



Clifton Scannell Emerson
Associates

Addendum to EIAR Chapter 10 Noise & Vibration

Suir Island Infrastructure Links



Comhairle Contae Thiobraid Árann
Tipperary County Council

Civil
Engineering

Structural
Engineering

Transport
Engineering

Environmental
Engineering

Project
Management

Health
and Safety

CONSULTING ENGINEERS





Clifton Scannell Emerson Associates Limited,
Consulting Engineers, 3rd Floor, The Highline, Bakers Point, Pottery Road,
Dun Laoghaire, Co. Dublin, A96 KW29
T. +353 1 2885006 F. +353 1 2833466 E. info@csea.ie W. www.csea.ie

Document Control Sheet

Project Name: Suir Island Infrastructure Links
Project Number: 20_071
Report Title: Addendum to EIAR Chapter 10 Noise & Vibration
Filename: RPT-20_071-037A

Issue No.	Issue Status	Date	Prepared by	Checked by
0	Issue for response to ABP RFI	25/09/2024	LW (AWN)	LP

Table of Revised Contents

Document Control Sheet	2
Table of Revised Contents	3
1 Addendum to EIAR Chapter 10 Noise & Vibration.....	4
1.1 Introduction	4
RFI Item 3 b) (i)	4
RFI Item 3 b) (ii) and Item 3 b) (iii)	6
Revised Section(s)	7
10.7 Mitigation and Monitoring Measures	7
10.7.1 Construction Phase	7
10.9 Cumulative Effects.....	8
10.9.1 P82201 – Suir Island Gardens	8
10.9.2 18601355 – Clonmel Arms Hotel Extension	8
10.9.3 Clonmel Urban Realm/Town Centre Enhancement Scheme.....	9
10.9.4 General Comment on Cumulative Effects	9
Appendix A - Construction Noise Contour Mapping.....	11

1 Addendum to EIAR Chapter 10 Noise & Vibration

1.1 Introduction

Tipperary County Council submitted the Planning Application for the proposed Suir Island Infrastructure Links development on 25th September 2023. An Bord Pleanála issued a Request for Further Information (RFI) on 9th July 2024 in accordance with Section 51(4) of the Roads Act 1993, as amended.

RFI No. 5 stipulates that the response documentation should be in addendum format. Thus, this document sets out to address the necessary changes which pertains to EIAR Chapter 10 Noise and Vibration.

The following RFI Items, which requests that the developer provide updated information relate to noise and vibration:

3. Environmental Impact Assessment (EIAR)
b) Noise and Vibration
(i) The EIAR outlines there is potential for very significant noise impacts to arise at the nearest sensitive locations (NSLs) at the construction stage. Mapping should be submitted indicating the expected worst case noise levels arising at the construction stage <u>at</u> noise sensitive receptors in the immediate vicinity of the site (including residential properties at The Quays, Sarsfield Street, Raheen Road), with the application of noise mitigation measures.
(ii) Clarity should be provided on the application of proposed binding noise limits at the construction stage and adherences to same should be outlined.
(iii) Chapter 10 should be revised to include for a detailed cumulative noise assessment of the proposal with other approved developments at construction stage.

RFI Item 3 b) (i)

“There EIAR outlines there is a potential for very significant noise impacts to arise at nearest sensitive locations (NSLs) at the construction stage. Mapping should be submitted indicating the expected worst case noise levels arising at the construction stage at noise sensitive receptors in the immediate vicinity of the site (including residential properties at The Quays, Sarsfield Street, Raheen Road), with the application of noise mitigation measures.”

Response:

Noise contour mapping (included in Appendix A) has been prepared in response to this item for the construction phases discussed in the EIAR which involve plaza and bridge construction works.

The noise contour mapping have been calculated using proprietary noise calculation software DGMR iNoise, using a 3D computer-based prediction model selected software, DGMR iNoise, calculates noise levels in accordance with ISO 9613: 1996 *Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation*.

Construction noise levels have been calculated using iNoise, taking into account a range of factors affecting the propagation of sound, including:

- the number, type and magnitude of the construction plant noise source in terms of A weighted sound power levels (L_{WA}) in octave band data;
- the distance between the source and receiver;
- ground topography;
- the presence of obstacles such as screens or barriers in the propagation path;

- the presence of reflecting surfaces;
- the hardness of the ground between the source and receiver;
- attenuation due to atmospheric absorption; and
- meteorological effects such as wind gradient, temperature gradient and humidity (these have significant impact at distances greater than approximately 400m).

Input Data and Assumptions

The noise model has been constructed using data from various source as follows:

- *Construction working areas:* The working area for each key phase of work is annotated by a 'DIV Area' or DIV Line' which is drawn around the working boundary of the assessment area under consideration. These are illustrated in the noise contour plots;
- *Local Area:* Background mapping has been taken from Google Earth to identify the location and presence of buildings and noise sensitive locations in the vicinity of the works;
- *Heights:* The heights of buildings on site have been obtained from review Google Earth imagery. Modelled buildings range from 3 to 20m in height. Contour heights are modelled at a height of 1.5m above ground, representing ground floor height of adjacent buildings.
- *Contours:* 3D site ground contours drawings provided by the design team have been included in the noise model to develop a 3D acoustic model of the study area. For example, where works are carried out in the floodplain below ground level, the lower ground level relative to the calculation height is included in the calculation methodology.
- *Construction Plant Items.* The plant type, numbers, sound power values and working on-time are those presented in Section 10.6.1 of the EIAR.
- *Mitigation measures* included in the model include site hoarding of 2.4m around the working site boundaries and the inclusion of an acoustic exhaust to mobile plant items which applies a reduction of the quoted sound pressure level of the plant item by 10dB. The model has limited the mitigation measures to the above two control measures to assess a conservative assessment and to account for those that can be reliably modelled and implemented as standard on site. It is acknowledged that a range of additional measures, as discussed in Section 10.7.1 of the EIAR are available to further control noise emissions, as required by the appointed contractor.

Model Outputs

The calculated noise contours are presented in terms of the $L_{Aeq,12hr}$ for the daytime period, between 07:00 and 19:00hrs. This assessment period is as per the proposed construction working hours of the project as discussed in Section 5.5 of the CEMP. As discussed in Section 5.3.2 of the CEMP

It may be necessary in exceptional circumstances to undertake certain activities outside of the construction core working hours. Any construction outside of the construction core working hours will be agreed by the contractor in advance with Tipperary County Council and scheduling of such works shall have regard to nearby sensitive receptors.

The noise contours calculated therefore relate to the standard working hours, as proposed.

Noise mapping for the following scenarios are presented in **Appendix A** of this addendum.

1. North Plaza – Site Preparation	8. South Bridge – Foundations
2. North Plaza – Paving & Landscaping	9. South Bridge – Pier Construction
3. North Quays – Site Preparation	10. South Bridge – Superstructure

4. North Quays – Paving & Landscaping	11. Raheen Road – Site Preparation
5. North Bridge – Foundations	12. Raheen Road – Paving & Landscaping
6. North Bridge – Pier Construction	13. Suir Island – Site Preparation
7. North Bridge – Superstructure	14. Suir Island – Paving & Landscaping

As discussed above, the noise levels illustrated in the noise contour maps are considered conservative and account for the assumed mitigation measures listed above that can be accurately represented in model format. Where noise sensitive locations fall within a noise contour band higher than the assigned construction noise significant threshold, there is potential for a residual significant impact at that location, depending on context.

The results of the modelled scenarios indicate that construction noise levels are highly localised to specific areas of works and will be highest at the façade of buildings immediately adjacent to the works. Construction noise levels reduce significantly beyond the immediate working area and are reduced to within the construction noise significance thresholds at distances beyond 20 to 50m from a working area.

As discussed within Section 10.2.1 and Table 10-2 of the EIAR, the significance of an effect relating to construction noise is dependent on a range of factors; namely the construction noise level, the duration over which it occurs at a specific noise sensitive location and the baseline noise level.

In accordance with the *Design Manual for Roads and Bridges (DMRB), LA111 Noise and Vibration: Highways England, Transport Scotland, The Welsh Government and The Department of Infrastructure, May 2020 (DMRB 2020)*, construction noise impacts shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- Ten or more days or night in any 15 consecutive day or nights; and
- A total number of days exceeding 40 in any six consecutive months.

In summary, for the vast majority of the construction phases, the duration of the works at any noise sensitive location will be limited and will not exceed the temporal durations from DMRB. In this regard, the residual impacts are not significant.

Monitoring will be undertaken in accordance with EIAR Chapter 8 Noise and Vibration, this Addendum report to EIAR Chapter 8, NIS, OCEMP and Chapter 17 Schedule of Mitigation Measures and Monitoring.

RFI Item 3 b) (ii) and Item 3 b) (iii)

“(ii) Clarity should be provided on the application of proposed binding noise limits at the construction stage and adherence to same should be outlined.

“(iii) chapter 10 should be revised to include for a detailed cumulative noise assessment of the proposal with other approved developments at construction stage.”

Response:

Addendums to the relevant sections of the EIAR relating to these items are presented in the sections below.

This document sets out to address the necessary changes and updates which pertain to EIAR Chapter 10 Noise & Vibration. This addendum includes the following revisions, additions or removed text in red colour, removed text is indicated by strikethrough text:

- Revision of Section 10.7 Mitigation and Monitoring Measures.
- Revision of Section 10.9 Cumulative Effects.

Revised Section(s)

10.7 Mitigation and Monitoring Measures

10.7.1 Construction Phase

v. Monitoring

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project.

Whilst Chapter 10 of the EIAR references Construction Noise Thresholds relating to potential noise effects, the following construction noise levels, taken from Transport Infrastructure Ireland (TII) publication *Guidelines for the Treatment of Noise and Vibration (2004)* are proposed with respect to setting construction noise limits for the purpose of noise monitoring as part of the works.

These are outlined in in Table 10.18.

Table 10-18: Maximum Permissible Noise Levels at the Facade of Dwellings During Construction

Days and Times	Noise Levels (dB re. 2x10 ⁻⁵ Pa)	
	L _{Aeq} (1hr)	L _{ASmax}
Monday to Friday 07:00hrs to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60*	65
Saturdays 08:00hrs to 14:00hrs	65	75

Note *: Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the local authority.

Appropriate construction noise limits for non-residential receptors are presented in Section 10.2.1, i.e.

70 decibels (dBA) in rural, suburban areas away from main road traffic and industrial noise;

75 decibels (dBA) in urban areas near main roads in heavy industrial areas.

Construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion.

Noise monitoring shall be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*.

Further details on construction monitoring and procedures/methodologies relating to noise and vibration are set out in the Outline Construction and Environmental Management Plan (OCEMP).

The successful contractor will prepare a Noise and Vibration Management Plan for future construction works taking into account site constraints and shall demonstrate compliance with the abovementioned

binding noise limits. Measures detailing actions to be taken on exceedance of construction criteria will be set out therein, in addition to the Mitigation/Monitoring in Chapter 10 of the EIAR, this Addendum to Chapter 10 of the EIAR and the OCEMP, and any conditions/restrictions in any Approval as may be granted.

10.9 Cumulative Effects

During the construction phase of the proposed development, construction noise on site will be localised and will therefore be the primary noise source at the nearest noise sensitive receivers.

A list of adjacent developments has been compiled and presented in Chapter 1, Section 1.16 of the EIAR and an updated list provided in Addendum to Chapter 1. This list comprises proposed developments ranging from modifications of private properties to the wide ranging Clonmel Urban Design Project.

A review of this list has been undertaken in order to identify the potential for cumulative noise and vibration effects.

Several developments have been determined to not have potential to cause cumulative effects due to the large distances between NSLs at the Suir Island Development and screening effects from intervening buildings.

The following projects have been identified as having potential to result in cumulative impacts.

- P82201 - Suir Island Gardens
- 18601355 – Clonmel Arms Hotel Extension
- Clonmel urban realm/Town Centre Enhancement Scheme

10.9.1 P82201 – Suir Island Gardens

Works on the Suir Island Gardens are programmed to take place before the Proposed Development and will be completed before construction works on the Proposed Development commence and has thus been assessed as a receptor. On this basis no cumulative construction noise and vibration impacts are predicted.

Traffic flows associated with the operation of the Suir Island Gardens development have been accounted for in traffic flows assessed for changes in noise level associated with the operation of the proposed development. The assessment set out in Section 10.6.2 of the EIAR Chapter 10 Noise & Vibration concluded that no mitigation was required as a result of operational traffic. The associated cumulative effect varies from negative, imperceptible and long-term to positive, imperceptible and long-term.

10.9.2 18601355 – Clonmel Arms Hotel Extension

Works associated with this development comprise demolition of existing buildings, construction of a new building and works to existing structures.

Adjacent to this site, buildings on O'Connell Street, Sarsfield Street and Quay Street primarily comprise commercial buildings and derelict buildings. Residential receptors are identified at the corner of Sarsfield Street and the Quays.

The timescale and sequence of works for the development are not known. In order to assess the potential for cumulative construction impacts, a worst-case scenario has been considered whereby works on the Clonmel Arms Hotel are ongoing at the same time as works at the proposed North Plaza. In the absence of information on construction methods it is assumed that these works will generate the same level of noise as the works at the North Plaza.

Under this scenario, the residential receptors at the corner of Sarsfield Street and the Quays have a calculated potential cumulative noise level of the order of 80 dB L_{Aeq} without mitigation. This cumulative scenario includes road works associated with the North Plaza at a distance of 10m, and general construction at the Clonmel Arms site at 50m from the identified residential receptors. The calculated unmitigated levels are above the Construction Noise Threshold (CNT) for residential receptors.

It is understood that the excessively noisy works, i.e. demolition and removal of rubble at the Clonmel Arms Hotel extension, has been completed at the time of writing this report and as a result, there is less probability and duration of significant cumulative noise impacts. Depending on the period of overlap of construction activity at both sites, these works are predicted to be negative, moderate to significant and brief to temporary.

The construction assessment for the Proposed Development set out in Section 10.6.1 has identified the need for mitigation measures to be implemented in order to reduce associated construction impacts.

~~Should another development become active, and construction was undertaken in proximity to the proposed development, there is the possibility that cumulative noise impacts could occur at nearby sensitive receptors that are equidistant to both sites. The most likely of these is the works proposed at the Suir Island Gardens, adjacent to the proposed development. There is also the possibility that elements of the Clonmel Urban works may take place close to northern end of the proposed development, closer to the town centre.~~

In this scenario, ~~it is recommended that~~ liaison between construction sites will be on-going throughout the duration of the construction phases. Contractors will schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors.

Construction works at the Clonmel Arms Hotel site will be subject to working hours and construction noise limits, similar to the Proposed Development. Mitigated noise levels experienced at nearby noise sensitive locations will therefore be of lower magnitude and impact. On the basis that following the completed demolition phase, construction traffic will be less in number and that large increases in traffic on existing roads are required in order to produce increases in noise level, it is not considered that there is potential for significant cumulative construction traffic impacts

Traffic flow level, tied with the operation of the Clonmel Arms Hotel development have been accounted for in traffic flows assessed for changes in noise level associated with the operation of the proposed development. The assessment set out in Section 10.6.2 concluded that no mitigation was required as a result of operational traffic. The associated cumulative effect varies from negative, imperceptible and long-term to positive, imperceptible and long-term.

10.9.3 Clonmel Urban Realm/Town Centre Enhancement Scheme

The Clonmel Urban Realm/Town Centre Enhancement Scheme comprises works to the public realm in general at potentially a wide range of locations adjacent to the Proposed Development. It is the understanding of the EIA Team that funding has not been obtained at this time and that timelines for the procurement process and subsequent construction phase are not known.

As a result, it is not possible to predict overlap and potential cumulative construction impacts. A project of this nature will be delivered in a number of phases and with the appropriate planning and delivery of the phased works, will eliminate any possible cumulative effect.

10.9.4 General Comment on Cumulative Effects

Potential for cumulative effects has been assessed in this document for construction and operational phases of the Proposed Development. A list of proposed, permitted and committed projects has been reviewed and the developments with potential to induce cumulative impacts have been assessed.

The development with the highest likelihood of producing cumulative construction impacts is the Clonmel Arms Hotel development. The assessment is conservative due to absence of detailed knowledge regarding construction methodologies and phasing of the hotel development, it has concluded there is potential for significant cumulative impacts during periods whereby construction is occurring at both sites.

Although it is understood that the excessively noisy works, i.e. demolition and removal of rubble at the Clonmel Arms Hotel extension, has been completed at the time of writing this report and as a result, there is less probability and duration of significant cumulative noise impacts. For the remainder of the works, to ensure significant noise generation does not occur in-combination, the following mitigation measures are required in this scenario; Ultimately construction works on both sites will be bound by noise criteria such as those listed in Section 10.7.1 (v) – Monitoring which are not couched in terms of significance of effect but are limits specified to ensure excessive levels of noise are not generated on an ongoing basis and that the point whereby mitigation measures are to be implemented can be known. Due to the variability of construction activities, there is an isolated and temporary potential for these limits to be exceeded, however the appointed contractor will conduct construction activities in line with the CEMP and mitigation measures contained therein to reduce the levels of noise generated.

No other likely cumulative construction impacts have been predicted on the other identified surrounding developments.

Potential cumulative operational impacts have been assessed already in Section 10.6.2 as traffic from surrounding developments has been accounted for and the assessment concludes that cumulative operational impacts are not significant.

Any large-scale future projects that are not yet proposed or permitted would also need to be the subject of EIA in turn, to ensure that no significant impacts resulting from noise and vibration will occur as a result of those developments.

Appendix A - Construction Noise Contour Mapping

A.1 North Plaza – Site Preparation



A.2 North Plaza – Paving & Landscaping



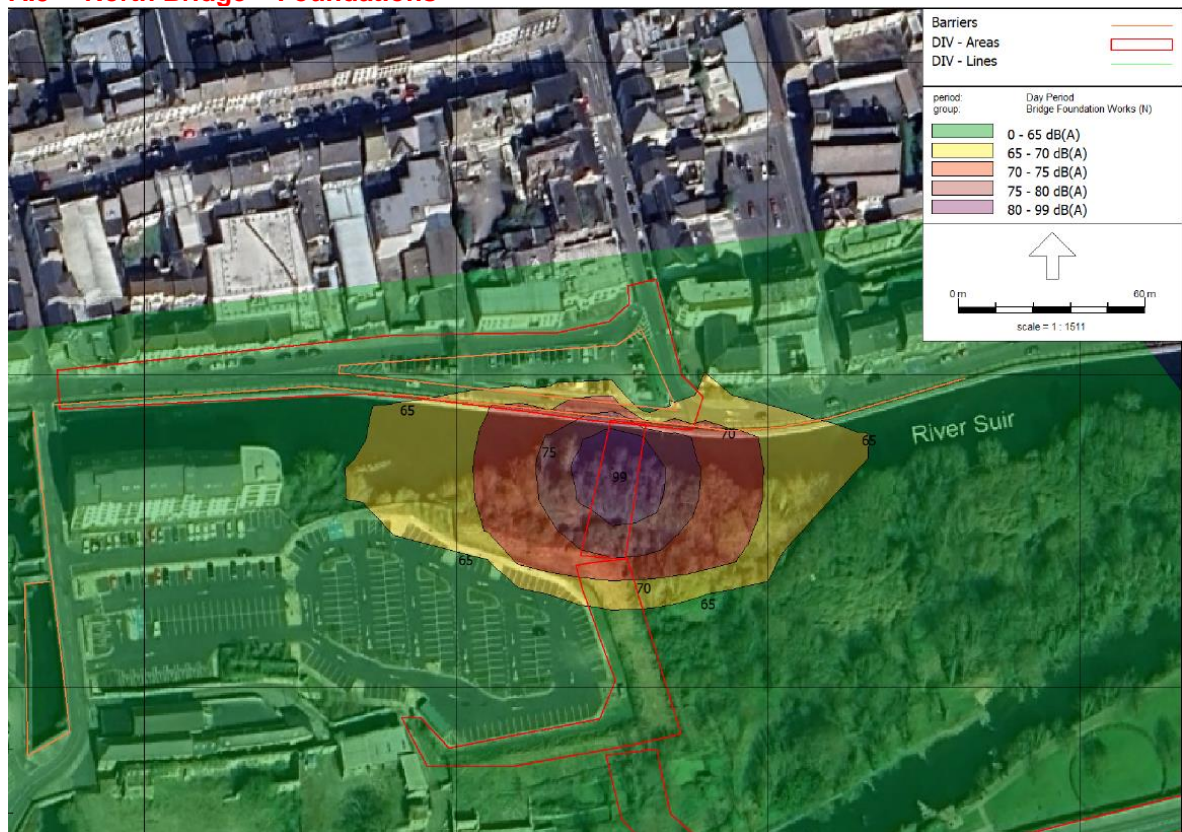
A.3 North Quays – Site Preparation



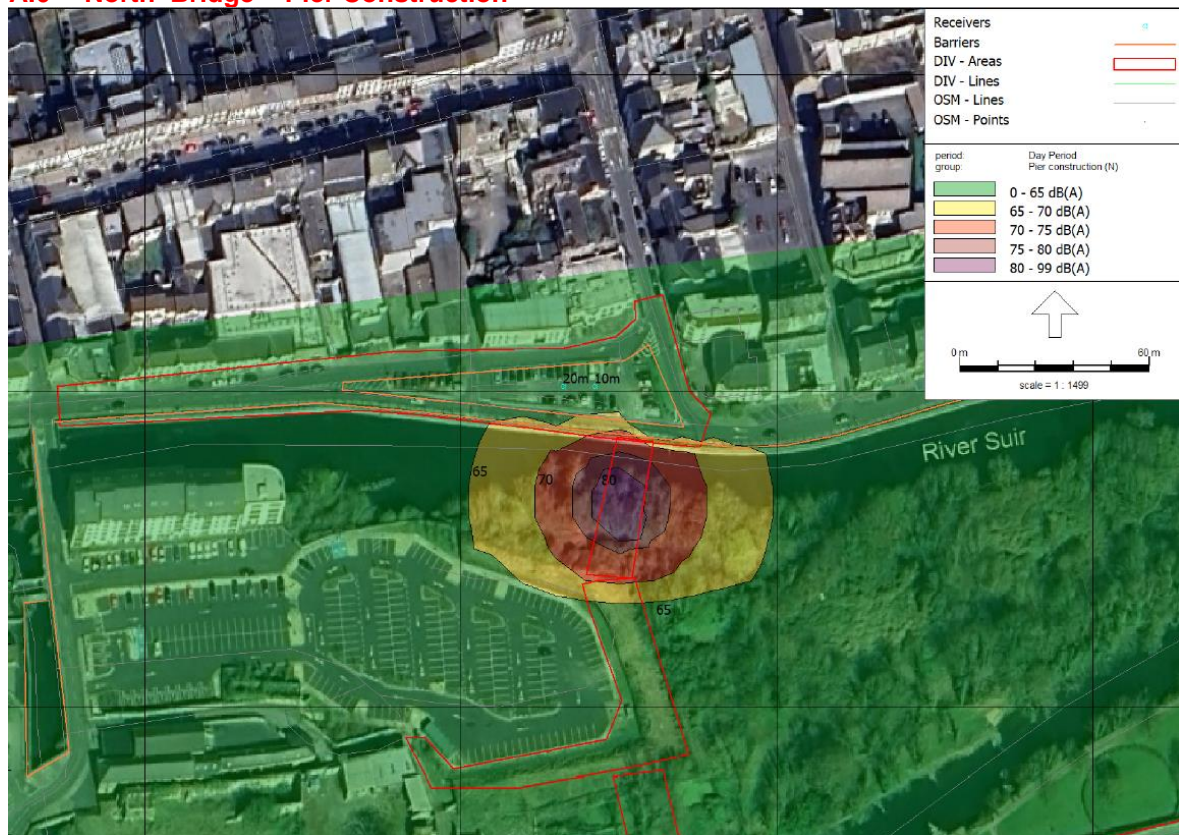
A.4 North Quays – Paving & Landscaping



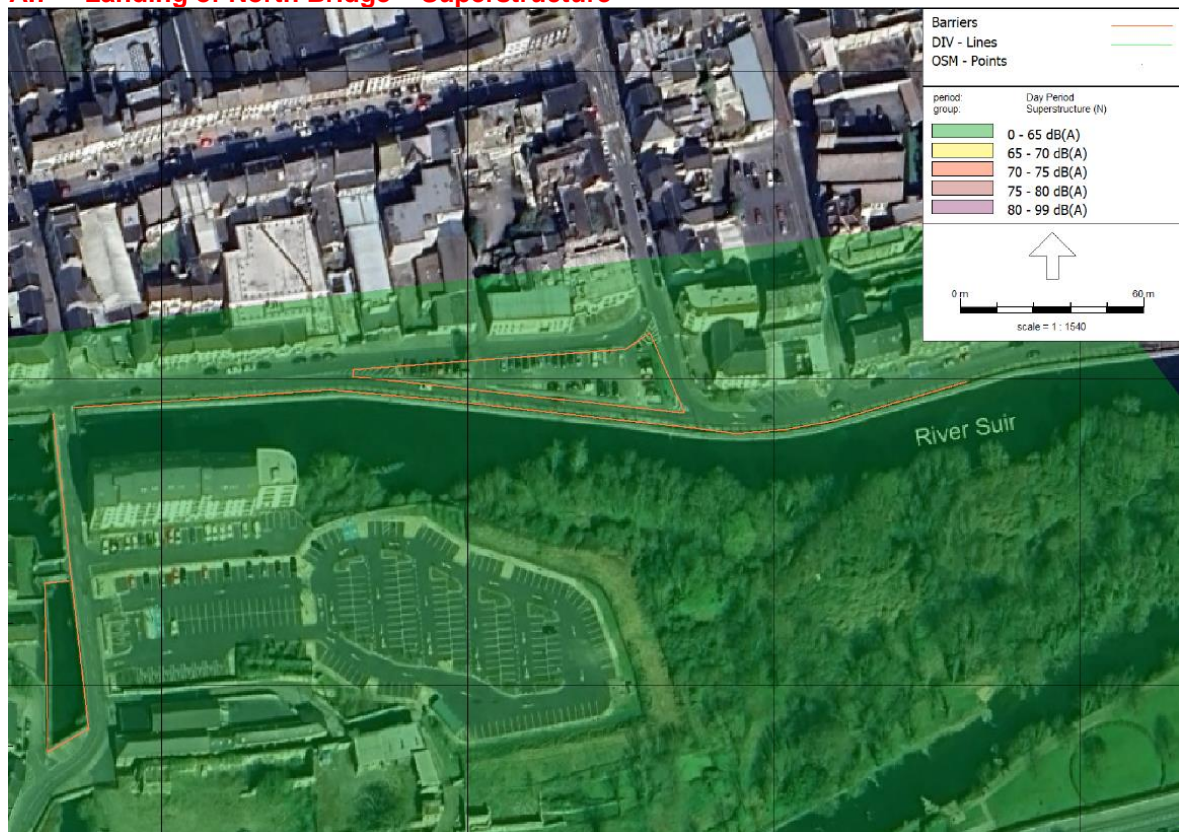
A.5 North Bridge – Foundations



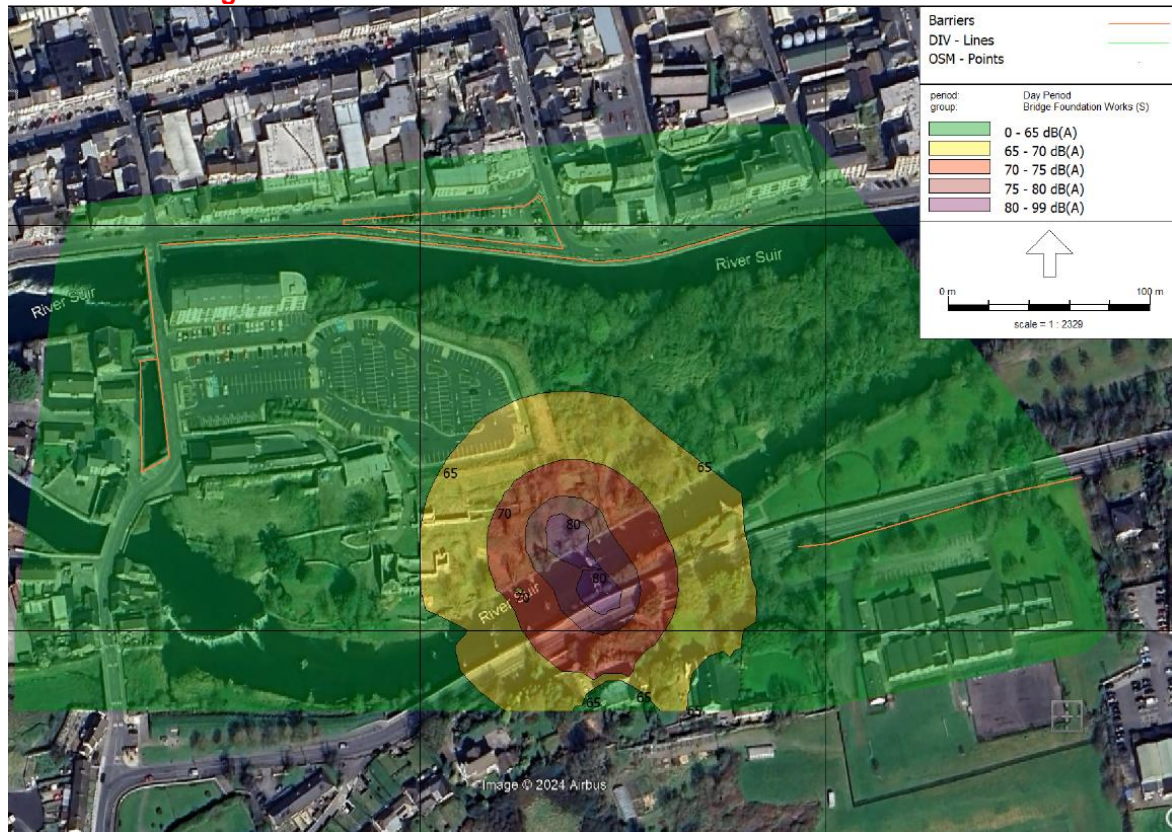
A.6 North Bridge – Pier Construction



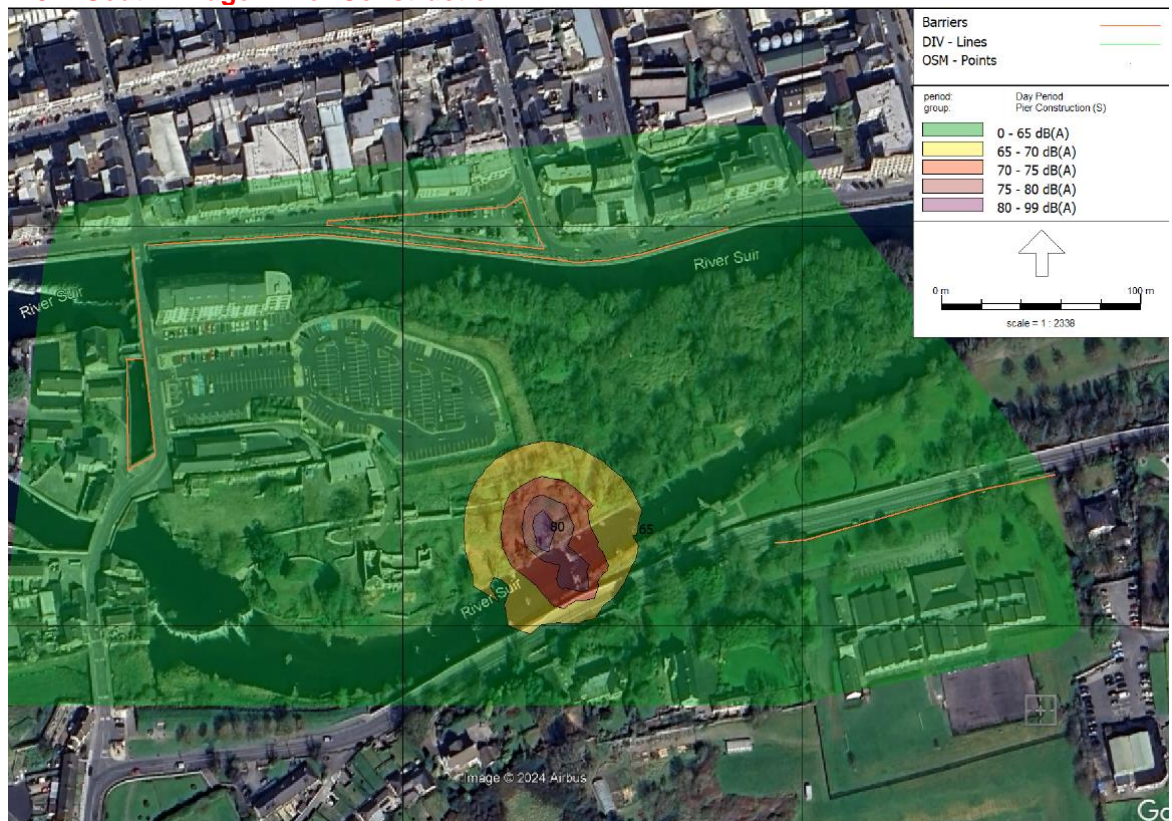
A.7 Landing of North Bridge – Superstructure



A.8 South Bridge – Foundations



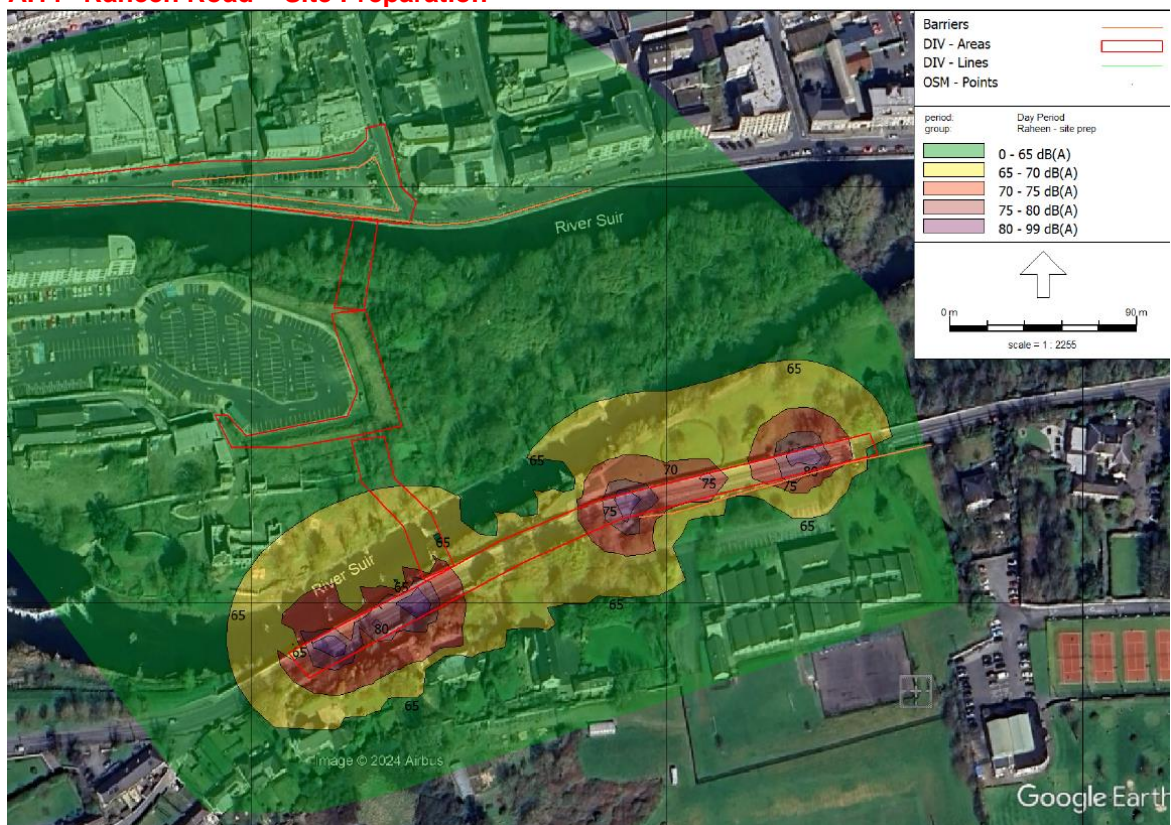
A.9 South Bridge – Pier Construction



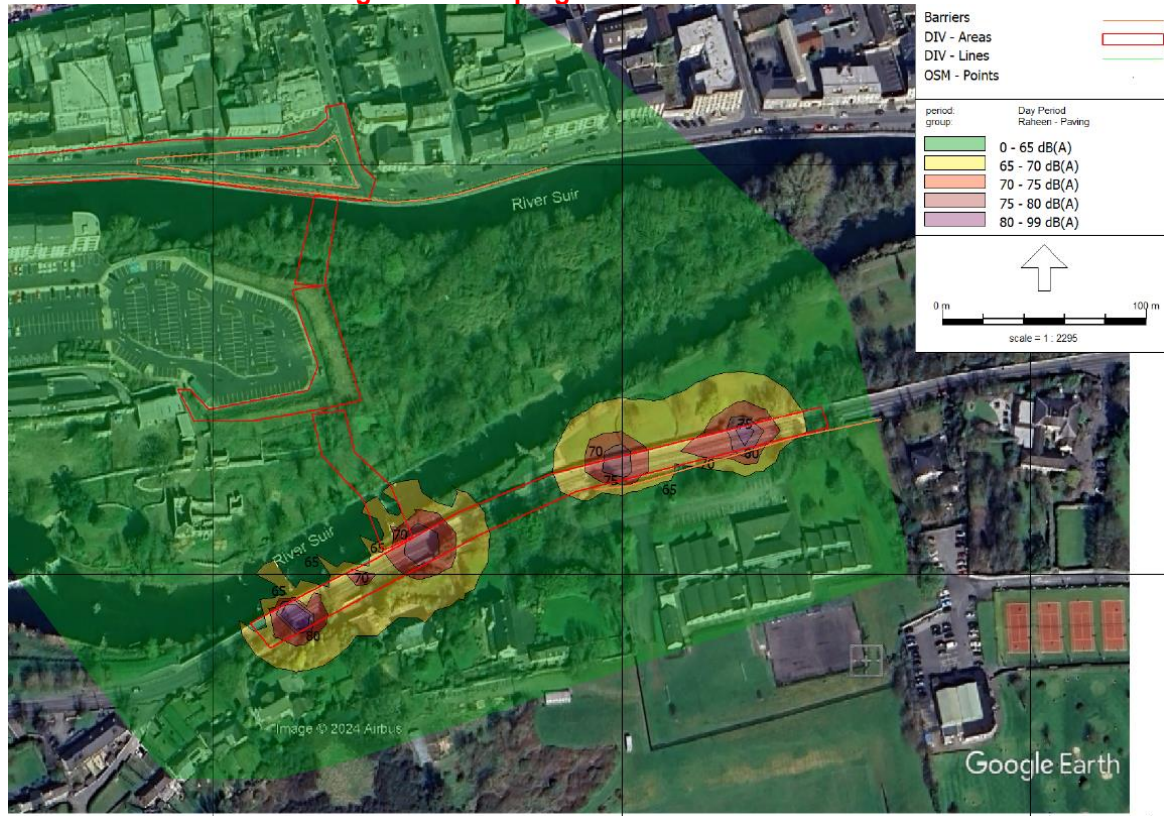
A.10 Landing of South Bridge – Superstructure



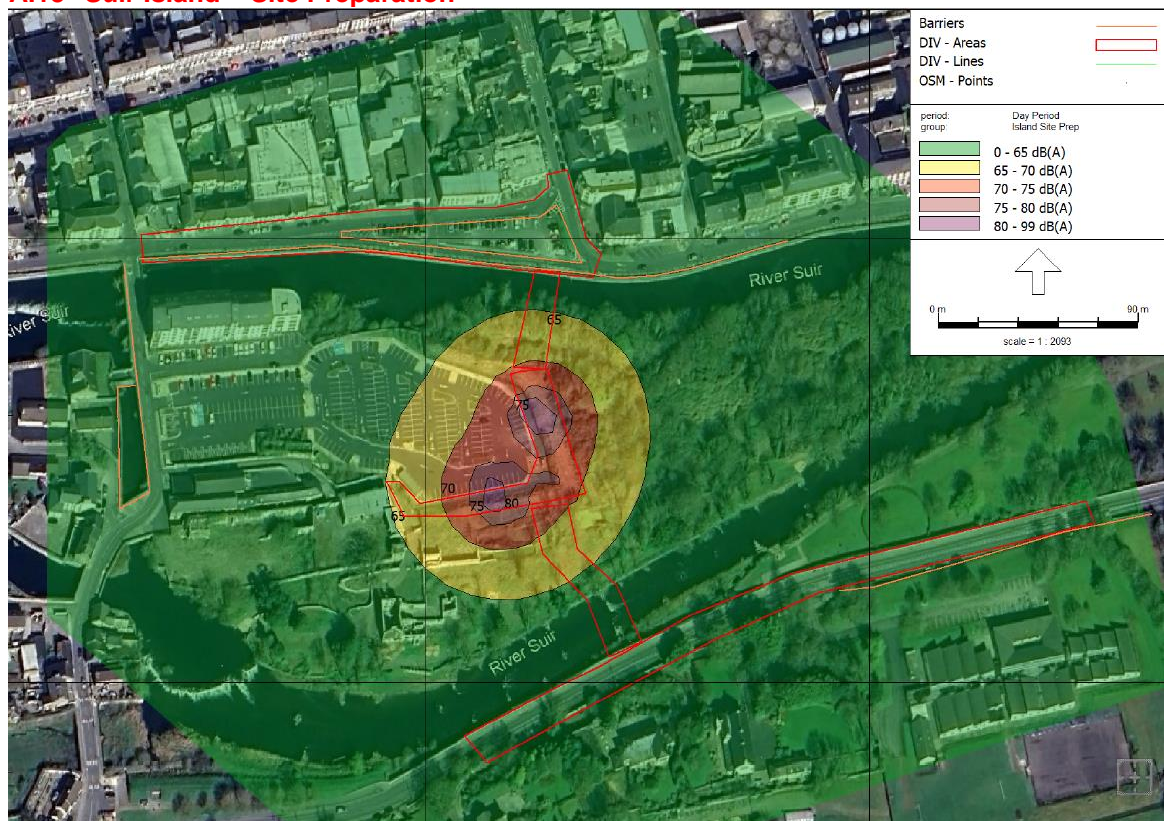
A.11 Raheen Road – Site Preparation



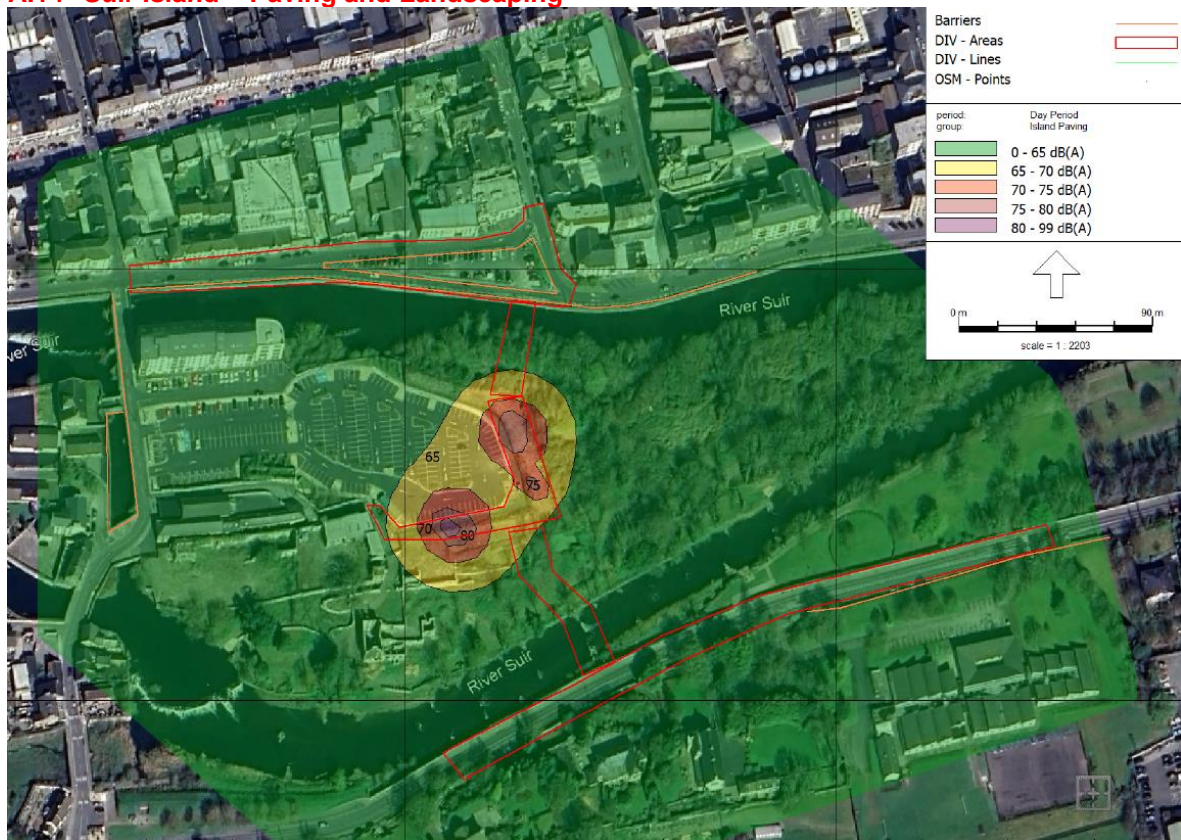
A.12 Raheen Road – Paving & Landscaping



A.13 Suir Island – Site Preparation



A.14 Suir Island – Paving and Landscaping



Clifton Scannell Emerson Associates Limited, Civil & Structural Consulting Engineers

3rd Floor, The Highline, Bakers Point, Pottery Road, Dun Laoghaire, Co. Dublin, A96 KW29

T. +353 1 288 5006 F. +353 1 283 3466 E. info@csea.ie W. www.csea.ie

