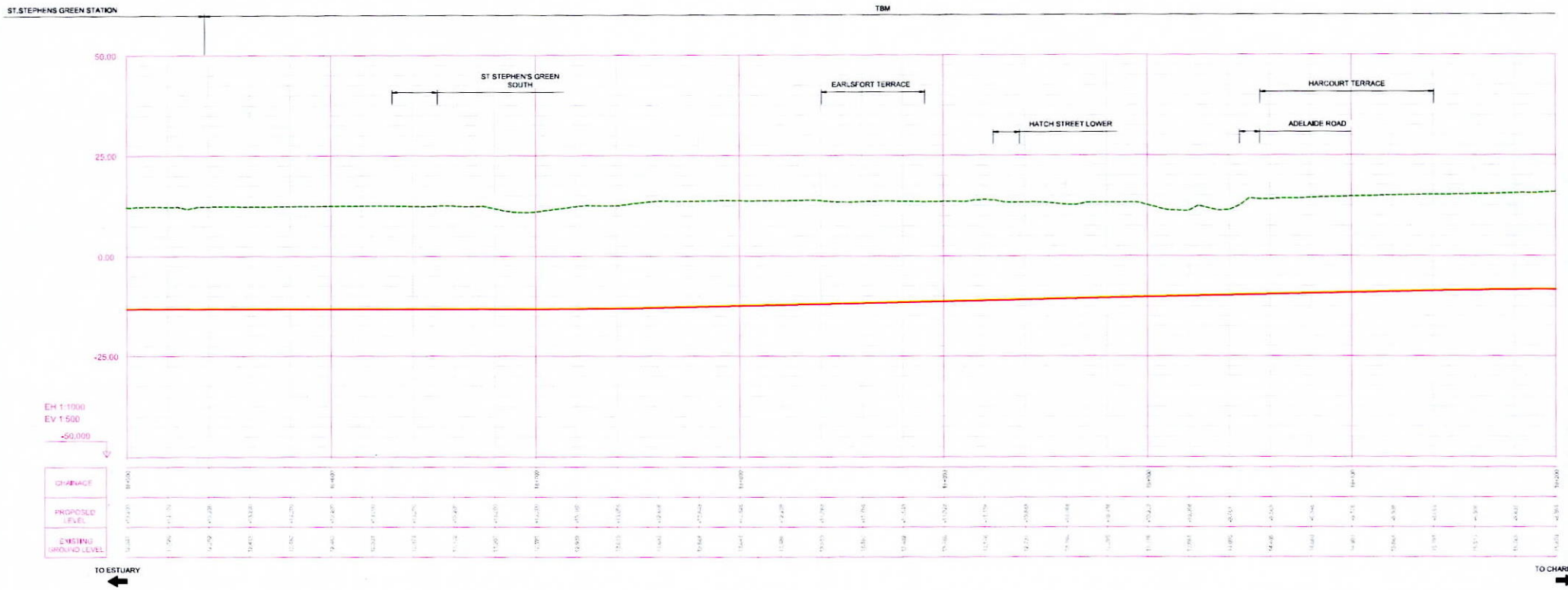
PUNCH Consulting Engineers

Appendix A -Extract of Damage Assessment Report of Building and Other Assets

Ref	Chainage	Description	Height (m)	Number of Floors	Length (m)	Depth of basement (m)	Initial Phase 2a Assessment Damage Category	Refined Phase 2a Assessment Damage Category	RPS, NIAH, RMP or other heritage (Y/N/unknown)	Continue to next assessment phase? (Y/N)	Comments
B-31	17920	Trinity College	19.0	4	19.9	-2.5	0 (Negligible)	0 (Negligible)	Y	Y	Special building
B-32	17900	Dept. of Mechanical Manufacturing Engineering	10.5	3	18.9	0.0	0 (Negligible)	0 (Negligible)	Y	Y	Special building
B-33	17900	Dublin Dental University Hospital	19.0	4	3.3	-2.5	0 (Negligible)	0 (Negligible)	Y	Y	Special building
B-34	17880	Dublin Dental University Hospital	19.0	4	3.3	-2.5	0 (Negligible)	0 (Negligible)	Y	Y	Special building
B-35	17840	Trinity College-Zoology	10.5	3	15.6	0.0	0 (Negligible)	0 (Negligible)	Y	Y	Special building
B-36	17800	Trinity College-Chemistry	10.5	3	56.1	0.0	0 (Negligible)	0 (Negligible)	Y	Y	Special building
B-37	17740	Trinity College-Laser Unit	17.5	5	30.6	0.0	0 (Negligible)	0 (Negligible)	Y	Y	Special building
B-38	17760	Trinity College-Physics	14.0	4	18.0	0.0	0 (Negligible)	0 (Negligible)	Y	Y	Special building
B-39	17720	Trinity College-Botanics	7.0	2	18.2	0.0	3 (Moderate)	2 (Slight)	Y	Y	Special building
B-40	17700	Luce Hall	17.5	5	1.3	0.0	0 (Negligible)	0 (Negligible)	N	N	Damage category 2 or below
B-41	17680	Engineering Laboratory	14.0	4	61.1	0.0	2 (Slight)	2 (Slight)	Y	Y	Special building
B-42	17660	Trinity Business School	10.5	3	5.5	0.0	2 (Slight)	2 (Slight)	Y	Y	Special building
B-43	17640	St Marks Church if Ireland	17.6	2	40.2	-1.8	N/A	N/A	Y	N	Outside 1mm contour
B-44	17620	GoHop - Ireland's Internet Travel Company	13.0	3	14.7	-2.8	0 (Negligible)	0 (Negligible)	Y	Y	Special building
B-45	17620	O'Neills Whiskey Bonders	12.0	3	4.1	-2.0	2 (Slight)	1 (Very Slight)	Y	Y	Special building
B-46	17600	O'Neills Town House	14.0	3	12.0	-2.0	2 (Slight)	1 (Very Slight)	Y	Y	Special building
B-47	17600	World Travel	11.6	3	6.3	-2.2	1 (Very Slight)	0 (Negligible)	Y	Y	Special building
B-48	17580	The School Tour company	11.6	3	0.4	-2.2	1 (Very Slight)	0 (Negligible)	Y	Y	Special building
B-49	17560	Mc Carty Centre	18.5	5	30.2	0.0	0 (Negligible)	0 (Negligible)	N	N	Damage category 2 or below
B-50	17540	Solvar Fields Ltd.	26.0	4	6.3	-3.5	1 (Very Slight)	0 (Negligible)	N	N	Demolished
B-51	17500	Dublin Fire Brigade & Commercial	30.0	6	13.1	-2.5	0 (Negligible)	0 (Negligible)	Y	Y	Special building Case A too (refer to section 4.1)
B-52	18840	National Concert Hall	10.5	3	117.3	0.0	0 (Negligible)	0 (Negligible)	Y	Y	Special building
B-53	18920	Public	14.0	4	3.0	0.0	2 (Slight)	1 (Very Slight)	N	N	Damage category 2 or below
B-54	17400	The Irish Times	36.0	7	37.9	-3.0	0 (Negligible)	0 (Negligible)	Y	Y	Special building Case A too (refer to section 4.1)
B-55	18980	Residential	19.0	4	14.5	-2.0	1 (Very Slight)	0 (Negligible)	Y	Y	Special building
B-56	17320	Tara House	10.5	3	11.9	0.0	1 (Very Slight)	1 (Very Slight)	N	N	Demolished
B-57	17260	Starbucks Coffee	16.0	5	6.6	0.0	0 (Negligible)	0 (Negligible)	N	N	Damage category 2 or below
B-58	17220	Corn Exchange Apartments	14.0	2	25.2	0.0	N/A	N/A	Y	N	Outside 1mm contour
B-59	17120	Eden House	14.0	4	32.5	-3.7	2 (Slight)	2 (Slight)	Y	Y	Special building
B-60	17100	Abbey Theatre	14.0	4	50.9	0.0	N/A	N/A	Y	N	Outside 1mm contour
B-62	17040	Methodist Church	14.0	4	30.8	0.0	N/A	N/A	Y	N	Outside 1mm contour
B-64	16980	College	17.5	5	42.4	0.0	N/A	N/A	N	N	Outside 1mm contour

BUILDING CODE	BUILDING DESCRIPTION			BUILDING LOCATION			BUILDING INFORMATION			
	NAME	CONSIDERATION	CATEGORY	Chainage	Dmin (m)	Dmax (m)	Height (m)	Nº Floors	Length (m)	Depth (m)
B-44	GoHop-Ireland's internet travel company	Commerce & Residential	0	17+620	14.80	29.53	13.0	3	14.73	-2.80
B-45	O'Neils whiskey bonders	Commerce & Residential	0	17+620	0.00	4.13	12.0	3	4.13	-2.00
B-46	O'Neils TownHouse	Commerce & Residential	0	17+600	1.02	13.02	14.0	3	12.00	-2.00
B-47	World Travel	Commerce & Residential	0	17+600	0.00	6.30	11.6	3	6.30	-2.20
B-48	The school Tour company	Commerce & Residential	0	17+580	0.00	0.40	11.6	3	0.40	-2.20
B-49	Mc Carty Centre	Offices	0	17+560	6.43	36.59	18.5	5	30.16	0.00
B-50	Solvar Fields Ltd.	Offices	Prominent	17+540	0.00	6.34	26.0	4	6.34	-3.50
B-51	Dublin Fire Brigade & Commercial	Public & Commercial	Public	17+500	0.00	13.10	30.0	6	13.10	-2.50
B-52	National Concert Hall	0	Prestigious	18+840	5.55	122.84	10.5	3	117.29	0.00
B-53	Public	0	Prominent Building	18+920	0.00	3.00	14.0	4	3.00	0.00
B-54	The Irish Times	Public	Public	17+400	36.66	74.54	36.0	7	37.88	-3.00
B-55	Residential	0	0	18+980	8.44	22.92	19.0	4	14.48	-2.00
B-56	Tara House	Old Building	0	17+320	0.00	11.89	10.5	3	11.89	0.00
B-57	Starbucks caffee	Commerce & Residential	0	17+260	0.00	6.55	16.0	5	6.55	0.00
B-58	Unknown	0	0	17+220	42.88	68.08	14.0	2	25.20	0.00
B-59	Eden House	Public	Public	17+120	4.06	36.60	14.0	4	32.54	-3.70
B-60	Abbey Theatre	Public	Public	17+100	29.98	80.85	14.0	4	50.87	0.00
B-61	Billiard World Class travel sport	Commerce & Residential	0	17+080	20.95	43.39	14.0	4	22.44	-2.50
B-62	Church Methodist	Public	Public	17+040	39.80	70.57	14.0	4	30.77	0.00
B-63	Veritas House	Commercial	0	17+000	20.42	48.28	14.0	4	27.86	0.00
B-64	College	Public	Public	16+980	39.00	81.38	17.5	5	42.38	0.00
B-65	Clearys shopcenter	Commercial	0	16+920	7.22	98.27	14.0	4	91.05	0.00
B-66	Ann Summers	Commercial	0	16+860	37.47	66.46	17.5	5	28.99	0.00
B-67	General Post Office	Public	Cultural & Historical	16+860	0.00	5.31	20.0	5	5.31	-2.81
B-68	Mc Dowels	Commercial	0	16+800	54.65	67.99	21.0	6	13.34	-3.00
B-69	Unknown	0	0	16+720	123.22	170.75	14.0	4	47.53	0.00
B-70	Carlton Theatre	Public	Public	16+680	0.00	15.36	20.0	3	15.36	0.00
B-71	Savoy Cinema	Public	Public	16+660	61.51	116.83	17.5	5	55.32	0.00
B-72	The Gresham Hotel;Station O'Conell Street	Hotel	0	16+600	61.34	117.23	17.5	5	55.89	-3.00
B-74	Unknown	0	0	16+600	0.65	15.92	14.0	4	15.27	0.00
B-75	Unknown	0	0	16+600	0.00	16.75	17.2	5	16.75	-3.30
B-76	Unknown	0	0	16+580	0.00	16.75	20.0	4	16.75	-3.90
B-77	AIB Bank	Commerce & Residential	0	16+540	0.00	17.06	18.0	4	17.06	-3.35
B-78	Parnell Monument	Monument	Cultural & Historical	16+500	29.35	43.51	19.0	4	14.16	0.00
B-79	Rotunda Hospital, Parnell Square East	Hospital	Hospital / Historical	16+480	7.33	140.49	14.0	4	133.16	-3.00
B-80	Rotunda IVF clinic	Hospital	Hospital / Historical	16+400	3.70	34.39	7.0	2	30.69	0.00
B-81	The Ambassador teatre	Public	Historical	16+460	0.00	18.06	14.0	4	18.06	-3.00
B-82	Gate theatre	Public	Hospital / Historical	16+440	0.00	15.48	10.5	3	15.48	-3.00
B-83	Netprint café	Commercial & Residential	0	16+460	49.21	71.43	12.0	4	22.22	-1.58
B-84	Cassidys Hotel	Hotel	0	16+440	40.07	87.59	14.0	4	47.52	-1.66
B-85	Cassidys Hotel	Hotel	0	16+440	40.07	87.59	14.0	4	47.52	-1.66
B-86	Residential	Residential	0	16+420	34.55	67.40	14.0	4	32.85	0.00
B-87	Coolcroft Cholaiste Mhuire & The Charles Stewart Dublin - Guest Accommodation	Residential	0	16+380	19.35	80.05	16.0	4	60.70	-3.30
B-88	Youthreach Transition Centre	Residential	0	16+320	10.91	39.65	14.0	4	28.74	0.00
B-89	Residential	Residential	prominent	16+280	4.32	66.96	14.0	4	62.64	0.00

Specific Building	Parameter	Critical Segment	Start [m]	End [m]	Curvature	Max Slope	Max Settlement [mm]	Max Tensile Strain [%]	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
B-13	Max Slope	1	0	3.2228	Sagging	1.30E-04	0.37572	0.00891	-	24394	0 (Negligible)
	Max Settlement	1	0	3.2228	Sagging	1.30E-04	0.37572	0.00891	-	24394	0 (Negligible)
	Max Tensile Strain	1	0	3.2228	Sagging	1.30E-04	0.37572	0.00891	-	24394	0 (Negligible)
	Min Radius of Curvature (Hogging)	-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	-	-	-	-	-	-	-	-	-	-
B-11	Max Slope	1	0	16.331	Hogging	9.43E-04	6.4691	0.025446	11659	-	0 (Negligible)
	Max Settlement	1	0	16.331	Hogging	9.43E-04	6.4691	0.025446	11659	-	0 (Negligible)
	Max Tensile Strain	1	0	16.331	Hogging	9.43E-04	6.4691	0.025446	11659	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	1	0	16.331	Hogging	9.43E-04	6.4691	0.025446	11659	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	-	-	-	-	-	-	-	-	-	-
B-12	Max Slope	1	0	11.186	Hogging	0.0014206	10.706	0.03748	7219.1	-	0 (Negligible)
	Max Settlement	2	11.186	21.876	Sagging	0.0014206	17.643	0.024623	-	3212.7	0 (Negligible)
	Max Tensile Strain	1	0	11.186	Hogging	0.0014206	10.706	0.03748	7219.1	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	1	0	11.186	Hogging	0.0014206	10.706	0.03748	7219.1	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	2	11.186	21.876	Sagging	0.0014206	17.643	0.024623	-	3212.7	0 (Negligible)
B-10	All vertical displacements are less than the limit sensitivity.										
B-7	All vertical displacements are less than the limit sensitivity.										
B-6	Max Slope	1	0	3.438	Sagging	5.74E-04	12.766	0.084645	-	371590	2 (Slight)
	Max Settlement	1	0	3.438	Sagging	5.74E-04	12.766	0.084645	-	371590	2 (Slight)
	Max Tensile Strain	2	3.438	3.6953	Sagging	5.66E-04	10.803	0.08561	-	266430	2 (Slight)
	Min Radius of Curvature (Hogging)	3	3.6953	33.169	Hogging	5.72E-04	10.657	0.057027	10238	-	1 (Very Slight)
	Min Radius of Curvature (Sagging)	-	-	-	-	-	-	-	-	-	-
B-5	All vertical displacements are less than the limit sensitivity.										
B-3	All vertical displacements are less than the limit sensitivity.										
B-4	All vertical displacements are less than the limit sensitivity.										
B-2	All vertical displacements are less than the limit sensitivity.										
B-52	Max Slope	1	0	6.7328	Sagging	7.06E-04	11.652	0.0042969	-	12272	0 (Negligible)
	Max Settlement	1	0	6.7328	Sagging	7.06E-04	11.652	0.0042969	-	12272	0 (Negligible)
	Max Tensile Strain	2	6.7328	28.742	Hogging	7.06E-04	7.5703	0.02584	20778	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	2	6.7328	28.742	Hogging	7.06E-04	7.5703	0.02584	20778	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	-	-	-	-	-	-	-	-	-	-
B-53	Max Slope	1	0	9.7159	Sagging	0.001586	26.299	0.016396	-	3834.6	0 (Negligible)
	Max Settlement	1	0	9.7159	Sagging	0.001586	26.299	0.016396	-	3834.6	0 (Negligible)
	Max Tensile Strain	2	9.7159	32.924	Hogging	0.001586	15.985	0.0522	8665.8	-	1 (Very Slight)
	Min Radius of Curvature (Hogging)	2	9.7159	32.924	Hogging	0.001586	15.985	0.0522	8665.8	-	1 (Very Slight)
	Min Radius of Curvature (Sagging)	1	0	9.7159	Sagging	0.001586	26.299	0.016396	-	3834.6	0 (Negligible)
B-55	Max Slope	1	0	1.3161	Sagging	0.0013944	14.552	0.0015107	-	24883	0 (Negligible)
	Max Settlement	1	0	1.3161	Sagging	0.0013944	14.552	0.0015107	-	24883	0 (Negligible)
	Max Tensile Strain	2	1.3161	15.476	Hogging	0.0013944	12.729	0.03766	8904.7	-	0 (Negligible)



0 10 20 30 40 50 60 70 80 90 100

SCALE 1:1000 (A1)
SCALE 1:2000 (A3)

METRES

DRAWING LEGEND

RAIL LEVEL ---- EXISTING GROUND LEVEL

REV.	DATE	Description	DRAWN BY	CHECKED BY	REVIEWED BY	APPROVED BY
P01	29/07/21	For Railway Order	JD	JR	RS	NC
P02	21/12/21	For Railway Order	BJ	RS	AS	NC
P03	12/05/22	For Railway Order	BJ	JR	AS	PB

Client: TII NTA

Project: METROLINK

Drawing Title: METROLINK - ALIGNMENT LONG SECTION 18

Drawing Status: S0

Consultant: JACOBS IDOM

Drawing N°: ML1-JAI-ARD-ROUT_XX-DR-Y-01018

Plan Drawing N°: ML-LN O-O18

Scales Original Size A1 1:1000

Sheet 18 of 19

Appendix B- Volume 4, Chapter 20- Fig 20.16, sheet 29 of 30

Legend

Alignment
- Tunnel
- Station Locations
- Project Boundary

Geographic Split
- AZ4 Northwood to Charlemont

Settlement Contours
- 1mm
- 5mm
- 10mm
- 15mm
- 20mm
- 25mm
- 30mm
- 35mm
- 40mm
- 45mm
- 50mm
- 60mm
- 70mm
- 80mm
- 90mm
- 100mm
- 110mm
- 120mm
- 130mm
- 140mm
- 150mm

St Stephens Green Station

Charlemont Station

Grand Canal

0 25 50 75 100 Meters

Rev	Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd
P02	8/12/2022	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII

Project: METROLINK

Drawing Title:
Figure 20.16 Settlement Contours
Sheet 29 of 30

Drawing Status: Final

Scale @ A3	1:2,500 DO NOT SCALE
Jacobs No.	32108400
Client No.	
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-21149 Rev P02

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Appendix C - Table 14.3: Groundborne Noise from Underground Sources

Table 14.16: Assessment Locations and Thresholds for AZ2 Airport Section

Building /location Description	Locations	Groundborne noise level, $L_{Amax,S}$ dB			Vibration			Air overpressure (blasting)
		TBM Passage	Mechanical Excavation	Operation	Blasting mm/s PPV	Construction $ms^{-1.75}$ VDV_{day}	Operation $ms^{-1.75}$ VDV_{day}	
Church	Our Lady Queen of Heaven Church	40	35	35	3	1.6	0.2	125
Offices	Dublin Airport Buildings	45	40	40	8	1.6	0.8	125
Existing Utilities	All along alignment	n/a	n/a	n/a	50	50mm/s PPV		n/a

14.3.1.3 Sensitive Receptors AZ3 Dardistown to Northwood

In the vicinity of the route in AZ3 there are a handful of residential properties, as listed in Table 14.17, together with the applicable noise and vibration assessment thresholds.

Table 14.17: Assessment Locations and Thresholds for AZ3 Dardistown to Northwood

Building / Location Description	Locations	Groundborne noise level, $L_{Amax,S}$ dB			Vibration					Air overpressure (blasting)
					Blasting mm/s PPV	Construction $ms^{-1.75}$		Operation $ms^{-1.75}$		
		TBM Passage	Mechanical Excavation	Operation		VDV_{day}	VDV_{night}	VDV_{day}	VDV_{night}	
Residential	St Annes' House; The Bungalow	n/a	40	40	8	0.8	0.4	0.8	0.4	125
Commercial Buildings	Frylite	n/a	45	45	8	1.6	n/a	1.6	n/a	125
Existing Utilities	All along alignment	n/a	n/a	n/a	50	50mm/s PPV				All along alignment

14.3.1.4 Sensitive Receptors AZ4 Northwood to Charlemont

There are many sensitive receptors in the vicinity of the route in AZ4 that include multiple residential dwellings, schools, buildings of architectural merit, healthcare facilities and places of business that contain electronic equipment. Examples of representative receptors in the area of AZ4 and in the vicinity of the proposed Project are shown in Table 14.18 together with the applicable noise and vibration assessment thresholds.

Table 14.18: Assessment Locations and Thresholds for AZ4 Northwood to Charlemont

Building / Location Description	Locations	Groundborne noise level, $L_{Amax,S}$ dB			Vibration					Air overpressure (blasting)
					Blasting mm/s PPV	Construction/ TBM $ms^{-1.75}$		Operation $ms^{-1.75}$		
		TBM Passage	Mechanical Excavation	Operation		VDV_{day}	VDV_{night}	VDV_{day}	VDV_{night}	
Residential	Albert College	45	40	40	8	0.8/ 1	0.4/	0.8	0.4	125

Building / Location Description	Locations	Groundborne noise level, $L_{Amax,S}$ dB			Vibration					Air overpressure (blasting)
					Blasting mm/s PPV	Construction/ TBM $ms^{-1.75}$		Operation $ms^{-1.75}$		
		TBM Passage	Mechanical Excavation	Operation		VDV_{day}	VDV_{night}	VDV_{day}	VDV_{night}	
	Court; Dalcasian Downs; Cross Gun Quay Apartments; Berkeley Road; O'Connell Street; Earlsfort Terrace; Harcourt Terrace; Dartmouth Square West						0.5			
Education	Scoil an Tseachtar Laoch & Our Lady of Victories Girl's School	45	40	40	8	1.6	n/a	0.4	n/a	125
Church	St Joseph's Church; Our Lady of Victories.	40	35	35	3	1.6	n/a	0.4	n/a	125
Healthcare	Rotunda Hospital; Dublin Dental University Hospital;	45	40	40	8	0.2/ 0.4	0.1/ 0.2	0.2	0.1	125
	Mater Hospital	45	40	40	8	VC-E		VC-E		125
Trinity College Buildings	Chemistry Extension Building; Sami Nasr Institute; Moyne Institute	45	40	40	8	VC-E		VC-E		125
Museum	National Museum; National Gallery; Natural History Museum	45	40	40	3	VC-A		VC-A		125
Library	National Library	45	40	40	8	1.6	n/a	0.8	n/a	125
Theatre	Gate Theatre; Abbey	30	25	25	8	0.8/ 1	n/a	0.8	n/a	125

centreline will experience significant groundborne noise for a period of up to two weeks as the TBM passes.

Just north of Glasnevin Station the tunnel would rise into the boulder clay, but although the source strength is less due to the softer structure of the soil compared to the limestone, vibration is reflected off the rockhead below, with the result that there would be little overall reduction in levels of groundborne noise at ground level. With the TBM in the boulder clay, groundborne noise levels are likely to be 44dB(A) over the crown of the TBM in cases where there is 20m of ground cover above the tunnel. For every 1m decrease in ground cover, the groundborne noise levels at the crown of the TBM increase at the rate of approximately 0.5dB(A); 25m to the side of the tunnel in the boulder clay there is a reduction of 3dB(A), with a trend showing a reduction of 0.15dB(A) per metre beyond that distance; 20m ahead of and behind the tunnel face in the boulder clay there is a reduction of 3dB(A), with a trend showing a reduction of 0.2 to 0.3dB(A) per metre.

A short distance to the south of the proposed Mater Station, the base of the tunnel enters the limestone and by O'Connell Street Station it is fully in the limestone. Receptors within approximately 65m of the tunnel centreline will experience significant groundborne noise for a period of up to two weeks as the TBM passes.

The contours of groundborne noise during TBM passage (Figure 14.2) remain a similar width for the remainder of the tunnel between O'Connell St and Charlemont.

With regard to vibration effects on sensitive equipment, Criterion VC-E will occur within a distance of 250m either side of the tunnel centreline, and during the passage of the TBM there is a potential significant effect on the operation of sensitive equipment.

14.4.1.8 AZ4 – Groundborne Noise during Construction

Table 14.28 presents predictions of groundborne noise during TBM passage for a cross section of receptors in the geographical area of AZ4. The values presented are applicable for both day and night-time working hours as there is no separate threshold for works being undertaken at night, such as TBM passage or mechanical excavation in the area of Glasnevin Station.

Table 14.28: Predicted Groundborne Noise during TBM Passage at Residential Receptors in AZ4

Receptor	TBM Passage, $L_{Amax,s}$ dB				
	Threshold Level	Predicted Level	Magnitude	Impact	Description of Impact
Albert College Court	45	48		High Adverse (significant)	Noticeable to all and disturbing to some over a number of days
Dalcasian Downs	45	49		High Adverse (significant)	Noticeable to all and disturbing to some over a number of days
Cross Gun Quay Apartments	45	49		High Adverse (significant)	Noticeable to all and disturbing to some over a number of days
Berkeley Road	45	49		High Adverse (significant)	Noticeable to all and disturbing to some over a number of days
O'Connell Street	45	50	Very High Adverse	Significant	Noticeable to all and disturbing to some over a number of days
35 Pearse Street	45	50	Very High Adverse	Significant	Noticeable to all and disturbing to some over a number of days

Receptor	TBM Passage, $L_{Amax,s}$ dB				
	Threshold Level	Predicted Level	Magnitude	Impact	Description of Impact
Trinity College, Dixon Hall	45	49	High Adverse	Significant	Noticeable to all and disturbing to some over a number of days
20 Earlsfort Terrace	45	50	Very High Adverse	Significant	Noticeable to all and disturbing to some over a number of days
9 Harcourt Terrace	45	49	High Adverse	Significant	Noticeable to all and disturbing to some over a number of days
Dartmouth Square West	45	49	High Adverse	Significant	Noticeable to all and disturbing to some over a number of days

Table 14.29: Predicted Groundborne Noise during TBM Passage at Non-Residential Receptors in AZ4

Receptor	TBM Passage, $L_{Amax,s}$ dB			
	Threshold Level	Predicted Level	Impact	Description of Impact
Scoil an Tseachtar Laoch	45	50	Significant	Noticeable to all and disturbing to some over a number of days
Our Lady of Victories Girl's School	45	43	Not significant	No significant Impact
Our Lady of Victories	40	45	Significant	Noticeable to all and disturbing to some over a number of days
Mater Hospital	45	48	Significant	Noticeable to all and disturbing to some over a number of days
St Joseph's Church	40	49	Significant	Noticeable to all and disturbing to some over a number of days
Gate Theatre	30	49	Significant	Noticeable to all and disturbing to some during quiet performances
Rotunda Hospital	45	49	Significant	Noticeable to all and disturbing to some over a number of days
Jurys Inn	45	43	Not significant	No significant Impact
Dublin Bus Office	45	49	Significant	Noticeable to all and disturbing to some over a number of days
General Post Office	45	50	Significant	Noticeable to all and disturbing to some over a number of days
Abbey Theatre	30	45	Significant	Noticeable to all and disturbing to some during quiet performances.
The Irish Times	45	46	Significant	Noticeable to all and disturbing to some over a number of days
Dublin Fire Brigade HQ	45	50	Significant	Noticeable to all and disturbing to some over a number of days
Trinity College, Chemistry Building	45	47	Significant	Noticeable to all and disturbing to some over a number of days
Trinity College, Sami Nasr Institute	45	49	Significant	Noticeable to all and disturbing to some over a number of days

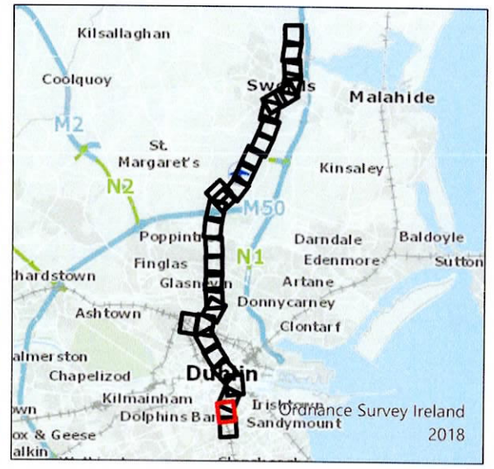
Receptor	Description of Impact	Nature of Impact	Predicted Impact	Mitigation	Residual Impact
Moyne Institute	Noise			and stakeholder engagement	
	Vibration (human response)	Temporary	Significant	Advance public consultation and stakeholder engagement	Significant
Trinity Point	Groundborne Noise	Temporary	Significant	Advance public consultation and stakeholder engagement	Significant
National Museum	Groundborne Noise	Temporary	Significant	Advance public consultation and stakeholder engagement	Significant
National Library	Groundborne Noise	Temporary	Very High Adverse (significant)	Advance public consultation and stakeholder engagement	Very High Adverse (significant)
Leinster House	Groundborne Noise	Temporary	Significant	Advance public consultation and stakeholder engagement	Significant
The Shelbourne	Groundborne Noise	Temporary	Significant	Advance public consultation and stakeholder engagement	Significant
Office of Public Works	Groundborne Noise	Temporary	Significant	Advance public consultation and stakeholder engagement	Significant
National Concert Hall	Groundborne Noise	Temporary	Significant	Advance public consultation and stakeholder engagement	Significant
	Vibration (human response)	Temporary	Significant	Advance public consultation and stakeholder engagement	Significant
20 Earlsfort Terrace	Groundborne Noise	Temporary	Very High Adverse (significant)	Advance public consultation, stakeholder engagement and application of TII Airborne Noise and Ground-borne Noise Mitigation Policy where eligibility has been established.	Very High Adverse (significant)
9 Harcourt Terrace	Groundborne Noise	Temporary	High Adverse (significant)	Advance public consultation, stakeholder engagement and application of the TII Airborne Noise and Ground-borne Noise Mitigation Policy where eligibility has been established.	High Adverse (significant)
Dartmouth Square West	Groundborne Noise	Temporary	High Adverse (significant)	Advance public consultation, stakeholder engagement and application of the TII Airborne Noise and Ground-borne Noise Mitigation where eligibility has been established.	High Adverse (significant)
Charlemont station new oversite development	Groundborne Noise	Temporary	Significant	Advance public consultation and stakeholder engagement	Significant
Receptors within 65-75m of the tunnel centreline, depending on	Groundborne Noise	Temporary	Significant	Advance public consultation and stakeholder engagement	Significant

Appendix D – Figure 12.2, Sheet 29 of 30, Construction Noise Assessment Locations

Legend

Alignment

- Tunnel
- Station Locations
- Construction Noise Receivers



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P02	1/7/22	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann

Project: METROLINK

Drawing Title: Figure 13.2 Construction Noise assessment locations
Sheet 29 of 30

Drawing Status: FINAL

Scale @ A3	1:2,500	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT-XX-DR-Y-13038	Rev P02

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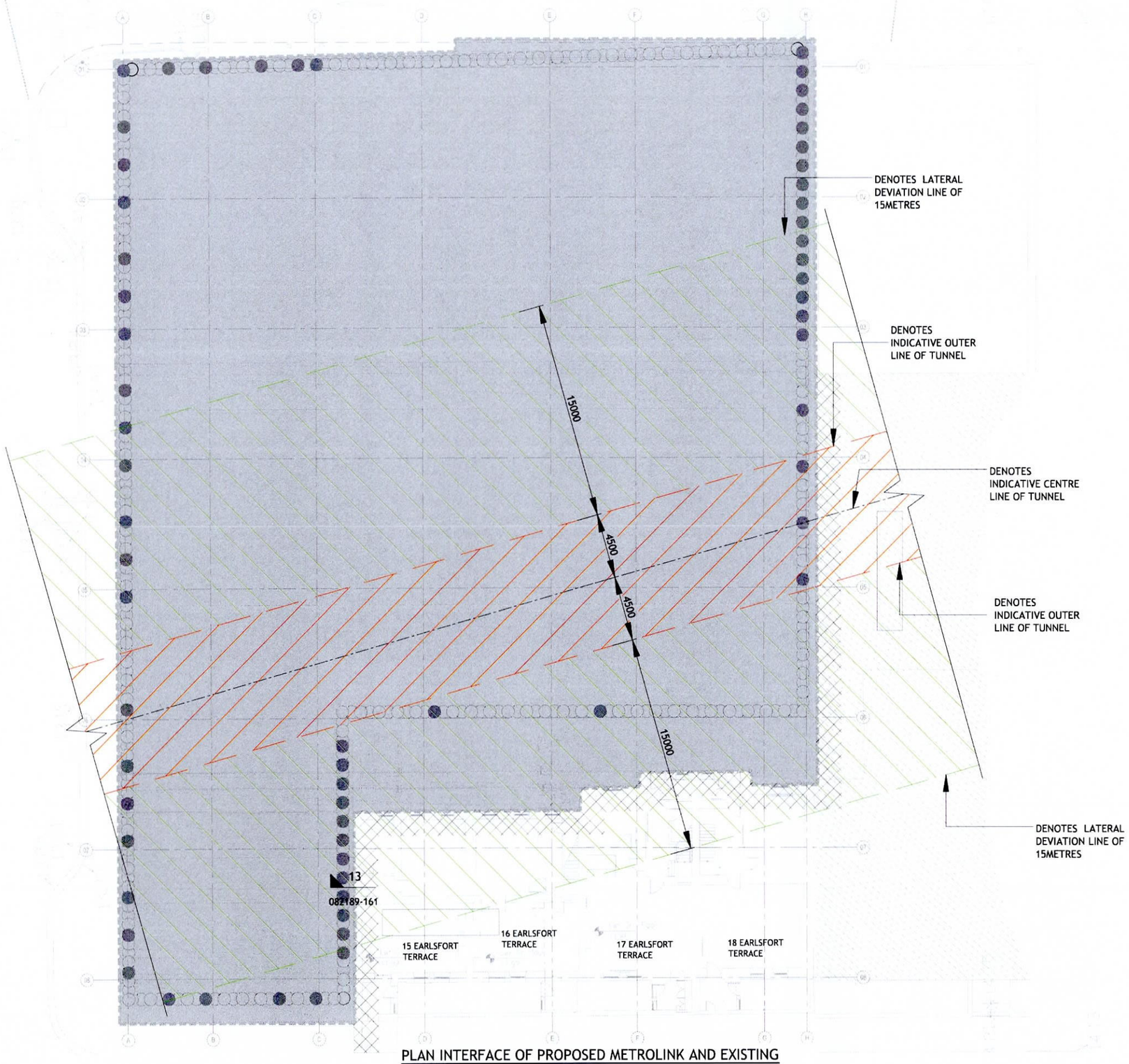
Path: \\europe.jacobs.com\Dublin\Data\3\Sustainable Solutions\Metro North\11 - Mapping\Working\EIAR_Drawings\Ch 13 - Fig 13.2 Construction Noise assessment locations.apx

0 25 50 75 100 Metres

Appendix E – Drawings Illustrating the Close Proximity of the Tunnel to the Existing Buildings.

NOTES:

1. DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.



PLAN INTERFACE OF PROPOSED METROLINK AND EXISTING BUILDINGS AT 15-18 EARLSFORT TERRACE

SCALE 1:50

Rev	Amendment	By	Date
P01	ISSUED FOR INFORMATION	MC	16/01/2023

Client: EARLSFORT BASIN LTD

PUNCH consulting engineers
Dublin | Limerick | Cork | Galway | Glasgow
Carnegie House Library Road, Dun Laoghaire, Co. Dublin, A96 C7W7
T +353 1 274 2200 | W punchconsulting.com

Project: PROJECT METROLINK AT 15-18 EARLSFORT TERRACE				
Title: INTERFACE OF PROPOSED METROLINK & 15-18 EARLSFORT TERRACE				
Drawn: M.Childs	Date Drawn: January 2023	Technician Check: B. Mavudri	Engineer Check: R. Coughlan	Approved: R. Coughlan
Project No: 222261	Model File: 222261-PUNCH-XX-FN-M2-S-100		Drawing Status: S3	
Scale @ A1: 1:125	Document No: 222261-PUNCH-XX-FN-DR-S-100			Revision No: P01

NOTES:

1. DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.

SECTION
SCALE 1:50
01
100

DENOTES LATERAL DEVIATION LINE OF 15METRES

DENOTES TUNNEL

DENOTES INDICATIVE CENTRE LINE OF TUNNEL

5000

9000

5000

-18.70 (DENOTES VERTICAL DEVIATION)

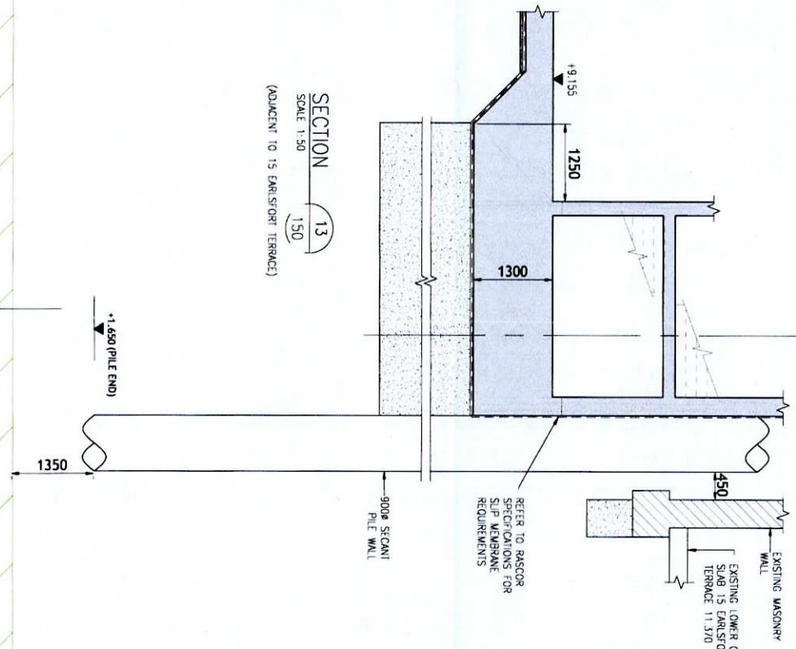
-13.70 (DENOTES INVERT OF TUNNEL)

-4.70(DENOTES CROWN OF TUNNEL)

DENOTES LATERAL DEVIATION LINE OF 15METRES

+0.300 (DENOTES VERTICAL DEVIATION)

SECTION
SCALE 1:50
13
150
(ADJACENT TO 15 EARLSFORT TERRACE)



NSAI Certified

Rev	Amendment	By	Date
P01	ISSUED FOR INFORMATION	MC	16/01/2023

Client: EARLSFORT BASIN LTD

PUNCH consulting engineers
Dublin | Limerick | Cork | Galway | Glasgow
Carnegie House Library Road,
Dun Laoghaire, Co. Dublin, A96 C7W7
t +353 1 275 2200 | w punchconsulting.com

Project: PROJECT METROLINK AT 15-18 EARLSFORT TERRACE				
Title: INTERFACE OF PROPOSED METROLINK & EXISTING BASEMENT STUCTURE - SECTION				
Drawn: M.Childs	Date drawn: January 2023	Technician check: B. Mavudzi	Engineer Check: R. Coughlan	Approved: R. Coughlan
Project No.: 222261	Model Ref.: 222261-PUNCH-XX-FN-M2-S-101		Drawing Status: S3	
Scale @ A1: 1:125	Document No.: 222261-PUNCH-XX-FN-DR-S-101			Revision No.: P01

Appendix F – Plan Number ML-P 306 E-O- Railway Works Metrolink – Property Details Hatch Street Lower to Grand Parade, Area No 306

x=716,154, y=732,582

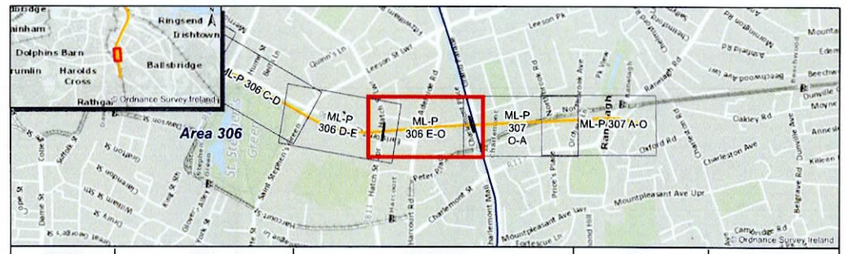
x=715,919, y=732,960

LOCATION PLAN

Map Scale: 1:1000 @ A3

DRAWING LEGEND

- LAND TAKE REFERENCE NUMBER — EXTENT OF PROPOSED ACQUISITION OF LAND
- LAND TAKE REFERENCE NUMBER — EXTENT OF PROPOSED ACQUISITION OF SUBSTRATUM LAND
- WAYLEAVE REFERENCE NUMBER — EXTENT OF WAYLEAVE / RIGHT OF WAY TO BE ACQUIRED / EXTINGUISHED
- TEMPORARY SITE REFERENCE NUMBER — EXTENT OF PROPOSED TEMPORARY SITE
- POSITION OF METRO RAIL TRACKS
- POSITION OF METRO RAIL TRACKS (UNDERGROUND)
- EXTENT OF METRO TUNNEL
- EXISTING BASEMENT REFERENCE NUMBER — EXISTING LIGHTWELL (MAY BE AFFECTED OR ACQUIRED); EXISTING BUILDING FACADE; EDGE OF EXISTING PAVEMENT; EXISTING BASEMENT BENEATH - MAY BE AFFECTED OR ACQUIRED (EXACT EXTENT OF BASEMENTS TO BE CLARIFIED)



REVISION	DATE	MODIFICATION	STATUS	STATE
P03	04/08/2022		Draft	Published

TII — METROLINK — JACOBS IDOM

TITLE:

RAILWAY WORKS
METROLINK - PROPERTY DETAILS
HATCH STREET LOWER TO GRANDE PARADE

DRAWING NUMBER: ML1-JAI-BOR-ROUT_XX-DR-Y-01097		
DRAWN: TW	CHECKED: MM	APPROVED: PB
SCALE: 1:1000 @ A3	REVIEWED: AS	
AREA NUMBER: 306	PLAN NUMBER: ML-P 306 E-O	SUBJECT: PROPERTY