PUNCH
consulting engineers

Markievicz Bridge Refurbishment Works

Outline Construction Management Plan
224138-PUNCH-XX-XX-RP-C-0006

April 2025

Document Control

Document Number: 224138-PUNCH-XX-XX-RP-C-0006

Rev	Description	Date	Prepared	Checked	Approved
A0-C01	Planning	07/04/2025	P. McDowell	K. O'Riordan	K. O'Riordan

Table of Contents

1 Introduction

The purpose of this document is to briefly outline the general activities required for the proposed Markievicz Bridge refurbishment works. The refurbishment works include pier scour repairs, riverbed scour repairs, cleaning, vegetation removal & repointing of masonry.

A Main Contractor has not yet been appointed to carry out the proposed works. Once appointed, it will be the responsibility of the Main Contractor to prepare and submit a detailed site-specific construction management plan, to be submitted to the Local Authority for approval. The construction management plan will be a live document that will be updated throughout the project lifecycle by the Main Contractor as required.

Regardless of the form of contract, the Contractor will be contractually bound by any conditions arising from the site constraints identified and specified, all Statutory Regulations governing the works, and any additional measures or modifications that may be imposed on the proposed development by the Local Authority.

2 Site Location

Markievicz Bridge lies along the R870, crossing over the Garavogue River in Sligo Town. The bridge is located c. 600m southwest of the Michael Hughes bridge where the N4 crosses the Garavogue. The location of Markievicz Bridge is illustrated below in Figure 2-1.

The bridge is accessible to southbound vehicular traffic only, with two lanes of southbound vehicular traffic in addition to a single footpath on the west (downstream) side of the bridge. The left lane of vehicular traffic provides access to Abbey Street and Teeling Street. The right lane provides access to Sligo Town Centre via Castle Street.

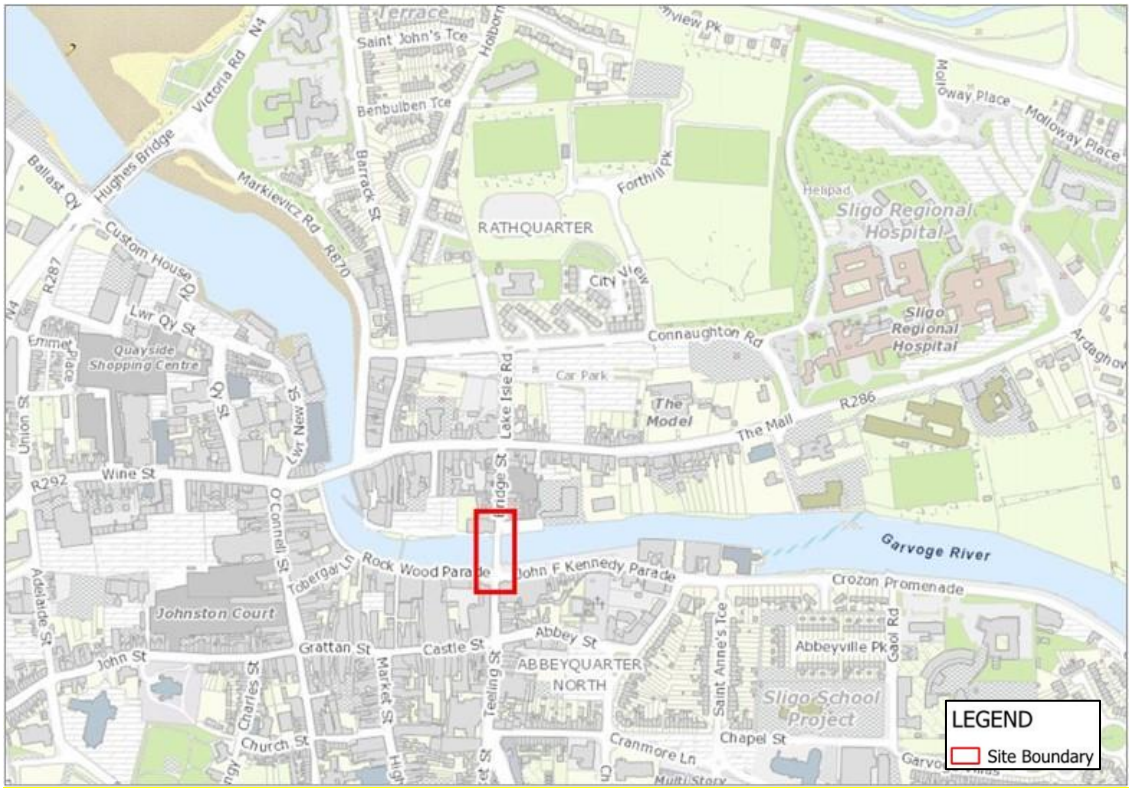


Figure 2-1: Site Location/ Access points to the proposed development

3 Site Description

The National Inventory of Architectural Heritage provides the following description of Markievicz Bridge:

> "Seven-arch bridge over river, built 1673. Repointed coursed rubble limestone walls centred on triangular cutwaters to piers to upriver (east) elevation on mass concrete bases having rendered pyramidal capping with margined tooled cut-limestone coping to benchmark-inscribed parapets. Series of seven segmental arches with margined tooled limestone ashlar block-and-start voussoirs (east) or rough hewn limestone voussoirs (west). Sited spanning Garvogue River."

At the southernmost span (Span 7, refer Figure 3-3 and Figure 3-4 below), a new raised height concrete base has been constructed such that the span will only allow passage of water in high water conditions. The upstream side of the span has also been amended with the construction of a splayed wall with cast-in holes for water passage. This creates increased circulation space for pedestrians at bridge deck level and gives the appearance of a six span bridge on the upstream elevation.

A longitudinal construction joint in the arch barrels indicate the bridge was widened in the upstream direction.

See upstream and downstream elevations in Figure 3-1 and Figure 3-2 below.

Figure 3-1. Markievicz Bridge upstream elevation

Figure 3-2. Markievicz Bridge downstream elevation

3.1 Bridge element labelling convention

The bridge element numbering convention used throughout this report is illustrated below in Figure 3-3 and Figure 3-4. Elements are numbered ascendingly from true right to true left. True right is on the right hand side when facing downstream, which is the North end of the bridge. True left is on the left hand side when facing downstream, which is the South end of the bridge.

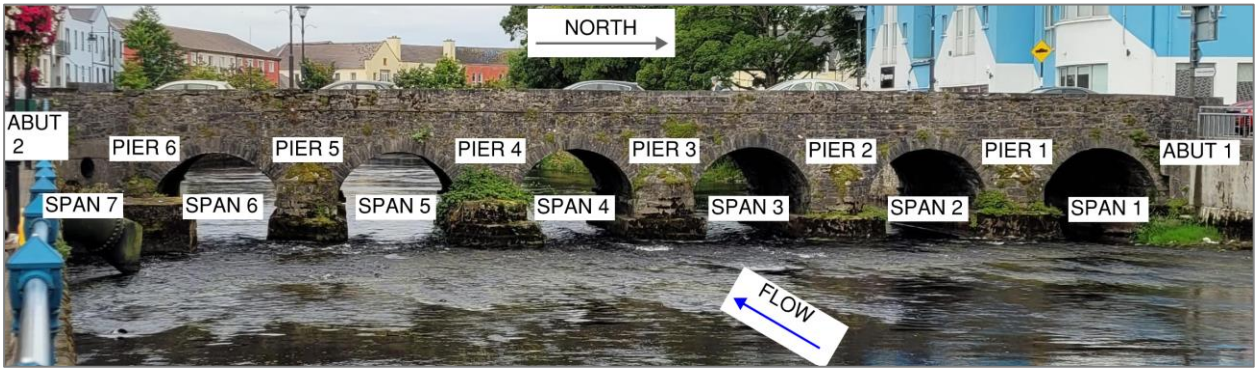


Figure 3-3. Element numbering on upstream elevation

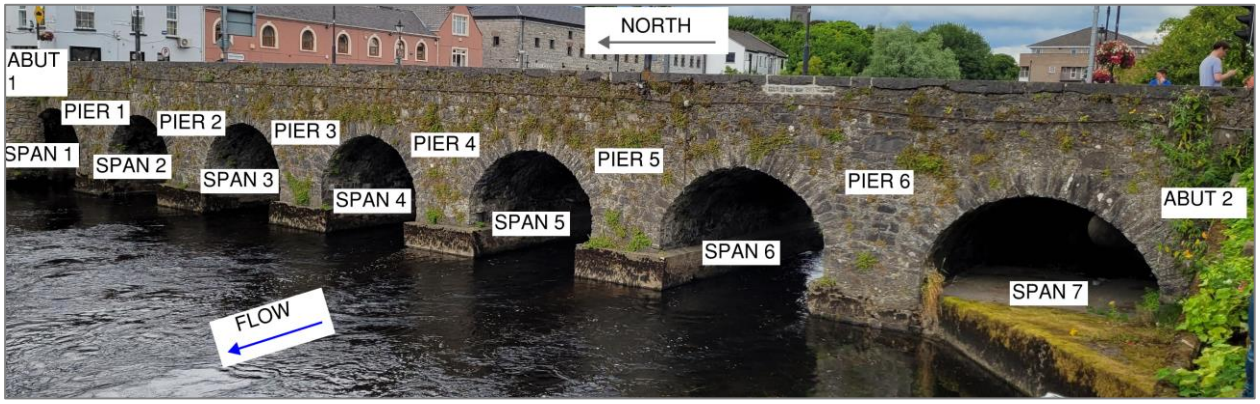


Figure 3-4. Element numbering on downstream elevation

4 Indicative Works Programme

It is estimated that the programme for the refurbishment works will last 3 months from the date of commencement. This estimation is based on the typical programmes for other similar developments that are currently underway. The Main Contractor will be required to prepare a detailed construction programme as part of their tender proposal.

5 Site Set Up and Security

The proposed location of the site compound has been agreed with Sligo County Council. The bridge will be reduced to a single lane of traffic for the duration of the works, with the site compound covering the eastern (upstream) lane of traffic in addition to a portion of John F Kennedy Parade, as shown in sketch: 224138-PUNCH-XX-XX-SK-CS-0006 - Temporary traffic Management and Site Setup (**Error! Reference s ource not found.**).

The site compound will be used as the primary location for the storage of materials, plant and equipment, site offices, and worker welfare facilities. As Project Supervisor Construction Stage (PSCS), the Contractor will be responsible for site security, and they are to ensure that the site and site compound are adequately secured at all times.

The Main Contractor will ensure that the site compound will be serviced as required and will be secured with appropriate fencing/hoarding. The Main Contractor will be required to submit a site layout plan that will show the site perimeter and the proposed detail with regards to the hoarding and gate system.

As with the other construction activities that are being carried out within the Local Authority's remit, activities associated with the construction compounds will be subject to restrictions to the nature and timing of operations so that they do not cause undue disturbance to neighbouring areas and communities.

6 Site Access

Access to the site will be via the John F Kennedy Parade, as shown in Appendix A. The proposed site gate on John F Kennedy Parade is proposed as the access point for all pedestrian and vehicular traffic. The Main Contractor will be responsible for all site access and works activity and must ensure the continued operation of the roads within the surrounding area.

Furthermore, to reduce the requirement for site parking for employees, public transport, and sustainable modes of travel including walking or cycling should be utilised where possible.

7 Material Storage and Delivery

The Contractor will ensure that the delivery of materials is coordinated to minimise impacts to adjacent properties. The Contractor will ensure that all materials are adequately stored and secured in their site compound.

The Purchasing Manager shall ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage is not conducive to the creation of unnecessary waste.

All deliveries will be booked into site at least one day before delivery. All drivers will contact the site gate operative 15 minutes before arrival.

The Contractor will ensure the roads adjacent to the site are kept clean and free of debris.

8 Traffic Management Plan

The Contractor will be required to prepare and submit a detailed traffic management plan as part of their tender submission. Once appointed, the preferred Contractor will further develop the traffic management plan as required for submission to the Local Authority for approval in advance of works commencing on site.

The Contractor will ensure that advanced warning signs are erected on approaches to the site as required by the PSCS. The Contractor will use a competent sign provider and all signage that meets the requirements of the Safety, Health & Welfare at Work (General Applications) Regulations 2007 and Chapter 8 Traffic Signs Manual. Any proposed temporary road markings must also conform to the requirements of Chapter 8 of the Traffic Signs Manual.

The extent of the site compound agreed with Sligo County Council will necessitate the temporary closure of one of the traffic lanes across the bridge. The site compound will also cover the footpath on the north side of John F Kennedy Parade (the footpath adjacent to the south bank of the river), as shown in sketch: 224138-PUNCH-XX-XX-SK-CS-0006 - Temporary traffic Management and Site Setup in Appendix A.

As a result, the existing traffic lights and associated controlled pedestrian crossing at the southern end of the bridge will be disabled. Temporary traffic lights will be introduced to control vehicular and pedestrian movements at the junction of Bridge Street, Rockwood Parade and Thomas Street.

The temporary hoarding along the site perimeter may necessitate the erection of temporary internal footways. Where required, these shall be built in accordance with Traffic Management Guidelines.

Construction traffic will arrive to site along John F Kennedy Parade. All deliveries will be off-loaded without delay by the most appropriate method and escorted off site.

All deliveries will be booked into site ate least one day before delivery. All drivers will contact the gate operative 15 minutes before arrival on site. The site gate operative will be responsible for ensuring that there is no conflict between pedestrians and vehicles entering/exiting the site. In addition, temporary markings will be painted on the footpath either side of the site entrance to alert pedestrians.

It is envisaged that working hours on site will be 07:00 hrs to 19:00 hrs Monday to Friday and 08:00 hrs to 16:30 hrs Saturday, therefore peak movements in and out of the site should occur outside of the AM/PM rush hour traffic.

Further detail on traffic management is provided in the Traffic Management Plan prepared by PUNCH as part of this application.

9 Potential Interface with Other Projects

The proposed works will likely have interface with other projects within the greater region. The appointed Contractor may need to coordinate with other contractors in the locality to ensure a smooth interface between projects.

There may be several PSCS's operating in the urban locality at any one time on individual sites. It will be responsibility of the appointed Contractor as PSCS to ensure that delivery and haul routes, site access and egress points and potential crossing points associated with the site are fully coordinated and agreed with other Contractors in advance of the works commencing.

10 General Construction Approach

10.1 Construction Working Space

Construction working space will be set out in the detailed Construction Management Plan at compliance stage.

Construction access routes, haul routes and delivery routes to the site are to be agreed with the Engineer/Employer's Representative in advance of works commencing onsite.

Any road closures required will be submitted and approved in advance with the local authority. It is the responsibility of the Main Contractor to prepare and submit the road closure application to the local authority in advance of works commencing onsite.

10.2 Outline Strategy

The strategy of the proposed works is as outlined below:

1. A pre-commencement survey for otter will be carried out prior to any works commencing. Should an otter holt be recorded within 150m of the proposed works, a derogation license will be obtained from NPWS and works carried out in accordance with NRA (2006) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes. The otter survey will be carried out no more than 10 months in advance of construction works commencing.
2. Appropriate signage will be provided around the works area to alert traffic and pedestrian of the construction activities and associated traffic management measures.
3. Temporary traffic lights will be set up on the southern end of Markievicz Bridge.
4. Secure site perimeter (fencing/hoarding) and construction compound location to be established.
5. A site induction process will be put in place for all site staff, in addition to ensuring all site staff have in date 'Safe Pass' cards.
6. The works area within the riverbed will be electro-fished by qualified personnel in advance of dewatering the works area.
7. A dry working will be established spanning half of the width of the Garavogue River at a time, ensuring water is allowed to flow freely around the dry working area at all times.
8. A pre-commencement survey and inspection beneath the bridge arches will be undertaken to ensure that the known location of the existing roost is clearly identified, and to ascertain whether any additional crevices in the bridge have been occupied by bats.
9. All holes within the bridge structure not used by bats will be temporarily filled with bubble wrap to prevent bats from occupying these locations for the duration of the construction phase. The bubble wrap will be removed following the proposed works.
10. Two artificial roosting brick structures (such as the Brick Roost 1GS) will be erected onto the side of the bridge to provide additional roosting habitat for bats, following best practice guidelines (Kelleher & Marnell 2006, NRA 2006). Bat boxes will have a southerly orientation and be positioned at least 3m from the ground, away from artificial lighting. Final bat box locations will be agreed by the project ecologist.
11. At least two bird boxes will be erected at the side of the bridge structure to allow for additional bird nesting habitat.
12. Automated turbidity metres will be installed upstream and downstream of the works area for suspended solids, and these will be monitored regularly by a suitably qualified ecologist. If there is a 20% difference between the downstream reading and the upstream reading, then all works will be halted until the source of the problem is rectified.
13. Removal of loose debris, sediment or unstable soil from the dry working area as required to establish a firm bearing strata. Should limited excavation of material from the riverbed be required, it will be stored on site and replaced over the scour repair.

14. Loose material to be hand excavated from base of pier to establish competent material.
15. 'Letterbox' formwork to be constructed around piers, filled with a high early strength, self-compacting concrete.
16. 'Letterbox' formwork to be removed and concrete protrusion from formwork to be cut off.
17. Geotextile layer to be put in place across dry works area, 150mm granular fill to be put in place over geotextile layer.
18. Rock rip-rap layer to be laid flush with riverbed material, to natural finished level.
19. Masonry surface area of arches & piers to be cleared of vegetation, cleaned and repointed in accordance with conservation architect's specification (No steam cleaning or repointing to occur within 2m of known bat roost(s), no works will be undertaken within 2m of an occupied birds nest until any young have fledged and the nest is unoccupied).
20. Where applicable final layer of material from existing riverbed to be spread.
21. Rehabilitation works to be carried out in the dewatered area, all tools and materials to be removed from the working area (including bunding materials i.e. sandbags and plastic membranes).
22. Dewatering measures to be removed and established on the opposite side of the river (following electrofishing as above).
23. Repairs to be carried out on the second half of the bridge as above.
24. Contractors compound to be removed. Temporary traffic and pedestrian management measures to be removed.

10.3 Outline Works Description

The construction works will involve an indicative sequence of works, as described in short below. The Contractor will outline works which impact public spaces within the Construction Management Plan that shall be subject to submission and agreement with the Local Authority.

It should be noted that instream works will only be carried out during the fisheries open season which is from 1st July to 30th of September each year.

Works will be carried out in accordance with measures set out in the Construction and Environmental Management Plan produced by MKO Planning and Environmental Consultants as part of this application.

10.3.1 Hoarding, Site Set-up, and Formation of Site Access/Egress

The site compound will be enclosed with hoarding details of which are to be agreed with the Local Authority. Hoarding panels will be maintained and kept clean for the duration of the works. This will involve erecting hoarding around the proposed site perimeter in line with the finished development extents. The site compound will be located as per the Temporary Traffic Management and Site Setup Sketch included in Appendix A.

The Contractor will be responsible for the security of the site. The Contractor will be required to:

1. Operate a Site Induction Process for all site staff.
2. Ensure all site staff shall have current SOLAS Safe Pass cards and appropriate PPE.
3. Install adequate site hoarding to the site boundary.
4. Maintain site security at all times.
5. Install access security in the form of turn-styles and gates for staff.
6. Separate public pedestrian access from construction vehicular traffic.

10.3.2 Tree Protection

The appointed contractor will provide a Tree Protection Strategy to ensure all trees are maintained and protected for the duration of the construction stage of the development.

10.3.3 Construction Sequence

The proposed works consist of the repairs to riverbed scour, repairs to pier scour, the removal of vegetation, cleaning and repointing of the masonry elements of the bridge, as well as the associated environmental mitigation works such as the installation of bird/bat boxes. (Full description of environmental mitigation works to be carried out can be found in the Construction and Environmental Management Plan produced by MKO as part of this application.

The proposed sequence of works is outlined in 10.2 above.

10.3.3.1 Excavation

<u>Riverbed Scour Repairs:</u>

The proposed riverbed scour repairs may require the removal some debris, sediment or unstable soil to establish a firm bearing strata. Should material be removed from the riverbed it will be retained on site and later redistributed over the rip-rap layer proposed as part of scour repair works.

<u>Pier Scour Repairs:</u>

It is expected that prior to repair works hand excavation will be required at the base of the piers to establish a competent material. Waste material (such as concrete) arising from these limited hand excavation works should be disposed of at an appropriately licensed waste management facility.

The Contractor will prepare a Construction and Demolition Waste Management Plan in accordance with the "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (Department of Environment, Heritage and Local Government, 2006) and ensure that all material is disposed of at an appropriately licensed land fill site. The Contractor must also outline detailed proposals within the detailed Construction Management Plan to accommodate construction traffic.

11 Waste Management Plan

The Main Contractor will be required to prepare a detailed Waste Management Plan for the project. This will be included in the overall Construction Management Plan that will be submitted to the Local Authority.

Records shall be kept tracking all waste generated from site to final destination, these records will be maintained and made available for inspection. A Construction and Demolition Resource Waste Management Plan (RWMP) as set out in the Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for C&D Projects (EPA 2021) shall be developed, implemented, and updated throughout the project, identifying type of materials/proportion of re-use/recycled materials and future maintenance to support the implementation of Government and EU circular economy policy. This will be agreed with the Local Authority prior to commencement of the works.

12 Communications and Local Stakeholder Management

The Contractor will, as required, liaise with owners of the local properties in advance of works commencing onsite. The Contractor will use a competent sign provider and all signage used will meet the requirements of the Safety, Health & Welfare at Work (General Applications) Regulations 2007 and Chapter 8 Traffic Signs Manual.

A Public Liaison Plan shall be developed and implemented for the duration of the works, covering the following:

1. Appointment of a Liaison Officer as a single point of contact to engage with the local community and respond to concerns.
2. Keeping local residents informed of progress and timing of particular construction activities that may impact on them.
3. Provision of a notice at the site entrance identifying the proposed means for making a complaint
4. Maintenance of a complaints log recording all complaints received and follow up actions

This will be agreed with the Local Authority prior to commencement of the works.

13 Construction Noise, Dust and Vibration

The Main Contractor will be required to monitor noise, dust and vibration as may be outlined in planning conditions. The Contractor will establish baselines for noise, dust and vibration in advance of works commencing onsite. As part of their detailed Construction Management Plan, the Contractor will be required to clearly indicate how they plan on monitoring noise, dust and vibration throughout the course of the project. This will be especially critical in relation to the piling works. The Contractor will also be required to clearly outline the mitigation measures they plan on putting in place to ensure any breaches in the baselines are mitigated.

Prior to the commencement of the proposed site works noise, vibration, and dust monitoring stations to be installed and maintained to provide continuous monitoring to measure and record the impact of site activities on local receptors. Noise monitoring will comply with the recommendations contained in BS 5228 and shall be installed, monitored, and reported on at weekly intervals by a suitable qualified

specialist company for the duration of the contract. All monitoring data to be compiled into a weekly technical monitoring report which shall identify remedial measures where levels exceed relevant limit values.

All management procedures will be agreed with the local authority prior to commencement of the works as part of the contractor's Constructions Stage Construction Management Plan.

13.1 Dust Management

The objective of dust control is to ensure that no significant nuisance occurs at nearby sensitive receptors. Effective site management regarding dust emissions will be the responsibility of appointed contractor by preparation of a Dust Management Plan (DMP).

The key features of the DMP are:

1. Identification of the site manager with responsibilities for dust.
2. Systems for managing site practices and implementing management controls.
3. Assessment of the performance of the dust management plan.

13.1.1 Site Management

The aim is to avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or using effective control measures.

The following measures should be taken in order to avoid dust nuisance occurring:

1. There will be a designated person monitoring performance to ensure that the proposed construction phase mitigation measures are implemented and that construction impacts are minimised.
2. During working hours, dust control methods will be monitored as appropriate, depending on the prevailing weather conditions.
3. Complaint registers will be kept on site detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out.
4. At all times, the procedures put in place will be monitored and assessed.

13.1.2 Dust Control Measures

Soil Excavation

Soil excavation during periods of high winds and dry weather conditions can be a significant source of dust. During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and rock and thus suppress dust. During periods of very high winds, construction activities can generate significant dust emissions and should be postponed until the winds have subsided.

Site Traffic on Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads should be reduced to a minimum by employing the following measures.

1. Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust.
2. At the main construction traffic exit, equipment for wheel washing should be made available. Site constraints may not allow for a full-size wheel washing facility. In addition, public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and

cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.

3. Vehicles onsite shall turn off engines when not in use to prevent idling emissions.

13.2 Noise Management

Some impact of noise is likely to occur as a result of the construction activity. Construction work is of a temporary nature and the resulting noise levels are usually acceptable, subject to typical management and time control procedures which are common to most development projects.

Construction plant used on site will comply with the relevant Irish regulations in relation to noise and vibration requirements.

Noise will be minimized as far as possible, by limiting the use of compressors and other plant to stated hours and by fitting and use of silencing devices wherever practicable. Attention should be paid to the recommendations given in the latest version of BS 5228. 'Noise Control on construction & Open Sites' & BS6187 Code of Practice for Demolition.

13.2.1 Noise Mitigation Measures

The nominated contractor shall appoint a designated person to manage all environmental complaints including noise and vibration, these will be logged and investigated where required. The nominated person will also liaise with and inform local residents and the Local Authority regarding out of hours works.

All on-site generator units (if required) used to supply electricity to the site shall be silenced models or enclosed and located away from any receptor. Mains power shall be used to supply electricity to all site offices and site lighting at the earliest instance and the use of generators during the night-time shall be avoided.

The principal of controlling noise at source shall be implemented at the site. Best practice mitigation techniques as specified in BS 5228:2009+A1 2014 – Noise and Vibration Control on Construction and Open Sites shall be implemented during the construction phase. Noisy stationary equipment shall be sited away from sensitive site boundaries as far as practicable. Noisy plant or activities should be replaced by less noisy alternatives if noise breaches and/or complaints occur. Proper use of plant with respect to minimising noise emissions and regular maintenance will be required, where noisy plant is required to operate in work areas next to public areas low noise plant options will be used where possible. Selected use of rubber-tyred equipment over steel track equipment can be utilised. Machines in intermittent use shall be shut down when not in use. Static noise emitting equipment operating continuously shall be housed within suitable acoustic enclosure. The use of acoustic screens to attenuate noise at source shall be implemented as deemed necessary.

14 Working Hours

It is anticipated that construction working hours will be stipulated in the planning conditions attached to the planning grant. Any working hours outside the normal construction working hours will be agreed with the Local Authority. The planning of such works will take consideration of sensitive receptors, in particular any nearby businesses.

The working hours are as follows;

- 07:00 a.m. to 19:00 p.m. Monday to Friday,
- 08:00 a.m. to 16:30 p.m. Saturday

No activities shall take place on Sundays or Bank Holidays.

In accordance with the Construction and Environmental Management Plan produced by MKO, no works will take place outside of daylight hours.

Where appropriate and permissible, the contractor may apply to the Local Authority to operate outside these hours. Construction working hours will be in accordance with planning permission.

15 Lighting

It is not envisaged that any existing public lighting will need to be disconnected as a result of the proposed works. Appropriate lighting will be provided as necessary at construction compounds. All lighting will be installed so as to minimise light spillage from the site.

16 Construction Employment

Construction employment numbers will vary depending on the construction stage of the project and the actual approach adopted by the Contractor. However, it is anticipated that at the peak of construction there may be a workforce of approximately 10 people present on site.

17 Protection of Wildlife

Wildlife are to be protected in accordance with the ecologists requirements. If not specifically identified, refer to the below legislation:

- Wildlife Act 1976 to 2020;
- Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna 1992 (Council Directive 92/43/EEC) – the Habitats Directive; and
- European Communities (Birds and Natural Habitats) Regulations, 2011 to 2015.

Reference is made to the Outline Construction Environment Management Plan (CEMP).

18 Arboricultural Impact and Tree Protection Strategy

The appointed contractor will provide a Tree Protection Strategy to ensure all trees are maintained and protected for the duration of the construction stage of the development.

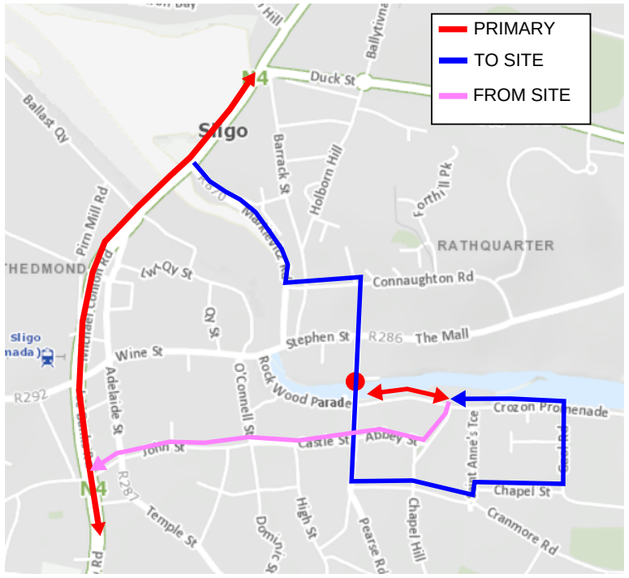
19 Conclusion

This document has provided an outline construction management plan for the proposed Markievicz Bridge Refurbishment works, for information purposes.

The construction programme for the works will take an estimated 3 months. The site will be accessed via John F Kennedy Parade, with the site compound entrance to the east of the site. Any working hours outside the normal construction working hours will be agreed with the Local Authority. It is anticipated that at the peak of construction there will be a workforce varying in a range of approximately 10 people present on site depending on phasing and stage of construction.

The Main Contractor will be required to prepare a detailed Construction Management Plan for the project, taking into account this outline plan.

Appendix A Temporary Traffic Management and Site Setup Sketch



CONTRACTOR ROUTE TO AND FROM SITE

TEMPORARY TRAFFIC MANAGEMENT AND SITE SETUP

PUNCH consulting engineers	PROJECT:	224138 MARKIEVICZ BRIDGE REPAIRS	
	SKETCH TITLE:	CONSTRUCTION TRAFFIC	
	SKETCH NO.	2224138-PUNCH-XX-XX-SK-CS-0006	
	DESIGNER:	KOR	DATE: 18/11/2024